



NAILAH K. BYRD
CUYAHOGA COUNTY CLERK OF COURTS
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Cleveland, Ohio 44113

Court of Common Pleas

BRIEF IN OPPOSITION
December 9, 2019 12:00

By: THOMAS C. MERRIMAN 0040906

Confirmation Nbr. 1888732

NADER M. HARB

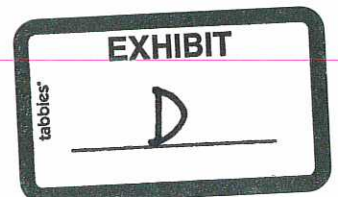
CV 19 917268

vs.

Judge: EMILY HAGAN

LG CHEM, LTD., ET AL

Pages Filed: 333



**IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO**

NADER M. HARB)	CASE NO: CV-19-917268
)	
Plaintiff)	JUDGE: EMILY HAGAN
)	
vs.)	PLAINTIFF’S OPPOSITION TO
)	DEFENDANT LG CHEM, LTD.’S
LG CHEM LTD., et al.)	MOTION TO DISMISS THE AMENDED
)	COMPLAINT FOR LACK OF
)	PERSONAL JURISDICTION
Defendants)	
)	

Plaintiff, Nader. M. Harb (“Mr. Harb” or “Plaintiff”), by and through his undersigned Counsels, hereby responds in opposition to the Motion to Dismiss Plaintiff’s Amended Complaint for Lack of Personal Jurisdiction brought by Defendant LG Chem Ltd. (“LGC”).

PERTINENT PROCEDURAL HISTORY

Plaintiff filed his initial Complaint on June 25, 2019, asserting products liability claims against Defendant LGC, a Korean entity, and Defendant Cleveland Vape Distribution, LLC (“Cleveland Vape”), an Ohio limited liability company. Plaintiff’s initial Complaint alleged that Defendant LGC manufactured, designed, tested, marketed, supplied, imported, and distributed lithium ion batteries, the subject LG HG2 18650 battery (“the Subject LG HG2 battery”) involved the June 8, 2018 incident which resulted in his burn injuries. Plaintiff likewise alleged that Defendant Cleveland Vape was the retailer of the Subject LG HG2 battery. Plaintiff was required to serve Defendant LGC pursuant the Hague Service Convention, and, to that end, this Court authorized the appointment of a special process server on July 1, 2019. On August 26, 2019, Defendant Cleveland Vape provided its Answer to Plaintiff’s initial Complaint. In its responsive pleading, Cleveland Vape also asserted a cross-claim against Defendant LGC and further brought a third-party claims against Midwest Goods, Inc. (“Midwest”), an Illinois corporation.

On September 25, 2019, rather than answering Plaintiff's initial Complaint, Defendant LGC instead moved to dismiss, claiming a lack of personal jurisdiction pursuant to Civ. R. 12(b)(2). Plaintiff submitted his brief in opposition to Defendant LGC's Civ. 12(b)(2) motion on October 9, 2019.¹ On October 30, 2019, this Court issued an Order specifying that "Defendant LC Chem Ltd.'s Motion to Dismiss for Lack of Personal Jurisdiction, filed 9/25/2019, is denied," and further stated that Defendant LGC was to "file an Answer within 14 days of this Order."²

The following day, October 31, 2019, a Case Management Conference ("CMC") was held with all parties.³ During that CMC, Defendant LGC requested an additional fourteen days to respond to Plaintiff's initial Complaint, which was "unopposed" by the Plaintiff.⁴ Likewise, during the October 31, 2019 CMC, Plaintiff sought leave to amend his initial Complaint to assert first-party claims against Midwest, which, as a practical matter, he had not been able to raise during the pendency of Defendant LGC's R. Civ. 12(b)(2) challenge due to the international service issues. Plaintiff's request was granted and he was told to submit his Amended Complaint on or before November 14, 2019.⁵ Defendant LGC did not answer Plaintiff's initial pleading before Plaintiff filed his Amended Complaint on November 13, 2019, as per the Court's directions in the October 31, 2019 CMC.⁶ As was discussed in the CMC, Plaintiff sought leave to file his Amended Complaint solely to add supplier liability claims against Midwest.⁷ Subsequently, on November

¹ Defendant LGC's arguments in support of the instant motion are substantively identical to those rejected by this Court in its October 30, 2019 Order. *See* Exhibit 1, Oct. 30, 2019 Order. While Plaintiff posits that the points raised in his prior opposition memorandum provide sufficient grounds for this Court to now deny Defendant LGC's successive motion, out of an abundance of caution Plaintiff provides this additional response in lieu of simply incorporating his prior memorandum and exhibits by reference.

² *See* Exhibit 1, Oct. 30, 2019 Order.

³ *See* Exhibit 2, Nov. 4, 2019 Journal Entry (Detailing Oct. 31, 2019 CMC).

⁴ *Id.*

⁵ *Id.*

⁶ *See* Exhibit 3, Plf's Amd. Compl.

⁷ *Compare* Exhibit 3, ¶¶ 10-13, 32, 49, 106-114; 116-120 (adding allegations regarding Defendant Midwest), with Exhibit 4, Plf's Initial Compl., *passim*.

25, 2019, Defendant LGC again moved pursuant to R. Civ. 12(b)(2), this time seeking to dismiss Plaintiff's Amended Complaint. Plaintiff now offers this response in opposition.

PRELIMINARY STATEMENT

The subject motion is a transparent attempt to re-litigate the jurisdictional challenge the Court has already resolved in Plaintiff's favor. The Amended Complaint alleges that Defendant LGC directly targets Ohio by shipping lithium-ion batteries into the State of Ohio, including the subject LG HG2 18650 battery involved in the June 8, 2018 incident at issue here ("the Subject LG HG2 battery").⁸ LGC has benefited from its direct and indirect business relationships with Ohio entities, its direct activities within the State of Ohio and the direct and indirect sales of its products to Ohio residents.⁹ Such purposeful avilment renders LGC subject to personal jurisdiction in Ohio.¹⁰ As set forth in greater detail herein, LGC has sufficient contacts with the State of Ohio to render the exercise of jurisdiction proper under R.C. § 2307.328, Civ. R. 4.3(A), and the due process clauses of the Constitution of the United States.

Furthermore, Defendant LGC's memorandum is largely an attack on Plaintiff's underlying, substantive claims masquerading as a jurisdictional challenge.¹¹ Should the Court determine that outright denial of Defendant's motion is unwarranted, in the alternative, Plaintiff respectfully requests this Court stay its decision on LGC's motion to dismiss so that Plaintiff may conduct

⁸ See Compl., ¶¶ 4-5.

⁹ *Id.*, ¶¶ 4-5; 26-42; 44-87.

¹⁰ *Id.*

¹¹ Defendant's Memorandum in Support of its Motion to Dismiss Plaintiff's Amended Complaint makes reference to an undated "Affidavit of Joon Young Shin." See Def's Mem. at 3. However, Defendant LGC's November 25, 2019 submission contains no such affidavit. *Id.* Defendant LGC cannot rely upon materials it has failed provide to the Court or to the Plaintiff in support its motion to dismiss Plaintiff's Amended Complaint. See e.g. Civ. R. 7(B)(1) (noting that "A written motion, and any supporting affidavits, *shall be served* in accordance with Civ.R. 5 unless the motion may be heard ex parte." (emphasis added)). To the extent that affidavit referenced in, but not served with, Defendant LGC's current motion is the September 17, 2019 affidavit from Mr. Joon Young Shin attached to its rejected initial motion to dismiss, Defendant LGC's reliance thereon is misplaced. That affidavit was not generated in response to Plaintiff's Amended Complaint, and reference thereto merely reinforces the fact that the instant motion is a patent attempt to re-argue the jurisdictional challenge properly rejected by the Court in its October 30, 2019 Order. See Exhibit 1.

jurisdictional discovery to further elucidate LGC's contacts with the forum related to the subject matter of Plaintiff's claims.

BACKGROUND FACTS

This case stems from injuries Plaintiff suffered on June 8, 2018 in Cuyahoga County, Ohio when the Subject LG HG2 battery suddenly and without warning exploded and caught fire Plaintiff's pants pocket.¹² Plaintiff sustained serious burns to his right thigh, as well as permanent scarring, physical pain and mental anguish.¹³ Plaintiff is a resident of Cuyahoga County and purchased the Subject LG HG2 battery ---- designed, formulated, manufactured, constructed and marketed by Defendant LGC --- from Defendant Cleveland Vape Distribution, LLC ("Cleveland Vape") on or about February 27, 2018.¹⁴ Prior to being purchased by the Plaintiff, Defendant Midwest marketed, supplied, and distributed lithium ion batteries, including the Subject LG HG2 battery designed, formulated, manufactured, constructed and marketed by Defendant LGC, to Defendant Cleveland Vape.¹⁵

Defendant LGC targets the U.S. market by selling lithium-ion batteries to various American entities, including but not limited to battery packers and power tool companies throughout the nation. Additionally, Defendant LGC has a host of wholly-owned United States subsidiaries that conduct business in this country. For example, one subsidiary, LG Chem America, Inc., is headquartered in Atlanta, Georgia and maintains a license to do business in Ohio.¹⁶ Another subsidiary, LG Chem Michigan, Inc. manufactures lithium-ion batteries and battery packs in the United States. Likewise, an additional subsidiary in which LGC holds a substantial stake, LG Fuel

¹² See Amd. Compl., ¶¶ 4-5; 33-49.

¹³ *Id.*, ¶¶ 33-49.

¹⁴ *Id.*, ¶¶ 2; 31. See also Exhibit 5, a true and accurate copy of Plaintiff's receipt for the purchase of, *inter alia*, two LG HG2 batteries, including the subject battery, on February 27, 2018 from Cleveland Vape.

¹⁵ *Id.*, ¶¶ 12-13, 32.

¹⁶ See Exhibit 6, LG Chem America, Inc.'s Ohio Secretary of State Registration.

Cell Systems, Inc. (“LGFCs”), was registered to do business in Ohio, maintained its global headquarters in North Canton, Ohio, and received over \$18,000,000 in state and federal grants before shuttering its operations after the date of the incident which forms the basis of this litigation.¹⁷

Plaintiff submits that LGC purposefully and actively supplies the U.S. market with lithium-ion batteries; the same kind of batteries that gives rise to suit here. Moreover, LGC has appeared and defended itself in other Ohio cases with substantially similar factual issues to those present here. Therefore, any suggestion that it would offend due process to hale LGC into Ohio courts lacks factual support.

A. LGC Floods the U.S. Market with Lithium-Ion Batteries, Netting Nearly \$1 Million Every Day in The United States

LGC is a multi-national chemical-based company founded in Korea in 1947.¹⁸ LGC boasts of leading the global market with its manufacture and sale of lithium-ion batteries, such as the cylindrical 18650 batteries at issue in this case.¹⁹ LGC has a network of wholly-owned subsidiaries in the United States that work together to sell various products nationwide.²⁰ LGC’s documents

¹⁷ See Exhibit 7, LG Chem Ltd. and Subsidiaries Consolidated Financial Interim Financial Statements, June 30, 2018 and 2017, at 14 (showing LG Chem’s ownership interested in LG Fuel Cell System Inc., a “power fuel cell research” entity); Exhibit 8, LG Fuel Cell System Inc.’s Ohio Secretary of State Registration; Exhibit 9, John Funk, *Rolls-Royce sells 51% of its Ohio fuel cell company to LG*, CLEV. PLAIN DEALER, June 28, 2012 (noting that “the facility will now be the global headquarters of LG Fuel Cell Systems.”) (available at https://www.cleveland.com/business/2012/06/rolls-royce_sells_51_percent_o.html (last accessed Oct. 6, 2019)); Exhibit 10, Subsidy Tracker identifying state and federal subsidies to LG and its subsidiaries, including LG Fuel Cell Systems, Inc. (available at <https://subsidytracker.goodjobsfirst.org/parent/lg> (last accessed Oct. 6, 2019)); Exhibit 11, John Funk, *LG Fuel Cell Systems quitting Ohio after receiving \$18 million in state and federal funds*, CLEV. PLAIN DEALER, Dec. 11, 2018 (available at <https://www.apnews.com/154ebba5a87d49a29f0fcc1467fae9b5>) (last accessed Oct. 6, 2019)).

¹⁸ See Exhibit 12, available at <https://www.lgchem.com/company/company-information/about> (last accessed Oct. 9, 2019).

¹⁹ *Id.*; see also Exhibit 13, available at <https://www.lgchem.com/product/PD00000150>

²⁰ See Exhibit 7, *passim*.

characterize the business activities of one such subsidiary, LG Chem America, Inc., as “sales and trading” of Defendant LGC’s products in the United States.²¹

Defendant LGC makes no distinction between itself and its U.S. subsidiaries when marketing its products in the United States, and for all intents and purposes, the entities represent themselves as one and the same. For example, there is no separate website²² for LG Chem America, Inc. or any other of LGC’s domestic subsidiaries, and they share a single YouTube channel for advertising and videos.²³ Furthermore, LGC readily has readily admitted that it has targeted the U.S. market in the sale of lithium-ion batteries for over a decade and that it derives substantial revenue from its daily activities in the United States in other litigations, including in a patent infringement case brought in North Carolina.²⁴

In *Celgard LLC v. LG Chem, Ltd. and LG Chem America, Inc.*, U.S. District Court for the Western District of North Carolina, Case No. 3:14-CV-00043-MOC-DC, LGC and its subsidiary, LG Chem America, Inc. were sued by Celgard, LLC. Celgard asserted patent infringement claims and sought an injunction against LGC and LG Chem America Inc. related to “separators” used in the construction of high energy rechargeable lithium-ion batteries, such as those at issue in the instant litigation.²⁵ The separators are used to prevent thermal runways that ultimately led to fires and battery explosions. Although LGC filed its motions and exhibits under seal, a May 21, 2015

²¹ *Id.* at 10.

²² See <http://www.lgchem.com/global/main>; see also Exhibit 13.

²³ See, for example, “LG Chem” YouTube channel, which also includes prior TV ads.

<https://www.youtube.com/user/LGChemTube>; <https://www.youtube.com/watch?v=Qcb0BhEJgBE>

²⁴ See *Celgard LLC v. LG Chem, Ltd. and LG Chem America, Inc.*, U.S. District Court for the Western District of North Carolina, Case No. 3:14-cv-43. Plaintiff does not suggest the patent infringement case and legal arguments made therein are analogous to those present here. The relevance of *Celgard* are the affirmative, factual statements made by LG Chem and LG Chem America, Inc. regarding their symbiotic relationship and attendant distribution of lithium-ion batteries throughout the United States.

²⁵ See Exhibit 14, July 18, 2014 Order, Document 128, at p. 1-2, issued in *Celgard, supra*.

Order.²⁶ by the Court provides insight into statements made by LGC; statements that stand in stark contrast to the picture it attempts to paint here.

In *Celgard*, the trial judge stated that “The court also notes that in defending its motion to stay the preliminary injunction against it in this case, LGC (LG Chem Ltd.) went to great lengths to describe the expanse of its participation in the U.S. economic markets,” and cited to LGC’s submission noting that:

Defendants sell in the order of \$ 0.76 million every day attributable to the accused batteries sold or imported into the United States.... Worldwide, that number jumps to \$6 million in daily sales. Defendants have yearly revenue of \$278 million attributable to the accused batteries sold or imported into the United States (and \$2.4 billion worldwide).... Beyond that, Defendants do business *every day* with companies at the center of the U.S. economy..²⁷

Moreover, in *Celgard* LGC further discussed the repercussions such an injunction would have on its sale of lithium-ion batteries in the U.S., including “tak[ing] Defendants’ batteries ‘off the shelves’” in U.S. stores such as Wal-Mart and Best Buy..²⁸ Additional documents referenced in the above-noted Order include the “Declaration of Juan (S.H.) Oh” attached in support of LGC’s opposition to the requested injunction. Mr. Oh’s declaration details LGC’s creation of wholly-owned subsidiaries in the United States to do its bidding with regard to lithium-ion batteries:

As noted above, LGCAI (LG Chem America, Inc.) a wholly-owned subsidiary of LGC, is a Delaware company headquartered in Englewood Cliffs, New Jersey. See Declaration of Juan (S.H.) Oh (“Juan Decl.”), (Document No. 33), ¶ 2; Def. Mem. Mot. Dismiss (Document No. 227), p. 4). LGCAI is responsible for marketing LGC petrochemicals, information and electronic materials, and batteries to customers in the United States. (Juan Decl, ¶ 2). LGCAI also acts as a product distributor for LGC’s customers in the U.S. and is responsible for sales and program management to U.S. customers ... *Id.*²⁹

²⁶ See Exhibit 15, *Celgard, LLC v. LG Chem, Ltd.*, No. 3:14-CV-00043-MOC-DC, 2015 WL 2412467 (W.D.N.C. May 21, 2015).

²⁷ *Id.* at *24 (emphasis added).

²⁸ *Id.* at *25 (emphasis added).

²⁹ *Id.* at *26 (emphasis added).

In addition to the jurisdictional evidence gleaned from the *Celgard* case, Plaintiff understands LGC has purposefully targeted Ohio as a market for its lithium-ion batteries and has engaged in a persistent course of conducted directed at Ohio. As such, Defendant LGC's motion should be denied.

B. LGC Has Engaged In Business in Ohio and Has Close Relationships With Other LG Entities Operating In This State

There can be no serious dispute that Defendant LGC has regularly supplied lithium-ion batteries to Ohio. For example, in June 2016, LGC “announced that it supplied its lithium-ion batteries for a recently completed 7 MW/3 MW battery energy storage system (BESS) in the Village of Minster, Ohio.”³⁰ This energy system in Minster, Ohio, featuring an “an LG Chem lithium-ion (nickel manganese cobalt chemistry) battery system,”³¹ contains materials directly and intentionally shipped by Defendant LGC from South Korea to the “Final Destination” of “Minster Substation 285 North Ohio Street, Minster, Ohio 24565.”³² Similarly, Defendant LGC delivered “the lithium ion batteries”³³ for the redevelopment of a Duke Energy plant in New Richmond, Ohio, and, in so doing, directly and intentionally shipped materials from South Korea to Ohio as part of that undertaking.³⁴ Additionally, LGC's subsidiary, LG Chem America, Inc. who it works in concert with to distribute batteries in the United States, maintains a license to do business in Ohio.³⁵ These activities are clear evidence, under R.C. § 2307.382, of Defendant LGC's doing or

³⁰ See Exhibit 16, Joseph Bebon, *LG Chem Batteries Power Large Storage System In Ohio*, SOLAR INDUS. MAG., June 10, 2016 (available at <https://solarindustrymag.com/lg-chem-batteries-power-large-storage-system-in-ohio> (last accessed Oct. 7, 2019)).

³¹ See Exhibit 17, *Capturing the Multi-Faceted Value of Energy Storage*, (available at <https://www.sandc.com/globalassets/sac-electric/documents/sharepoint/documents---all-documents/case-study-180-1084.pdf> (last accessed Oct. 7, 2019)).

³² See Exhibit 18, Import Genius Report Regarding B/L HDMUBUCI9193624A.

³³ See Exhibit 19, Peter Maloney, *Duke Energy restyles retired Ohio coal plant into battery storage facility*, UTILITY DIVE, Nov. 20, 2015, available at <https://www.utilitydive.com/news/duke-energy-restyles-retired-ohio-coal-plant-into-battery-storage-facility/409552/> (last accessed Oct. 7, 2019)).

³⁴ See Exhibit 20, Import Genius Report Regarding B/L HDMUBUCI9189611A.

³⁵ See Exhibit 6.

soliciting business, engaging in a persistent course of conduct, and generating revenues from its knowing, deliberate decisions to ship its lithium-ion batteries into the State of Ohio.

Moreover, Defendant LGC regularly ships products intended for, and used in, the State of Ohio. For example, between January of 2014 and January of 2019, Defendant LGC made at least 529 distinct shipments of products from South Korea to business addresses in Ohio.³⁶ Likewise, Defendant LGC has regularly utilized distribution ports within Ohio, including Cleveland, as part of its international operations, further emphasizing the ongoing, systematic contacts between Defendant LGC and the State of Ohio.³⁷

Furthermore, Defendant LGC has regularly and purposefully availed itself of the forum through its interactions with colleges and universities within Ohio. For example, Defendant LGC solicited submissions from, and awarded funds to, researchers from The Ohio State University's Energy Innovation Lab regarding lithium-ion batteries, the same type of battery at issue in this action. Specifically, LGC awarded researchers at The Ohio State University some \$450,000.00 in December 2018 in response to a submission to LGC's "LG Chem Global Innovation Contest (GIC)," entitled "Characterizing and Optimizing Electrode Surfaces for High-Energy Li-ion Batteries."³⁸ Similarly, LGFCS, a subsidiary in which Defendant LGC holds a substantial stake, was registered to business in Ohio and maintained its global headquarters at Stark State College in North Canton, Ohio as part of a formal program with that educational institution.³⁹ LGFCS's business scope included the development of "lithium-ion battery" technology,⁴⁰ it received at least

³⁶ See Exhibit 21 Import Genius Report Regarding LGC's Ohio Shipments.

³⁷ See Exhibit 22, Import Genius Report Regarding LGC's Ohio Distribution Ports.

³⁸ See Exhibit 23, *Lab Won LG Chem Global Innovation Contest* (available at <https://battery.engineering.osu.edu/news/2018/12/lab-won-lg-chem-global-innovation-contest>) (last accessed Oct. 6, 2019)).

³⁹ See Exhibits 7-9.

⁴⁰ See Exhibit 24, Overview Presentation, Hydrogen and Fuel Cell Technical Advisory Committee, April 23-24, 2013 (available at https://www.hydrogen.energy.gov/pdfs/htac_apr13_6_fleiner.pdf) (last accessed Oct. 7, 2013)).

\$3,124,654.00 in grants or hybrid loans from the State of Ohio,⁴¹ and employed approximately seventy people in Ohio before it was shuttered in December 2018.⁴² Each of these factors further reinforce Defendant LGC's ongoing, extensive contacts with Ohio related to lithium-ion batteries.

C. Defendant LGC Has Answered and Defended Claims Brought By Other Litigants in Ohio with Nearly Identical Facts

Mr. Harb is not first victim of LGC's lithium-ion batteries in Ohio or the United States generally. Innocent consumers across the country have suffered serious burn injuries as a result of LG's lithium-ion batteries exploding unexpectedly. Plaintiff is aware of other cases pending in Ohio courts against Defendant LGC alleging injuries arising out of alleged explosions involving LGC's batteries, one in Summit County and another in Lucas County.⁴³ Indeed, in one case, brought by two unrelated individuals in Toledo, each of whom alleges he sustained injuries from LG HG 18650 batteries purchased in Ohio, Defendant LGC, represented by the *same counsel* defending it in this matter, answered the complaint *without contesting jurisdiction*.⁴⁴ Based on this, one can only conclude that LGC is cherry-picking cases in which it will invoke jurisdictional arguments. Such actions not only belie LGC's claims that it is not subject to the jurisdiction of Ohio courts, but it also creates a legal lottery wherein some plaintiffs may have the opportunity to fully litigate their claims against LGC and recover for their injuries while others may be denied that opportunity.

Respectfully, a foreign, multinational conglomerate who has, for at least approximately four years, knowingly manufactured, sold, distributed and/or acquiesced in the distribution of its

⁴¹ See Exhibit 10.

⁴² See Exhibit 11.

⁴³ See Exhibit 25, Compl. in *Jeremy Darrow and Dale Mock v. LG Chem, Ltd. et al.* No. G-4801-CI-01801056-00 (Ct. Comm. Pls. Lucas Cty); see also Compl. in *Daniel F. Reyes v. Freedom Smokes, Inc. et al.*, No. 2019072443 (Ct. Comm. Pls. Summit Cty.)

⁴⁴ See e.g. Exhibit 26, Defendant LGC's answer in *Darrow et al. v. LG Chem, Ltd. et al.* (Ct. Comm. Pls. Lucas Cty).

products to consumers in the United States with the knowledge that such products can “create a fire hazard leading to serious bodily injury”.⁴⁵ cannot be allowed to escape the consequences of its tortious conduct by selectively submitting to, or contesting, the jurisdiction of American courts based on its mercurial litigation strategy. LGC has regularly defended claims brought against it in this country, and this state, on their merits without speciously invoking jurisdictional defenses as means to try and avoid responsibility for its defective products. Given the Plaintiff’s allegations and facts set forth herein, this Court should respectfully decline LGC’s invitation to effectively exculpate itself from any responsibility for its conduct based on a self-serving memorandum and affidavit. Rather, in the interest of justice, and consistent with the Ohio long-arm statute the federal due process guarantees, LGC should be made to answer, again, in Ohio for the known defects in its products which have, once again, resulted in serious injuries to yet another Ohio resident.

ARGUMENT

A. Plaintiff’s Burden of Persuasion

Defendant LGC initially fails to accurately describe the burden of persuasion on its motion to dismiss for lack of personal jurisdiction. Generally, “the plaintiff is only required to make a prima facie showing of jurisdiction; the court is to view allegations in the pleadings and the documentary evidence in a light most favorable to the plaintiff and resolve reasonable inferences in favor of the plaintiff.” *See Triad Hunter, LLC v. Eagle Natrium, LLC*, 2019-Ohio-940, ¶ 20, 132 N.E.3d 1272, 1280. Likewise, although Defendant LGC did not serve any affidavits with the subject motion, to the extent that it is attempting to base its second jurisdictional challenge upon Mr. Shin’s prior affidavit, it must be noted that in such scenarios the plaintiff’s burden is “relatively slight.” *See Am. Greetings Corp. v. Cohn*, 839 F.2d 1164, 1168-1169 (6th Cir.1988); *Estate of Thompson ex rel. Estate of Rakestraw*

⁴⁵ See Exhibit 28, Deposition of Joon Young Shin, Nov. 29, 2017 in *Juan Manuel Flores v. LG Chem Ltd. et al.*, C.A. No. 1:16-cv-297, United States District Court for the Southern District of Texas, Brownsville Division, at 54:10-17.

v. Toyota Motor Corp. Worldwide, 545 F.3d 357, 360-361 (6th Cir.2008); *Ammo USA, Inc. v. Deubelbeiss*, Franklin Cty. C.P. No. 13CV-6816, 2014 Ohio Misc. LEXIS 10631 (Jan. 31, 2014).

Indeed, where a defendant bases its jurisdictional challenge on an affidavit, the sworn statements cannot be treated as “uncontroverted” and accepting them as true is improper. *See Theunissen v. Matthews*, 935 F.2d 1454, 1459 (6th Cir.1991). This rule is meant to “prevent non-resident defendants from regularly avoiding personal jurisdiction simply by filing an affidavit denying all jurisdictional facts[.]” *Id.* Instead, all the pleadings and affidavits must be viewed in the light most favorable to the plaintiff. *CompuServe, Inc. v. Patterson*, 89 F.3d 1257, 1261-1262 (6th Cir.1996); *Pharmed Corp. v. Biologics, Inc.*, 97 Ohio App.3d 477, 480, 646 N.E.2d 1167 (8th Dist.1994). If jurisdictional discovery is not allowed, the plaintiff’s only burden is to establish a *prima facie* case of personal jurisdiction. *Trintec Indus., Inc. v. Pedre Promotional Prods., Inc.*, 395 F.3d 1275, 1282-1283 (Fed.Cir.2005); *Avery Dennison Corp. v. Alien Tech. Corp.*, 632 F.Supp.2d 700, 704-705 (N.D. Ohio 2008); *Giachetti v. Holmes*, 14 Ohio App.3d 306, 307, 471 N.E.2d 165 (8th Dist.1984).

Furthermore, the Supreme Court of Ohio has adopted a two-step process for determining when personal jurisdiction over a non-resident has been established:

First, the court must determine whether the state’s “long-arm” statute and applicable civil rule confer personal jurisdiction, and, if so, whether granting jurisdiction under the statute and the rule would deprive the defendant of the right to due process of law pursuant to the Fourteenth Amendment to the United States Constitution. (Footnote omitted.)

See U.S. Sprint Comms. Co. Ltd. P’ship v. Mr. K’s Foods, Inc., 68 Ohio St.3d 181, 183-184, 624 N.E.2d 1048 (1994); *see also Kauffman Racing Equip., L.L.C. v. Roberts*, 126 Ohio St.3d 81, 2010-Ohio-2551, 930 N.E.2d 784, ¶ 28.

Here, not only does the long-arm statute confer personal jurisdiction over Defendant LGC, but exercise of such jurisdiction likewise comports with due process. To the extent Defendant LGC

is relying upon them, Mr. Shin's self-serving statements from his September 17, 2019 affidavit attempt to refute general personal jurisdiction, but in reality are nothing more than dressing up a substantive defense as proof of absence of minimum contacts with Ohio. Moreover, contrary to Defendant LGC's assertions, *no* portion of that affidavit specifically addresses Plaintiff's allegations in the Amended Complaint regarding Defendant Midwest.⁴⁶ These contentions may be probative to LGC's substantive defenses against Plaintiff's product liability claims, but they do not foreclose the possibility Defendant may be subject to this Court's jurisdiction. LGC narrowly focuses on what it *does not* do, but as detailed below, Plaintiff has sufficiently identified what LGC *has done* relative to Ohio to establish personal jurisdiction.

B. Ohio's Long Arm Statute Confers Jurisdiction Over LGC

Under Ohio law, specific jurisdiction exists "in cases in which the subject matter of the lawsuit arises out of or is related to the defendant's contacts with the forum." *See Nationwide Mut. Ins. Co. v. Tryg Int'l Ins. Co.*, 91 F.3d 790, 793 (6th Cir.1996). To first assess whether specific jurisdiction will be deemed to exist, the Ohio General Assembly has extended the jurisdiction of Ohio courts to reach all types of business activities directed toward this state:

A court may exercise personal jurisdiction over a person who acts directly or by an agent, as to a cause of action arising from the person's:

- (1) Transacting any business in this state;
- (2) Contracting to supply services or goods in this state;
- ***
- (4) Causing tortious injury in this state by an act or omission outside this state if he regularly does or solicits business, or engages in any other persistent course of conduct, or derives substantial revenue from goods used or consumed or services rendered in this state....

⁴⁶ Compare Def's Memo. at 4, 6 (asserting, *inter alia*, that Mr. Shin's affidavit, ¶¶ 13-14, specifies that "LGC has never conducted any business with Cleveland Vape or Midwest ... and has never authorized Cleveland Vape or Midwest to sell LG brand lithium-ion cells," (emphasis added) with See Shin Affidavit, attached hereto as Exhibit 27, ¶¶ 13-14 (making no reference to Defendant Midwest).

See R.C. § 2307.382(A); See also Civ.R. 4.3(A)(1), (2), and (4).

These broad terms encompass a wide range of business activities. See *Kentucky Oaks Mall Co. v. Mitchell's Formal Wear, Inc.*, 53 Ohio St.3d 73, 75, 559 N.E.2d 477 (1990). “[I]t is an inescapable fact of modern commercial life that a substantial amount of business is transacted solely by mail and wire communications across state lines[.]” See *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 476, 105 S.Ct. 2174, 85 L.Ed.2d 528 (1985); see also *Cardinal Distrib. v. Duane Reade*, 10th Dist. Franklin No. 02AP-1204, 2003-Ohio-2880, ¶ 29, 34 (June 5, 2003) (finding plaintiff made a *prima facie* personal jurisdiction case over nonresident defendants, who operated a chain of drug stores and accepted and processed orders in state); *Timekeeping Sys., Inc. v. Safety Protection Universal Ltd.*, 8th Dist. Cuyahoga No. 99714, 2013-Ohio-3919, ¶ 4, 21-24 (finding *prima facie* case for personal jurisdiction over defendant located in Hong Kong because defendant was alleged to have hid assets while operating her company in order to avoid paying a judgment owed in Ohio); *Kauffman Racing Equip.*, 2008-Ohio-1922, ¶ 33 (personal jurisdiction over Virginia resident was established based on his alleged conduct over the Internet, which had harmful effects in Ohio).

Plaintiff’s ability to establish a *prima facie* case for exercising personal jurisdiction over Defendant LGC is most readily apparent under R.C. § 2307.382(A)(4). Of note, the long-arm statute makes use of the disjunctive term “or,” which signifies that Plaintiff only has to establish that Defendant LGC “regularly does or solicits business, *or* engages in any other persistent course of conduct, *or* derives substantial revenue from goods used or consumed or services rendered” in Ohio.⁴⁷ This long-arm provision does not require direct contact with this state. See *Schwanger v. Munchkin, Inc.*, Fed.Cir. No. 99-1049, 1999 WL 820449, *3 (Oct. 7, 1999); *Ross v. Spiegel, Inc.*,

⁴⁷ See R.C. 2307.382(A)(4). (Emphasis added.)

53 Ohio App.2d 297, 303-304, 373 N.E.2d 1288 (10th Dist.1977). Likewise, even non-tortious sales of products in this state “are relevant to determining whether [a defendant] derives substantial revenue from sales in Ohio.” See *Dayton Superior Corp v. Gen. Tech., Inc.*, S.D.Ohio No. 3:09cv00114, 2009 WL 4250034, *4 (Nov. 20, 2009); *Red Carpet Studios v. Midwest Trading Grp., Inc.*, S.D.Ohio No. 1:12cv501, 2014 WL 4908317, *4-5 (Sept. 30, 2014). Plaintiff has come forward with sufficient information to satisfy the requirements set forth in the long-arm statute by identifying a host of actions by LGC directed at Ohio and which relate to Plaintiff’s claims.

First, the Amended Complaint has alleged—in as much detail as possible without the benefit of discovery—that Plaintiff sustained serious burns and other injuries in Ohio due to defects in the Subject LG HG2 Battery which was designed, manufactured and sold or distributed by Defendant LGC.⁴⁸ Moreover, Plaintiff has adequately alleged that Defendant LGC “has extensive, ongoing, and specific contacts with Ohio,” including “manufacturing designing, testing, marketing, certifying, supplying, selling, importing and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this county and which are in fact used, sold, distributed, and retailed” in both Cuyahoga County and Ohio, generally; and that Defendant LGC “designed, manufactured, sold or otherwise placed into its distribution chain the Subject LG HG2 battery that caused the injuries at issue in this matter.”⁴⁹

Similarly, Plaintiff has alleged that Defendant LGC “has purposefully availed itself of the privilege of conducting business in the State of Ohio, has transacted business in the State of Ohio, contracted to supply its products in the State of Ohio, regularly caused its products to be sold in the State of Ohio, and this action arises out of business transacted in, as well as a tortious actions

⁴⁸ See Amd. Compl., ¶¶ 4-5; 29-47; 50-86.

⁴⁹ *Id.* ¶¶ 4-5.

and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio.”⁵⁰

Defendant LGC has not served any affidavit or other materials in response to the allegations set forth in the Amended Complaint. Rather, it appears it is attempting to simply rely on the prior affidavit from Joon Young Shin, its “Team Leader of the Customer Service Team and authorized representative,”⁵¹ and, ironically given his role as an affiant “in support”⁵² of LGC’s motion to dismiss for lack of jurisdiction in Ohio, is a person who “graduated from Ohio State University.”⁵³ Based upon the *ipse dixit* set forth in Mr. Shin’s affidavit, LGC unconvincingly attempts to disavow any connection between its actions directed towards Ohio and Plaintiff’s claims, positing that jurisdiction is lacking under the Ohio long-arm statute.⁵⁴ In particular, Defendant LGC asserts, via Mr. Shin’s affidavit, that it “has never distributed or sold any 18650 lithium-ion cells in Ohio, has never conducted any business with Cleveland Vape, and has never authorized Cleveland Vape---or any other distributor, retailer, or re-sell—to distribute or sell LG branded lithium-ion cells for use by individual consumers as standalone, replaceable rechargeable batteries in e-cigarette or vaping devices.”⁵⁵ As with the prior jurisdictional challenge, here LGC’s arguments do not provide a basis for dismissing Plaintiff’s Amended Complaint.

First, despite its protestations, nowhere in LGC’s pleading or in the prior affidavit from Mr. Shin does it credibly deny targeting the Ohio market or shipping its lithium-ion batteries directly to its subsidiaries and/or to others who service the Ohio marketplace. Indeed, in light of Mr. Shin’s Fed. R. Civ. P. 30(b)(6) corporate representative deposition testimony on behalf of

⁵⁰ *Id.*

⁵¹ See Shin Affidavit, attached hereto as Exhibit 27, ¶¶ 1-2.

⁵² *Id.*

⁵³ See Exhibit 28, Deposition of Joon Young Shin, Nov. 29, 2017 in *Juan Manuel Flores v. LG Chem Ltd. et al.*, C.A. No. 1:16-cv-297, United States District Court for the Southern District of Texas, Brownsville Division, at 8:3-9.

⁵⁴ See Def.’s Brief at 5.

⁵⁵ *Id.* at 5 (citing Shin Affidavit, ¶¶ 9, 13-15).

LGC in *Juan Manuel Flores v. LG Chem Ltd. et al.*, C.A. No. 1:16-cv-297, (S.D. Tex) and the information outlined herein, LGC could not make such denials for myriad reasons. Put simply, jurisdiction exists under the long-arm statute and the due process clause.

For example, although it disclaims any connection with Cleveland Vape or *any* activities in Ohio, LGC's argument ignores that, for purposes of the long-arm statute, to show a persistent course of conduct, "[d]irect contact with Ohio is not required." *See Retail Serv. Sys., Inc. v. Mattress Clearance Centers of Am., LLC*, No. 2:17-CV-746, 2018 WL 3716896, at *6 (S.D. Ohio Aug. 3, 2018). To that end, where it was shown that a foreign company, through the use of a third-party vendor, sent unsolicited faxes seeking to generate business to Ohio residents, even in the absence of records showing that the Defendant specifically contacted the Plaintiff directly, the foreign entity was deemed to have engaged in a persistent course of conduct and the Plaintiff's claims, alleging violations of telefax statutes, were deemed to sufficiently arise from the Defendants contacts with Ohio. *See Advanced Dermatology v. Adv-Care Pharmacy, Inc.*, No. 1:17 CV 251, 2017 WL 5067576, at *4 (N.D. Ohio Nov. 1, 2017).

Similarly, here Plaintiff has sufficiently adduced evidence showing that Defendant LGC has engaged in a persistent course of conduct, either directly or indirectly, towards Ohio by, *inter alia*, providing lithium-ion batteries for use in this state, such as its publicly-touted projects in Minster, Ohio,⁵⁶ and New Richmond, Ohio,⁵⁷ respectively, both of which involved the intentional shipment of lithium-ion batteries from South Korea to ultimate destinations in Ohio by LGC;⁵⁸ by promoting and soliciting submissions in this state related to the development and design of

⁵⁶ *See* Exhibits 16-17

⁵⁷ *See* Exhibit 18.

⁵⁸ *See* Exhibits 18; 20.

lithium-ion batteries;⁵⁹ by making hundreds of shipments from Korea to Ohio addresses;⁶⁰ by utilizing distribution ports in Ohio as part of its global product supply chain;⁶¹ by operating, through LGFCS, an entity in this state devoted to the development of “lithium-ion battery” technology which, prior to ceasing operations, employed nearly seventy Ohioans;⁶² by supplying lithium-ion batteries which have been alleged to have caused injuries to others within this Ohio;⁶³ and by appearing and answering, without contesting jurisdiction, a lawsuit filed in this state wherein in two separate individuals who purchased LG HG2 batteries in Ohio alleged they were injured by the explosion of such batteries in Ohio..⁶⁴

The foregoing activities establish a requisite “‘regular ... flow’ or ‘regular course’ of sales” in Ohio and relate to activities which form the basis of Plaintiff’s claims, demonstrating not only of satisfaction R.C. § 2307.382(A)’s requirements but also sufficient minimum contacts for this court to permissibly exercise specific personal jurisdiction over Curtis. *See McIntyre*, 564 U.S. at 889 (2011) (Breyer, J., concurring).

Additionally, Defendant LGC, for purposes of the long-arm statute, can also be said to be regularly engaged in a persistent course of conduct by maintaining methods for its end users and customers to communicate issues related to products supplied by LGC to the U.S., including Ohio. Specifically, Mr. Shin has testified that his group, the “Customer Service Team,” is responsible for “responding to customers on quality issues outside the company,” including those in the United States..⁶⁵ Indeed, LGC maintains publicly accessible avenues “on the website” for consumers in

⁵⁹ See Exhibit 23, *Lab Won LG Chem Global Innovation Contest* (available at <https://battery.engineering.osu.edu/news/2018/12/lab-won-lg-chem-global-innovation-contest>) (last accessed Oct. 6, 2019)).

⁶⁰ See Exhibit 21 Import Genius Report Regarding LGC’s Ohio Shipments.

⁶¹ See Exhibit 22, Import Genius Report Regarding LGC’s Ohio Distribution Ports.

⁶² See Exhibit 11.

⁶³ See Exhibits 25-26.

⁶⁴ See Exhibit 26.

⁶⁵ See Exhibit 28 at 7:3-12.

the United States, including those in Ohio, to contact the company if they believe product issues, including the battery explosions acknowledged by LGC, arise.⁶⁶

Likewise, Plaintiff has reason to believe Defendant LGC engages in persistent conduct directed towards Ohio by shipping lithium-ion batteries – like the battery giving rise to suit here – directly to a U.S. subsidiary and to other businesses, who in turn facilitate the distribution of such goods in Ohio.⁶⁷ Indeed, LGC has previously admitted it works in concert with LG Chem America, Inc. to market and distribute lithium-ion batteries throughout the United States,⁶⁸ and LG Chem America, Inc. is licensed to business on Ohio.⁶⁹ Similarly, Mr. Shin’s prior deposition testimony clearly notes that LGC was, at all times relevant, aware that its customers who buy lithium-ion batteries include not only “companies that make power tools and packers that make battery packs to be used on power tools,” but “also small agents,” namely “those companies that sell to small packers and small power tool companies.”⁷⁰

Indeed, as early as June 2016, Defendant LGC was aware that its lithium-ion batteries were being used in E-cigarette devices, as Mr. Shin has testified certain materials were sent out to LGC’s customers because “the idea was that might possibly be a possibility of our agents that deal with small packers and selling our products for E-cigarette purposes.”⁷¹ Specifically, Mr. Shin admitted that LGC sent a letter with the subject line “Notice on Prohibition of Unauthorized Sales of Battery Cells,”

⁶⁶ *Id.* at 48:8-49:15.

⁶⁷ *See e.g.* the *See* Third Party Compl. Of Defendant Cleveland Vape at ¶ 4 (noting that MGI “sold the Subject LG HG2 battery to Cleveland Vape on or about February 21, 2018 as part of Midwest Distribution Order No. 163731 in SKU-10001059.”).

⁶⁸ *See* Exhibit 15, *Celgard, LLC v. LG Chem, Ltd.*, No. 3:14-CV-00043-MOC-DC, 2015 WL 2412467, *26 (W.D.N.C. May 21, 2015) (noting, *inter alia*, that is LG Chem America, Inc. is “responsible for marketing LGC petrochemicals, information and electronic materials, and batteries to customers in the United States,” and that LG Chem America, Inc. “also acts as a product distributor for LGC’s customers in the U.S. and is responsible for sales and program management to U.S. customers”) (emphasis added).

⁶⁹ *See* Exhibit 6, LG Chem America, Inc.’s Ohio Secretary of State Registration.

⁷⁰ *See* Exhibit 28 at 30:14-31:1.

⁷¹ *Id.* at 50:1-16.

to “the agents and companies that we supply our cells to,” given that LGC had learned that end-consumers were able to, and had been, purchasing its products directly from E-commerce websites and retail stores often for personal use in E-cigarette devices.⁷²

Furthermore, Mr. Shin has admitted that LGC was aware of customer incidents which “happened in the U.S....towards the end of 2015 or early 2016,” specifically, incidents where an “E-Cigarette user had a lithium-ion cell, HG2 cell, in a bag and together with the cell had keys, key chains, and whatnot in the bag as well and together with other conductive materials and that caused the fire. Such issue happened.”⁷³ Indeed, Mr. Shin has noted that “in the early parts of 2016 these E-cigarette issues kept on occurring and prior to that, we were not aware of our batteries or even just 18650 batteries being used for different purposes and we had been doing business for ten years or so and we had no such issues and then come early 2016, these issues started to occur and that’s when we started to take action and make a decision to apply this language, warning language, *for protection of customers with – with the --- considering the possibilities of these incidents happening.*”⁷⁴ As such, LGC not only maintained methods for communicating with its customers in the United States, including Ohio, but, as of at least early 2016, was aware of the manner in which its products were being distributed and used in E-cigarette in the U.S.

Likewise, Mr. Shin has stated on behalf of LGC that “if you have a look at the claim letters that were sent to us, the company, by general consumers, they state that the purchase was made over the internet or at vape shops,” and as a result, “a member of [Mr. Shin’s] team was sent to the U.S. to investigate and that person visited vapor shops to conduct use and find out how they purchased our products and through what route the products ended up there,” though, per Mr. Shin “nobody would

⁷² See Exhibit 28 at 51:1-52:9.

⁷³ *Id.* at 28:1-21.

⁷⁴ See Exhibit 28 at 35:6-23.

tell us.”⁷⁵ Mr. Shin noted on behalf of LGC that in 2016, LGC, in light of its knowledge of the distribution of its lithium-ion batteries to consumers who then utilized them in E-cigarette device, specifically contacted its agents and customers and indicated its desire to prohibit “the sale of individual cells without protection circuits as such unprotected circuits may create a fire hazard leading to serious bodily injury when mishandled.”⁷⁶ Nevertheless, LGC continued to manufacture, distribute, and promote HG2 lithium-ion batteries worldwide, and despite whatever correspondence or entreaties it made to its distributors, including the aforementioned “small agents,” or any cautionary language it attempted to implement, such products continue to be distributed and sold in Ohio.

Furthermore, while LGC previously provided an affidavit making certain representations about the putative lack of direct distribution or sale of LG HG2 18650 cells in Ohio,⁷⁷ and its alleged lack of direct contacts with Cleveland Vape, Mr. Shin’s affidavit is telling based on what *it does not* say. Specifically, in his affidavit this defense witness has *not* denied that his employer “derived substantial revue from goods used or consumed or services rendered” in Ohio; he has *not* disputed that LGC has designed, manufactured and distributed lithium-ion batteries for years with the expectation that they would be shipped throughout the United States; he does *not* asserted that did not LGC distribute or sell any LG 18650 lithium-ion cells to a wholesaler, distributor, retailer, or re-seller located in Ohio, or which serves the Ohio market; and he does *not* to identify how, and where, LGC does distribute and sell its lithium-ion batteries intended for use in Ohio.

Likewise, Plaintiff’s claims are sufficiently related to LGC’s revenue generating activities in Ohio sufficient to invoke long-arm jurisdiction under R.C. § 2307.382(A). For example, LGFCS obtained obtaining approximately \$18,000,000.00 in funds from the federal and Ohio governments

⁷⁵ *Id.* at 52:18-53:15.

⁷⁶ *Id.* at 54:10-17.

⁷⁷ *See Shin Aff.*, Exhibit 27.

for its operations related to, *inter alia*, developing “lithium-ion battery” technology in tandem with Stark State College in North Canton, Ohio.⁷⁸ Moreover, as noted in the materials from the *Celgard* litigation, as of 2015 LGC and its subsidiaries sold “in the order of \$.76 million every day attributable” to lithium-ion batteries “sold or imported to the United States,” and have “yearly revenue of \$278 million attributable to” such batteries “sold or imported in the United States.”⁷⁹ Thus, Plaintiff has alleged, and provided further support, that LGC derives substantial revenues from its activities related to targeting the United States, and thus Ohio, with lithium-ion batteries.

Ohio is presently the seventh most populous state, and thus the potential for injuries and losses in this jurisdiction could have been easily foreseen to Defendant LGC. Here, Plaintiff submits that there is no reason to believe that Defendant LGC has supplied just one, or even a handful, of lithium-ion batteries in Ohio. The far greater likelihood is that LGC has generated “substantial revenue” through the direct and/or indirect distribution of hundreds, if not thousands, of such devices in this jurisdiction, as well as elsewhere in the United States. The totality of the internal financial information is known only to Defendant LGC and remains unavailable to Plaintiff until discovery can be conducted. *See Schwanger*, 1999 WL 820449, at *5 (“It is our view that any meaningful application of the “substantial revenue” requirement in an action where the plaintiff has alleged all elements of subsection (4), including sales of the defendant's goods in Ohio, requires at a minimum an evidentiary hearing. Only in this manner can the plaintiff be afforded sufficient opportunity, through discovery, to present facts (if possible) meeting the court's discretionary “substantial revenue” threshold.”). Indeed, it has a wholly-owned subsidiary that maintains a license to operate in Ohio, has been sued in Ohio for injuries alleged to have been

⁷⁸ See Exhibits 10-11.

⁷⁹ See Exhibit 15, *Celgard, LLC v. LG Chem, Ltd.*, No. 3:14-CV-00043-MOC-DC, 2015 WL 2412467 (W.D.N.C. May 21, 2015).

caused by its lithium-ion batteries,⁸⁰ and has voluntarily submitted to the jurisdiction of Ohio courts in a suit brought by two unrelated individuals injuries sustained in Ohio from defects in LG HG2 batteries purchased in this state..⁸¹

Moreover, “[i]n assessing subsection [R.C. 2307.832(A)(4)]’s requirements, Ohio courts have a great deal of flexibility and latitude in determining what constitutes “substantial revenue.” *See Jackson*, 674 N.E.2d at 712; *Ross*, 373 N.E.2d at 1294. The meaning of the word substantial “is to be gauged by all the circumstances surrounding the transaction with respect to which it has been used.” *Busch v. Service Plastics, Inc.*, 261 F.Supp. 136, 142 (N.D. Ohio 1966) (applying “substantial revenue” language of § 2307.382(4) to determine that personal jurisdiction was appropriate over a non-resident corporation that earned \$100,000/ yr. over a five year period from Ohio sales). *See Schwanger v. Munchkin, Inc.*, 217 F.3d 854 (Fed. Cir. 1999)). While its distribution network may reach beyond Ohio’s state lines, there can be little doubt batteries shipped directly from LGC to its subsidiaries or distributors reached Ohio – and therefore LGC targets - the Ohio market and Ohio residents, including the Plaintiff, who is a resident of this state and was injured in this state. Under these circumstances, an assertion that LGC has not purposefully availed itself and/or benefited from the Ohio market cannot withstand scrutiny. LGC has availed itself of the privilege of conducting business in Ohio and jurisdiction under the long-arm statute is proper.

C. Exercising Personal Jurisdiction Over LGC Comports With Due Process

In addition to satisfying the burden of persuasion under the long-arm statute, Plaintiff must also meet federal constitutional standards. *See Maui Toys v. Brown*, 7th Dist. Mahoning No. 12

⁸⁰ *See* Exhibit 25; *see also* Compl. in *Daniel F. Reyes v. Freedom Smokes, Inc. et al.*, No. 2019072443 (Ct. Comm. Pls. Summit Cty.).

⁸¹ *See* Exhibits 25-26.

MA 172, 2014- Ohio-583, ¶ 57. Under the Fourteenth Amendment to the United States Constitution, due process requires that a court hold personal jurisdiction over a defendant before a valid judgment may issue. *See World-Wide Volkswagen Corp. v. Woodson*, 444 U.S. 286, 291, 100 S.Ct. 559, 62 L.Ed.2d 490 (1980). Obviously, this fundamental constitutional principle must be satisfied regardless of whether Ohio's long-arm statute authorizes jurisdiction against a non-resident. *U.S. Sprint Comms. Co. Ltd. P'ship*, 68 Ohio St.3d at 184, 624 N.E.2d 1048.

For purposes of compliance with federal due process when analyzing personal jurisdiction, the Court's inquiry is as follows: "*First*, whether the defendant purposefully directed its activities at the residents of the forum; *Second*, whether the claim arises out of or relates to those activities; and *Third*, (3) whether assertion of personal jurisdiction is reasonable and fair." *See NCR Corp. v. PC Connection, Inc.*, 384 F. Supp. 2d 1152, 1161 (S.D. Ohio 2005). Here, Plaintiff has alleged that the exercise of specific jurisdiction over Defendant LGC comports with both the long-arm statute and due process, and the above-noted criteria have been satisfied.

First, LGC has purposefully availed itself of the privileges and benefits of Ohio law. Purposeful availment includes intentionally engaging in significant activities within a state or creating continuing obligations with residents of the forum. *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 475-76 (1985). Here, LGC has supplied lithium-ion batteries to at least two major public utility projects in Ohio,⁸² overseen the operations of a subsidiary with a global headquarters in this state and obtained in excess of \$3,000,000.00 in grants from the State of Ohio for the operation of a facility related to the development of lithium-ion battery technology,⁸³ and, *inter alia*, distributed

⁸² See Exhibits 9-11, 16-20.

⁸³ See Exhibits 10-11.

or allowed the distribution of its lithium-ion batteries into the State of Ohio, where they have resulted injuries to at least four distinct individuals and three separate lawsuits.⁸⁴

Likewise, as noted above, Mr. Shin's prior testimony clearly establishes that LGC was aware, as far back as early 2016, that its lithium-ion battery products were being disseminated through its distribution system in a manner leading to customer complaints and personal injuries in the United States.⁸⁵ Combined with the above-noted activities, there can be no question that LGC should have expected to be, and indeed has been, sued for its activities in this forum related to its purposeful actions related to the Ohio market. Forcing LGC to litigate this case in Ohio – a forum where it has already Defendant appeared voluntarily to defendant product liability claims alleging injuries sustained from HG LG2 batteries – comports with due process requirements.

Furthermore, as discussed *supra*, LGC has regularly shipped products to Ohio, supplied lithium-ion batteries to projects in Ohio, and a host of other activities which indicate its purposeful availment. Indeed, a manufacturer like LGC that admittedly targets the United States in its sales of lithium-ion batteries - and maintains substantial connections with the State of Ohio via its subsidiaries and its own activities in the State - and intends for its lithium-ion batteries to be sold to and used by Ohio residents and beyond, is likely to be subject to jurisdiction in multiple forums.

This Court may properly exercise specific jurisdiction over Defendant LGC. Specific jurisdiction applies in cases “in which the suit ‘aris[es] out of *or relate[s]* to the defendant's contacts with the forum.” *See Daimler AG v. Bauman*, 571 U.S. 117, 125, 134 S. Ct. 746, 754, 187 L. Ed. 2d 624 (2014), 134 S.Ct. at 754 (*citing Helicopteros Nacionales de Colombia, S.A. v. Hall*, 466 U.S. 408, 414, n.8, 104 S. Ct. 1868, 1871, 80 L. Ed. 2d 404 (1984) (emphasis added)).

⁸⁴ See Exhibit 25, Compl. in *Jeremy Darrow and Dale Mock v. LG Chem, Ltd. et al.* No. G-4801-CI-01801056-00 (Ct. Comm. Pls. Lucas Cty); *see also* Compl. in *Daniel F. Reyes v. Freedom Smokes, Inc. et al.*, No. 2019072443 (Ct. Comm. Pls. Summit Cty.)

⁸⁵ See Exhibit 28 at 35:6-23.

Moreover, “[s]pecific jurisdiction ‘arises out of’ or ‘relates to’ the cause of action even if those contacts are ‘isolated and sporadic.’” *Dayton Superior Corp. v. Gen. Techs., Inc.*, No. 3:09CV00114, 2009 WL 4250034, at *4 (S.D. Ohio Nov. 20, 2009) (citing *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 472–73, 105 S.Ct. 2174, 2182, 85 L.Ed.2d 528 (1985)). A Plaintiff’s cause of action is not required to “formally ‘arise from’ defendant’s contacts with the forum; rather, this criterion requires only ‘that the cause of action, of whatever type, *have a substantial connection with* the defendant’s in-state activities.’” See *Third Nat’l Bank v. WEDGE Grp., Inc.*, 882 F.2d 1087, 1091 (6th Cir. 1989) (internal citations omitted). Indeed, “the ‘arising from’ requirement ... is a lenient requirement and plaintiff simply needs to show the defendant’s contacts with the forum state are related to the “operative facts of the controversy.” See *Mayfran Int’l, Inc. v. Eco-Modity, L.L.C.*, 2019-Ohio-4350, ¶ 30 (citing *Kauffman Racing Equip., L.L.C. v. Roberts*, 126 Ohio St.3d 81, 2010-Ohio-2551, 930 N.E.2d 784, ¶ 70. Hence, to establish specific jurisdiction consistent with the Due Process Clause, the Plaintiff’s injuries need only “arise out of or relate to” activities the out-of-state defendant has directed towards the forum. See *Burger King Corp.* 471 U.S. 462 at 472–73 (citing *Helicopteros*, 466 U.S. at 414). Indeed, the Supreme Court explained that:

As has long been settled, and as we reaffirm today, a state court may exercise personal jurisdiction over a nonresident defendant only so long as there exist “minimum contacts” between the defendant and the forum State. *** The concept of minimum contacts, in turn, can be seen to perform two related, but distinguishable, functions. It protects the defendant against the burdens of litigating in a distant or inconvenient forum. And it acts to ensure that the States through their courts, do not reach out beyond the limits imposed on them by their status as coequal sovereigns in a federal system.

See *World-Wide Volkswagen*, 444 U.S. at 291-292, 100 S.Ct. 559, 62 L.Ed.2d 490.

The primary issue for consideration is whether there have been “contacts of the [defendant] with the state of the forum as make it reasonable, in the context of our federal system of

government, to require the [defendant] to defend the particular suit which is brought there.” *Int’l. Shoe Co. v. State of Wash., Office of Unemp. Comp. and Placement*, 326 U.S. 310, 317, 66 S.Ct. 154, 158, 90 L.Ed. 95 (1945).

Likewise, in a variety of analogous circumstances, courts have recognized that furnishing products to consumers in Ohio is sufficient to both confer long-arm jurisdiction and satisfy due process concerns. *Chace v. Dorcy Internatl., Inc.*, 68 Ohio App.3d 99, 107, 587 N.E.2d 442 (8th Dist.1991) (recognizing that foreign manufacturer can be sued in any state where its products are regularly sold); *State ex rel. Dann v. Bulgartabac Holding Group*, 10th Dist. Franklin No. 07AP-177, 2007-Ohio-6777, ¶ 21 (holding that personal jurisdiction existed over foreign tobacco manufacturer that had entered the stream of commerce); *Ross*, 53 Ohio App.2d at 303-304, 373 N.E.2d 1288 (foreign pajama manufacturer's sales in the United States and proof that a proportionate share of those sales occurred in Ohio satisfied long-arm jurisdiction); *Morgan Adhesives Co. v. Sonikor Instrument Corp.*, 107 Ohio App.3d 327, 332-333, 668 N.E.2d 959 (9th Dist.1995) (foreign manufacturer that sold cleaning systems to Ohio company was subject to jurisdiction of Ohio courts where 3 percent of systems made were sold in state); *Cardinal Distrib.*, 2003-Ohio-2880, ¶ 29-34 (drug store operator transacted business with Ohio distributors and jurisdiction did not violate due process concerns); *Pharmed Corp., Inc.*, 97 Ohio App.3d at 484-485, 646 N.E.2d 1167 (nonresident seller of beds was subject to jurisdiction of Ohio courts where seller's conduct in soliciting in-state buyer amounted to transacting business within Ohio). As these authorities attest, a foreign defendant's subjective expectations of where a product will remain are irrelevant.

Because a *prima facie* case for satisfying the long-arm statute has been established through R.C. § 2307.382(A)(4), then the logical implication is that “specific” jurisdiction also exists for

due process purposes. *See Kernan v. Kurz-Hastings, Inc.*, 175 F.3d 236, 242-245 (2d Cir.1999) (holding that Japanese manufacturer could be required consistent with due process to defense products liability action in New York); *Pennzoil Prods. Co. v. Colelli & Assocs., Inc.*, 149 F.3d 197, 201-207 (3d Cir.1998) (due process allows Ohio corporation to be sued in Pennsylvania under long-arm statute's "tort out/harm in" provision); *Dillard v. Fed. Corp.*, 321 F.Supp.3d 752, 758-762 (W.D.Tx.2018) (consumers who were allegedly injured in Mexico by defective tires manufactured by a Taiwanese company were entitled under long-arm statute and due process to invoke specific jurisdiction); *State Farm Fire & Cas. Co. v. Swizz Style, Inc.*, 246 F.Supp.3d 880, 887-893 (S.D.N.Y.2017) (rejecting argument that specific jurisdiction could not be established over Swiss company that had allegedly designed and manufactured defective air purifiers); *Hatton v. Chrysler Canada, Inc.*, 937 F.Supp.2d 1356, 1364-68 (M.D.Fla.2013) (concluding that jurisdiction could be invoked by Florida accident victims against Canadian vehicle assembler). *See also Goodyear Dunlop Tires Operations, S.A. v. Brown*, 131 S.Ct. 2846, 2855, 180 L.Ed.2d 796 (2011) (noting that "[f]low of a manufacturer's products into the forum ... may bolster an affiliation germane to specific jurisdiction.").

Indeed, "a large foreign corporation which manufactures or wholesales goods places a substantial quantity of such goods in the "stream of commerce" in the United States and derives a substantial revenue therefrom, that corporation is not denied due process of law by the imposition of in personam jurisdiction over it by Ohio state courts, because it may properly be inferred that such corporation could reasonably have expected the goods to be used or consumed in Ohio." *See* 13 OHIO JUR. 3D BUSINESS RELATIONSHIPS § 1055 (citing *Ross v. Spiegel, Inc.*, 53 Ohio App. 2d 297, 7 Ohio Op. 3d 385, 373 N.E.2d 1288 (10th Dist. Franklin County 1977)). *See also See Goodyear*, 564 U.S. at 927 (citing *World-Wide Volkswagen Corp.* 444 U.S. at 297) (noting "where

‘the sale of a product ... is not simply an isolated occurrence, but arises from the efforts of the manufacturer or distributor to serve ... the market for its product in [several] States, it is not unreasonable to subject it to suit in one of those States if its *allegedly* defective merchandise has there been the source of injury to its owner or to others.’”)

Moreover, under Justice Breyer’s controlling concurrence in *J. McIntyre Machinery, Ltd., v. Nicastro*, 564 U.S. 873 (2011), a plaintiff may establish a defendant’s sufficient minimum contacts by showing that the defendant placed goods into the stream of commerce with the expectation that the regular flow or regular course of sales could lead the product to the forum. *See J. McIntyre*, 564 U.S. at 888-889 (Breyer, J., concurring in judgment). Likewise, “the forum State does not exceed its powers under the Due Process Clause if it asserts personal jurisdiction over a corporation that delivers its products into the stream of commerce with the expectation that they will be purchased by consumers in the forum State.” *See Triad Hunter, LLC v. Eagle Natrium, LLC*, 2019-Ohio-940, ¶ 38 (citing *Asahi Metal*, at 480 U.S. at 109). *See also Greenscapes Home & Garden Prod., Inc. v. Testa*, 2019-Ohio-384, ¶¶ 39-42, 129 N.E.3d 1060, 1075–76, *appeal not allowed sub nom. Greenscapes Home & Garden Prods., Inc. v. Testa*, 2019-Ohio-2261, ¶¶ 39-42, 156 Ohio St. 3d 1406, 123 N.E.3d 1042 (noting that “a defendant who sells products to a national or regional retailer for resale to ordinary, individual consumers in the forum state has purposefully availed itself of the privilege of doing business in the forum state.”)

The entire point of the stream-of-commerce theory is to find cases where jurisdiction is appropriate even when a product was directed to a forum by a third-party. Consider *Asahi*. There, “Asahi did not design or control the system of distribution that carried its valve assemblies into California.” *See Asahi*, 480 U.S. at 121 (Brennan, J. concurring). In other words, Asahi’s valve assemblies only ended up in California due to the unilateral actions of a third party. And yet,

according to Justice Brennan, because “Asahi was aware of the distribution system’s operation, and [because] it knew that it would benefit economically from the sale in California of products incorporating its components . . . Asahi’s regular and extensive sales of component parts to a manufacturer it knew was making regular sales of the final product in California” was sufficient “to establish minimum contacts with California.” *Id.* Indeed, If the sale of the product “arises from the efforts of the manufacturer or distributor to serve, **directly or indirectly**, the market for its product” in the forum, then exercising jurisdiction is reasonable. *See World-Wide Volkswagen*, 444 U.S. at 297 (emphasis added).

As Plaintiff notes in his Amended Complaint, LGC purposefully availed itself of the privilege of doing business within Ohio.⁸⁶ Specifically, Plaintiff alleged, *inter alia*, that LGC has a regular plan for the distribution of its products within Ohio, that it conducts substantial business in Ohio, and that it placed its products into the stream of commerce with the reasonable expectation that they will be purchased in Ohio.⁸⁷ As is the case here, “where a defendant knowingly benefits from the availability of a particular state’s market for its products, it is only fitting that the defendant be amenable to suit in that state.” *See Luv N’ Care v. Insta-Mix, Inc.*, 438 F. 3d 465, 470 (5th Cir. 2006).

Defendant LGC’s efforts to now assert that the Supreme Court’s 2014 decision in *Walden v. Fiore*, 134 S. Ct. 1115, 1122, 188 L. Ed. 2d 12 (U.S. 2014) provide a basis for its successive motion is unavailing as *Walden* did not “change[] the minimum contacts analysis, but rather . . . clarified and reemphasized what previous decisions had already held. . . .” *See First Reliance Bank v. Romig*, No. 4:14-CV-00084-BHH, 2014 WL 5644602, at *3 (D.S.C. Nov. 4, 2014). Defendant LGC cites *Walden* for the proposition that minimum contacts cannot be establish by

⁸⁶ *See* Amd. Compl., ¶ 5.

⁸⁷ *Id.*, ¶¶ 4-5.

“demonstrating contacts between the plaintiff (or third parties) and the forum state.”⁸⁸ However, Plaintiff’s has not merely alleged the existence of contacts between himself, or Cleveland Vape and Midwest; moreover, *Walden* acknowledges “[t]o be sure, a defendant’s contacts with the forum State may be intertwined with his transactions or interactions with the plaintiff or other parties” .. and that “[n]aturally, the parties’ relationships with each other may be significant in evaluating their ties to the forum.” *See Walden*, 571 U.S. 277 (citing *Rush v. Savchuk*, 444 U.S. 320, 332, 100 S.Ct. 571, 62 L.Ed.2d 516 (1980)).

Likewise, *Walden* is not a “stream of commerce” or product liability case at all. Instead, it involves a professional gambler who sued a Georgia police officer for seizure of his cash in the Atlanta airport and for later drafting a false affidavit he knew would affect Nevada residents. The Plaintiff sued the Georgia resident in his home state of Nevada, arguing his injury was felt in Nevada because he had to go home without his money. However, as the Supreme Court noted, the defendant “approached, questioned, and searched [plaintiff], and seized the cash at issue, in the Atlanta airport” and drafted a false probable cause affidavit in Georgia. He “never traveled to, conducted activities within, contacted anyone in, **or sent anything** or anyone to Nevada.” *Walden* 134 S. Ct. at 1124 (emphasis added). *Walden* only rejects “conduct that affects plaintiffs” in their home state as the sole basis for jurisdiction. This differs from plaintiffs injured in their home state by products in the forum that were deposited by defendants into the stream of commerce.

Furthermore, LGC’s citation to *Bristol-Myers Squibb Co. v. Super. Ct. of California, San Francisco Co.*, 137. S. Ct. 1773 (2017) is largely irrelevant. The analysis in *Bristol-Myers* was focused on claims brought by non-resident plaintiffs in California state court who were not prescribed Plavix in California, nor purchased, used, or sustained injuries related to that drug in

⁸⁸ *See* Def’s Brief at 8.

California. Defendant's reliance on this case is misplaced as it *did not* alter the constitutional specific jurisdictional analysis; indeed, the opinion specifically states "[o]ur settled principles regarding specific jurisdiction control this case." See *Bristol-Myers*, 137 S. Ct. 1781. Moreover, the facts here are distinguishable as Mr. Harb is an Ohio resident who purchased Defendant's product in Ohio and was injured in, and brought suit in, this State. As such, the connection between the Plaintiff's claims, the forum and Defendant LGC's actions is palpable.

Finally, as to the third prong under the due process analysis, a determination of reasonableness of exercising jurisdiction vis-à-vis the due process clause depends on several factors, including the burden on the defendant, the interest of the forum state in resolving the conflict, the plaintiff's interest in obtaining relief, and other states' interest in securing the most efficient resolution of the controversy. See e.g. *Intera Corp. v. Henderson*, 428 F.3d 605, 618 (6th Cir. 2005). LGC has offered no cogent argument on how, or why, exercise of specific jurisdiction over it is unreasonable, or how any potential burden upon it outweighs both the interest of Plaintiff, and of the State of Ohio, in providing a forum wherein in Mr. Harb, an Ohio resident, may seek redress for the injuries occurring in this State alleged in the operative Complaint. See e.g. *Kauffman Racing Equip.*, 2010-Ohio-2551, ¶ 72 (citing *Keeton v. Hustler Magazine, Inc.* (1984), 465 U.S. 770, 776, and noting that "[I]t is beyond dispute that [a forum state] has a significant interest in redressing injuries that actually occur within the State.")

Indeed, LGC chosen to provide no insights into a number of other factors bearing upon the reasonableness and appropriateness of requiring the foreign manufacturer to defend its product line here in Ohio. Discovery may well confirm that LGC is already dealing with additional product liability claims in this state regarding lithium-ion batteries beyond the two previously noted by the Plaintiff, as well as other legal matters requiring the company to retain counsel and produce

representatives for hearings and depositions. Not only does LGC's memorandum and affidavit fail to mention anything about the company's legal actions in Ohio, but there has been no disclosure of the number of warranty claims or customer complaints that have been received from Ohio residents and businesses. Based upon the Motion's silence on a number of key due process concerns, there is every reason to believe that Defendant LGC should have appreciated, and undoubtedly did appreciate, that the HG2 lithium-ion it designed and manufactured would reach Ohio in substantial numbers, and thus could generate litigation here.

D. Should the Court Not Deny LGC's Motion, Jurisdictional Discovery Is Required

This Court should refuse to adopt Defendant LGC's myopic view of both the long-arm statute and the applicable due process standards. Nevertheless, should the Court be inclined to allow Defendant's motion, Plaintiff respectfully requests leave to conduct jurisdictional discovery, including limited written requests and a deposition of a knowledgeable corporate representative regarding LGC's distribution of lithium-ion batteries to America's seventh-most-populous state. There can be no serious disagreement that a fact-intensive analysis is required when personal jurisdiction is being challenged. *Pharmed Corp., Inc.*, 97 Ohio App.3d at 483-485, 646 N.E.2d 1167; *Ricker v. Fraza/Forklifts of Detroit*, 160 Ohio App.3d 634, 2005-Ohio-1945, 828 N.E.2d 205, ¶ 9-12, 18-19 (10th Dist.). Consistent with the constitutional guarantee of due process, Plaintiff should be afforded—at a minimum—a reasonable opportunity to serve limited written discovery, and, after obtaining adequate responses, depose Mr. Shin, the LGC official who has executed an affidavit in support of Defendant's Motion. *Goldberg v. Kelly*, 397 U.S. 254, 269, 90 S.Ct. 1011, 25 L.Ed.2d 287 (1970); *see also Gorsuch Homes, Inc. v. Wooten*, 73 Ohio App.3d 426, 433, 597 N.E.2d 554 (2^d Dist.1992); *Woods v. Willis*, N.D. Ohio No. 3:09CV2412, 2010 WL

3808279, *5 (Sept. 27, 2010). Additional investigation may then be necessary based upon the responses that are received to the questioning.

CONCLUSION

For the reasons set forth herein, Plaintiff's Amended Complaint, on its own right or considered in tandem with the additional factual materials discussed herein, sufficiently establish the existence of personal jurisdiction over Defendant LGC under both the Ohio long-arm statute and applicable due process precedent. Therefore, Plaintiff submits that Defendant LGC's successive, repetitive personal jurisdiction challenge should be denied in the same manner as its initial motion. Nonetheless, in the alternative, Plaintiff requests leave to conduct targeted discovery to further establish the propriety of exercising specific personal jurisdiction over Defendant LGC.

Dated: December 9, 2019.

/s/Tom Merriman

Tom Merriman, Esq.
MERRIMAN LEGANDO WILLIAMS & KLANG, LLC
1360 West 9th Street, Suite 200
Cleveland, OH 44113
Phone: 216-522-9000
Email: tom@merrimanlegal.com

T. David Hoyle, Esq. (admitted *pro hac vice*)
W. Taylor Lacy, Esq. (admitted *pro hac vice*)
MOTLEY RICE, LLC
28 Bridgeside Blvd.
Mount Pleasant, SC 29464
Phone: (843) 216-9000
Email: Dhoyle@motleyrice.com

Attorneys for Plaintiff Nader M. Harb

CERTIFICATE OF SERVICE

I hereby certify that on December 9, 2019 a copy of the foregoing was filed electronically.
Notice of this filing will be sent to all parties by operation of the Court's electronic filing system.
Parties may access this filing through the Court's system.

/s/Tom Merriman _____

TOM MERRIMAN (#0040906)

Counsel for Plaintiffs



110995891

**IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO**

NADER M. HARB
Plaintiff

Case No: CV-19-917268

Judge: EMILY HAGAN

LG CHEM, LTD., ET AL
Defendant

JOURNAL ENTRY

DEFENDANT LG CHEM LTD.'S MOTION TO DISMISS FOR LACK OF PERSONAL JURISDICTION, FILED 09/25/2019, IS DENIED. DEFENDANT TO FILE AN ANSWER WITHIN 14 DAYS OF THIS ORDER.

Judge Signature

10/30/2019

10/29/2019

Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH
10/30/2019 10:26:42

NAILAH K. BYRD, CLERK



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**IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO**

NADER M. HARB
Plaintiff

Case No: CV-19-917268

Judge: EMILY HAGAN

LG CHEM. LTD., ET AL
Defendant

JOURNAL ENTRY

CMC BY PHONE HELD 10/31/2019. COUNSEL FOR ALL PARTIES PARTICIPATED.
DEFENDANT LG CHEM LTD.'S ORAL REQUEST FOR AN ADDITIONAL 14 DAYS' LEAVE TO FILE ANSWER TO PLAINTIFF'S COMPLAINT ON OR BEFORE 11/27/2019 IS UNOPPOSED AND GRANTED.
PLAINTIFF'S ORAL REQUEST FOR LEAVE TO FILE FIRST AMENDED COMPLAINT IS GRANTED OVER OBJECTION BY THIRD PARTY DEFENDANT MIDWEST GOODS, INC. PLAINTIFF'S FIRST AMENDED COMPLAINT TO BE FILED ON OR BEFORE 11/14/2019. RESPONSES DUE BY RULE.
CASE MGMNT CONFERENCE SET FOR 12/19/2019 AT 10:00 AM. COURTROOM 19-A. PLAINTIFF'S OUT OF STATE COUNSEL MAY PARTICIPATE BY PHONE. ATTORNEY MERRIMAN TO APPEAR IN PERSON. ANY ATTORNEY OR UNREPRESENTED PARTY WHO IS NOT AVAILABLE WILL BE DEEMED TO HAVE WAIVED HIS/HER PARTICIPATION AND TO HAVE ACCEPTED THE CASE SCHEDULING ORDER ESTABLISHED BY THE COURT. PARTIES SHOULD NOT WAIT FOR THE CMC BEFORE BEGINNING TO CONDUCT DISCOVERY.

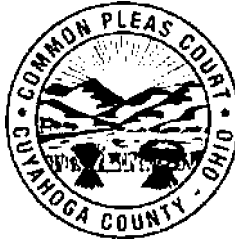
Judge Signature

11/04/2019

10/31/2019

Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH 11/04/2019 09:15:36

NAILAH K. BYRD, CLERK



**NAILAH K. BYRD
CUYAHOGA COUNTY CLERK OF COURTS
1200 Ontario Street
Cleveland, Ohio 44113**

Court of Common Pleas

**AMENDED COMPLAINT \$75
November 13, 2019 15:36**

By: THOMAS C. MERRIMAN 0040906

Confirmation Nbr. 1868677

NADER M. HARB

CV 19 917268

vs.

Judge: EMILY HAGAN

LG CHEM. LTD., ET AL

Pages Filed: 30

IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO

NADER M. HARB)
3681 W. 116th Street)
Cleveland, Ohio 44111)

Plaintiff,)

vs.)

LG CHEM LTD.)
128 Yeoui-Daero)
Yeongdeungpo-Gu Seoul)
Seoul, 07336 South Korea)

Defendant.)

and)

CLEVELAND VAPE DISTRIBUTION,)
LLC)
17114 Detroit Road)
Cleveland, Ohio 44107)

Defendant.)

and)

MIDWEST GOODS, INC.)
c/o Statutory Agent Kamran Yasin)
1019 Entry Drive)
Bensenville, IL 60106)

Defendant.)

Case No. CV 19 917268

Judge Emily Hagan

AMENDED CIVIL COMPLAINT
(Jury Demand Endorsed Hereon)

NOW COMES the Plaintiff, Nader M. Harb (“Mr. Harb” or “Plaintiff”) by and through the undersigned counsel, and alleges the following:

NATURE OF THE ACTION

1. This is a product liability brought pursuant to Ohio R.C. 2307.71, et seq., arising from Defendants’ sale of unreasonably dangerous products that catastrophically failed during normal and foreseeable circumstances with such failure causing Mr. Harb serious bodily injury.

PARTIES, JURISDICTION & VENUE

2. At all times relevant, Plaintiff, Nader M. Harb, is, and has been, a citizen and resident of the City of Cleveland, Cuyahoga County, Ohio.

3. Defendant LG Chem, Ltd., (“LG Chem”) is a foreign company organized and existing under the laws of the Republic of Korea (“South Korea”) with its principal place of business at 128 Yeoui-Daero, Yeongdeungpo-Gu Seoul, Seoul, 07336 South Korea. Defendant LG Chem has previously been served in this matter via the Hague Convention on the Service Abroad of Judicial and Extra Judicial Documents in Civil and Commercial Matters, this Court has denied its challenge to personal jurisdiction under Ohio Civ. R. 12(b)(2), and service may now be made upon its counsel of record.

4. Defendant LG Chem is engaged in the business of manufacturing, designing, testing, marketing, certifying, supplying, selling, importing and distributing lithium ion batteries including, but not limited to, the subject LG HG2 18650 battery (“the Subject LG HG2 battery”) purchased by Mr. Harb. In addition, Defendant LG Chem has extensive, ongoing, and specific contacts with Ohio that include, but are not limited to, the following:

- a. At all times relevant herein, Defendant LG Chem has had continuing contacts with Cuyahoga County by manufacturing, designing, testing, marketing, certifying,

supplying, selling, importing and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this county and which are in fact used, sold, distributed, and retailed in this county;

- b. At all times relevant herein, Defendant LG Chem has had continuing contacts with the State of Ohio by transacting substantial business in this state manufacturing, designing, testing, marketing, certifying, supplying, selling, importing, and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this state and which are in fact used in this state;
- c. Defendant LG Chem designed, manufactured, sold, or otherwise placed into its distribution chain the Subject LG HG2 battery which caused the injuries at issue in this matter; and
- d. In addition, Defendant LG Chem's contacts with Ohio principally relate to the placement of electronic devices, including lithium ion batteries, into the stream of commerce, and all of the conduct associated with placing those products into the stream of commerce in Ohio and associated with this civil action is related to and connected with the placement of batteries used in electronic cigarette devices into the stream of commerce.

5. Therefore, at all times relevant herein, Defendant LG Chem has purposefully availed itself of the privilege of conducting business in the State of Ohio, has transacted business in the State of Ohio, has contracted to supply its products in the State of Ohio, has regularly caused its products to be sold in the State of Ohio, and this action arises out of business transacted in, as

well as a tortious actions and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio, and specific personal jurisdiction is proper under one or more provisions of Ohio R.C. 2307.382, as well as the Due Process Clauses of the Fifth and Fourteenth Amendments to the Constitution of the United States of America.

6. Defendant Cleveland Vape Distribution, LLC (“Cleveland Vape”) is an Ohio limited liability company with its principal place of business located in Cuyahoga County at 17114 Detroit Road, Lakewood, Ohio 44107.

7. Defendant Cleveland Vape is registered to do business, and does business, in the State of Ohio and its registered agent for service of process is United States Corporation Agents, Inc., 411 Wolfe Ledges Parkway, Suite 201, Akron, Ohio 44311.

8. Defendant Cleveland Vape sells e-cigarette products and accessories, including the Subject LG HG2 battery purchased by Mr. Harb at issue in this lawsuit.

9. At all times relevant herein, Defendant Cleveland Vape conducted substantial business in Ohio and this cause of action arises out of business transacted in, as well as tortious actions and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio, and, therefore, both specific personal jurisdiction under Ohio R.C. 2307.382 and general jurisdiction over Defendant Cleveland Vape are proper.

10. Defendant Midwest Goods Inc., d/b/a Midwest Distribution (“Midwest”) is an Illinois corporation organized with its principal place of business located at 1001 Foster Avenue, Bensenville, Illinois 60106.

11. Defendant Midwest is not registered to do business in the State of Ohio but may be served with process pursuant to Ohio Civ. R. 4.3(B)(1), via registered or express mail sent to its

Illinois agent for service of process, Kamran Yansin, 1001 Foster Drive, Bensenville, Illinois 60106.

12. Defendant Midwest is engaged in the business of marketing, certifying, supplying, selling, importing and distributing lithium ion batteries including, but not limited to, the subject the Subject LG HG2 battery, which, upon information and belief, it distributed to Defendant Cleveland Vape prior to it being purchased by Mr. Hard in Ohio. In addition, Defendant Midwest has extensive, ongoing, and specific contacts with Ohio that include, but are not limited to, the following:

- a. At all times relevant herein, Defendant Midwest has transacted business in this state, and has contracted to supply goods in this state, including but not limited to the Subject LG HG2 battery;
- b. At all times relevant herein, Defendant Midwest has had continuing contacts with Cuyahoga County by marketing, supplying, selling, importing and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this county and which are in fact used, sold, distributed, and retailed in this county;
- c. At all times relevant herein, Defendant Midwest has had continuing contacts with the State of Ohio by transacting substantial business in this state by marketing, supplying, selling, importing and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation the reasonable expectation that they will be used in this state and which are in fact used in this state;

- d. Defendant Midwest, sold, distributed, or otherwise placed into its distribution chain the Subject LG HG2 battery which caused the injuries at issue in this matter; and
- e. In addition, Defendant Midwest's contacts with Ohio principally relate to the placement and/or furtherance of electronic devices, including lithium ion batteries, into the stream of commerce, and all of the conduct associated with placing those products into the stream of commerce in Ohio and associated with this civil action is related to and connected with the placement of batteries used in electronic cigarette devices into the stream of commerce.

13. Therefore, at all times relevant herein, Defendant Midwest has purposefully availed itself of the privilege of conducting business in the State of Ohio, has transacted business in the State of Ohio, has contracted to supply its products in the State of Ohio, has regularly caused its products to be sold in the State of Ohio, and this action arises out of business transacted in, as well as a tortious actions and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio, and specific personal jurisdiction is proper under one or more provisions of Ohio R.C. 2307.382, as well as the Due Process Clauses of the Fifth and Fourteenth Amendments to the Constitution of the United States of America.

14. Pursuant to Ohio Civ. R. 3(C), venue and jurisdiction are proper in the Common Pleas Court for Cuyahoga County, State of Ohio because, *inter alia*, the acts, events, and circumstances mentioned in this action and complained of herein occurred in Cuyahoga County, State of Ohio, and Defendant Cleveland Vape resides in, and has its principal place of business in, Cuyahoga County, State of Ohio.

FACTS

15. Manufacturers, distributors, and sellers of electronic cigarettes, or “e-cigarettes,” as they are more commonly known, claim to provide a tobacco-free and smoke-free alternative to traditional cigarettes. E-cigarettes offer doses of nicotine via a vaporized solution.

16. All e-cigarettes are designed and function in a similar way. They consist of three primary component parts: a tank or cartridge that is filled with a liquid (known as "juice" or "e-liquid") that usually contains a concentration of nicotine; an atomizer, which heats and converts the contents of the liquid-filled cartridge to a vapor that the user then inhales; and a battery, which provides power for the atomizer. The atomizer itself typically contains three components: the casing; the wire (or "coil"); and the wicking material. The wire is wrapped around the wicking material (usually cotton) in a coil formation; the two ends of the coil are then connected to the casing in a way that permits contact with the battery. When e-liquid is added to the e-cigarette's tank, the wicking material absorbs it. When the user activates the e-cigarette's battery, the coil heats, vaporizing the e-liquid within the wicking material.

17. E-cigarette batteries are typically cylindrical lithium-ion batteries. Some e-cigarette batteries are rechargeable, and others are disposable. Some e-cigarettes are closed systems, in which prefilled tanks are used; others are also open systems that allow the user to manually refill the tank with e-liquid. E-cigarettes come in pen form (these are usually plastic and are modeled after a traditional cigarette) and in a form known as a ‘mod.’ Mods are metal devices that are heavier than pen e-cigarettes and carry a much higher capacity for juice and creation of vapor. There are many different types of mods, some of which require the use and replacement of atomizer coils like those described above.

18. While e-cigarettes were first patented in 2003, they first entered the market exclusively in China in 2004, and did not first appear in the United States until 2007. Since that time, U.S. sales of electronic cigarettes have risen dramatically — from approximately \$20 million in 2008 to \$2.5 billion in 2014. According to some media sources, industry experts predict the e-cigarette industry will reach \$32.11 billion by 2021.

19. Lithium ion batteries, commonly used in e-cigarettes, pose a risk of fire and explosion.¹ A medical case report of a man in New Jersey, whose e-cigarette exploded in his pocket causing him severe burns, noted, “the potential for serious burn injuries related to device malfunction is of concern.”²

20. In particular, lithium ion batteries are susceptible to a condition known as “thermal runaway,” whereby the internal battery temperature can cause a fire or explosion, and which is often the result of “poor design, use of low quality materials ... [and] manufacturing flaws and defects....”³

21. Some tout e-cigarettes as a safer alternative to traditional cigarettes because e-cigarettes do not contain tobacco, do not actually burn or create smoke, and do not pose the same risks of second-hand smoke inhalation. However, these supposedly ‘safer’ alternatives to traditional cigarettes are still the subject of debate, as they still often provide nicotine, which is a neurotoxin and extremely addictive. Further, the actual and long-term effects of the chemicals in e-liquid and vapor are unknown, as the technology is still relatively new.

¹ Lithium-ion batteries have been referred to as the “mini bomb in your pocket” due to its known ability to spontaneously ignite. See Ben D., Ma B., Liu L, et al., *Unusual Burns with Combined Injuries Caused by Mobile Phone Explosion: Watch Out for the “mini Bomb!”*, J. Burn Care Res. 2009 Nov-Dec; 30(6): 1048.

² *Spontaneous Electronic Cigarette Explosion: A Case Report, American Journal of Medical Case Reports*, 2015, Vol. 3, No. 4, 93-94, 94.

³ See Ben DJ. Burn Care Res. 2009 Nov-Dec; 30(6): 1048.

22. Only a few federal regulations have been promulgated or proposed regarding e-cigarette sales and use. Many of these products are shipped from China and placed into the stream of commerce without any knowledge as to what is in them, how they were made, or whether they are safe for consumers.

23. In 2009, the United States Food and Drug Administration ("FDA") first attempted to regulate e-cigarettes under the Food, Drug, and Cosmetic Act ("FDCA"). E-cigarette manufacturers then successfully sued the FDA, claiming e-cigarettes should not be considered medical devices subject to the provisions of FDCA. Because of this ruling and lack of regulatory oversight, e-cigarette sales skyrocketed.

24. On April 25, 2014, the FDA released a proposed regulation that would extend the statutory definition of "tobacco product" to include e-cigarettes. While the FDA regulates traditional cigarettes, cigarette tobacco, roll-your-own tobacco, and smokeless tobacco under its tobacco control authority, e-cigarettes are not yet defined as a tobacco product.

25. An October 2014 report notes the proposed FDA regulations do not include any consideration of the battery or electronic components of the devices, as the FDA is only addressing the health effects of vapor inhalation.⁴ Further, the U.S. Fire Administration noted the World Health Organization recently proposed member states adopt stringent controls on e-cigarettes, but did not include any language addressing the electronics themselves. The U.S. Consumer Product Safety Commission has advised e-cigarettes do not fall under its jurisdiction. As noted in October 2014, and as was the case when Nader Harb purchased his e-cigarette and its batteries, "no regulation, code or law applies to the safety of the electronics or batteries in e-cigarettes. While

⁴ See United States Fire Administration, *Electronic Cigarette Fires and Explosions*, October 2014, at 2.

many consumer products are required to be tested by a nationally recognized test laboratory . . . there are no requirements that e-cigarettes be subjected to the product safety testing.”⁵

26. On August 8, 2016, a new FDA rule took effect expanding regulation to e-cigarettes. According to the FDA [t]his final rule has two purposes: (1) To deem all products that meet the definition of “tobacco product” under the law, except accessories of a newly deemed tobacco product, and subject them to the tobacco control authorities in chapter IX of the FD&C Act and FDA's implementing regulations; and (2) to establish specific restrictions that are appropriate for the protection of the public health for the newly deemed tobacco products.

27. E-cigarettes and E-cigarette batteries have caused numerous fires and explosions injuring consumers. Federal, state, and local efforts have recently been aimed at protecting public health via regulations on sale and use of e-cigarettes, but not on the safety hazards posed by the products themselves.

28. There is mounting evidence the explosions and fires caused by e-cigarettes and lithium ion batteries are increasing in occurrence. The U.S. Department of Transportation ("DOT") issued a rule banning e-cigarettes from checked bags on airplanes because they have been known to catch fire. The DOT has also determined e-cigarettes may not be used during flight. The explosion of e-cigarettes and lithium ion batteries are not novel occurrences; a California man recently lost his eye as a result of an e-cigarette exploding near him. A southern California woman was set on fire after an e-cigarette exploded while she was a passenger in a car. An Atlanta woman's couch and rug caught on fire after an e-cigarette exploded, almost burning her house down. Complaints of injury caused by e-cigarettes continue to rise as the devices' popularity increases. These products continue to be placed into the stream of commerce in an untested and unsafe

⁵ *Id.*

condition, and will continue to cause injuries unless and until those responsible are held accountable.

29. Defendant LG Chem its agents, servants and employees, participated in the design, formulation, production, creation, making, construction, assembly, marketing, delivery, and sale of the LG HG2 batteries, including the Subject LG HG2 battery.

30. Defendant Cleveland Vape its agents, servants and employees, participated in marketing, distribution and/or sale of LG HG2 batteries, including the Subject LG HG2 battery.

31. Plaintiff purchased LG HG2 lithium ion batteries designed, manufactured and distributed by Defendant LG Chem, including the Subject LG HG2 battery, from Defendant Cleveland Vape on or about February 27, 2018.

32. Prior to February 27, 2018, Defendant Cleveland Vape obtained LG HG2 ion batteries designed, manufactured and distributed by Defendant LG Chem, including the Subject LG HG2 battery, as part of a purchase agreement with Defendant Midwest.

33. At or about 9:00 a.m. on the morning of June 8, 2018, Plaintiff reported to work at his place of employment in Cleveland, Ohio.

34. At all times relevant, Plaintiff worked as a butcher.

35. Plaintiff regularly kept a spare battery on his person for use in his e-cigarette device in the event a replacement was needed to power his e-cigarette device.

36. On the morning of June 8, 2018, Plaintiff had the Subject LG HG2 battery in the right front pocket of the long, heavy duty pants he regularly wore when working.

37. On the morning of June 8, 2018, Plaintiff had the Subject LG HG2 battery in his right front pocket so that it might be utilized in the event that the battery inserted into his e-cigarette device ceased to supply power.

38. At approximately 9:30 a.m. on the morning of June 8, 2018, the Subject LG HG2 battery in Plaintiff's right front pocket spontaneously exploded, setting his pants and leg on fire (hereinafter "the Incident.")

39. Plaintiff then dropped and rolled to the floor and removed to his pants, in an effort to extinguish the flames.

40. Thereafter, on the morning of June 8, 2018, Plaintiff was taken to the MetroHealth Medical Center in Cleveland, Ohio, where the Emergency Department referred him to Burn Clinic for treatment.

41. Plaintiff was joined by his wife at the MetroHealth Medical Center Burn Clinic.

42. While at the MetroHealth Medical Center Burn Clinic, it was determined that Plaintiff had sustained an acute 2% TBSA burn of his right thigh as a result of the Incident.

43. Plaintiff has suffered and will continue to suffer the effects of permanent scarring due the injuries sustained in the Incident.

44. Plaintiff has suffered and will continue to suffer severe physical pain and mental anguish as a result of the injuries sustained in the Incident.

45. As a result of the Incident, Plaintiff has incurred substantial medical bills.

46. Plaintiff has suffered lost wages as a result of the injuries he sustained during the Incident.

47. Upon information and belief, Defendant LG Chem was aware, or should have been aware, that LG HG2 batteries, including the Subject LG HG2 battery, were defective due to their manufacture, construction, design, formulation, due to its inadequate warnings or instructions; and/or due to its failure to conform or adhere to representations made about it.

48. Upon information and belief, Defendant Cleveland Vape was aware, or should have been aware, that LG HG2 batteries, including the Subject LG HG2 battery, were defective due to their manufacture, construction, design, formulation, due to its inadequate warnings or instructions; and/or due to its failure to conform or adhere to representations made about it.

49. Upon information and belief, Defendant Midwest was aware, or should have been aware, that LG HG2 batteries, including the Subject LG HG2 battery, were defective due to their manufacture, construction, design, formulation, due to its inadequate warnings or instructions; and/or due to its failure to conform or adhere to representations made about it.

**FIRST CAUSE OF ACTION
DEFECTIVE MANUFACTURE OR CONSTRUCTION --- OHIO R.C. § 2307.74
(AGAINST DEFENDANT LG CHEM)**

50. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

51. This First Cause of Action is brought by Plaintiff against Defendant LG Chem.

52. At all times relevant, Defendant LG Chem is and was a “manufacturer,” as defined in Ohio R.C. §2307.71, responsible for the design, production, creation, assembly, and manufacture of the Subject LG HG2 battery.

53. Defendant LG Chem manufactured, assembled, distributed, tested, inspected, and sold the Subject LG HG2 battery.

54. The Subject LG HG2 battery, which was manufactured, assembled, distributed, tested, inspected, and sold by Defendant LG Chem, is a “product” as that term is refined in Ohio R.C. §2307.71(A)(7).

55. Defendant LG Chem manufactured, assembled, distributed, tested, inspected, and sold the Subject LG HG2 battery with actual or constructive knowledge that it would be purchased and used by members the general public, such as Plaintiff.

56. The Subject LG HG2 battery was expected to and did reach Plaintiff without undergoing any substantial changes or alterations.

57. From the time the Subject LG HG2 battery left the control of Defendant LG Chem until the time of the Incident, it did not undergo any substantial changes or alterations.

58. The Subject LG HG2 battery was defective in manufacture, pursuant to Ohio Revised Code §2307.74, because, upon information and belief, it deviated from design specifications, formulas, and/or performance standards set forth by Defendant LG Chem because, *inter alia*:

- a. The Subject LG HG2 battery was manufactured and/or fabricated with materials that failed to resist the ordinary pressures stress, thermal stress, and fatigue stress, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- b. The Subject LG HG2 battery was manufactured and/or fabricated with materials that magnified the ordinary pressures stress, thermal stress, and fatigue stress contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- c. The Subject LG HG2 battery was manufactured and/or fabricated using material or materials that caused or contributed to cause excessive thermal and pressure build up, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;

of the battery due to unreasonable heat and pressure, contrary to its anticipated and intended design specifications, formulas, and/or performance standards,

j. The Subject LG HG2 battery was fabricated and manufactured with materials such that it was capable of energizing, exploding or catching flame, contrary to its anticipated and intended design specifications, formulas, and/or performance standards; and

k. In such other particulars as the evidence may show.

59. The Subject LG HG2 battery was expected to and did reach Plaintiff without undergoing any substantial changes or alterations affecting the aforementioned conditions.

60. As a direct and proximate result of the defect(s) in its manufacture, the Subject LG HG2 battery energized, exploded and/or caught fire while in Plaintiff's pocket.

61. As a direct and proximate result of the defective manufacture of the Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating personal injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**SECOND CAUSE OF ACTION
DEFECTIVE DESIGN OR FORMULATION --- OHIO R.C. §2307.75
(AGAINST DEFENDANT LG CHEM)**

62. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

63. This Second Cause of Action is brought by Plaintiff against Defendant LG Chem.

64. At all times relevant, Defendant LG Chem is and was engaged in the business of designing, formulating, producing, creating, constructing, assembling, and marketing LG HG2 batteries, including the Subject LG HG2 battery.

65. The foreseeable risks associated with the design of the Subject LG HG2 battery exceeded the benefits associated with that design, pursuant to the provisions of Ohio R.C. §§ 2307.75(B) and (C).

66. As a direct and proximate result of the defective design of the Subject LG HG2 battery, Plaintiff sustained the injuries described herein.

67. Defendant LG Chem is strictly liable because the Subject LG HG2 battery was designed in a defective manner and was in a defective and unreasonably dangerous condition when it was placed into the stream of commerce.

68. The defective condition of the Subject LG HG2 battery existed at the time it was purchased by the Plaintiff from Defendant Cleveland Vape.

69. The defective condition of the Subject LG HG2 battery existed at the time of the Incident which forms the basis of this action.

70. From the time the Subject LG HG2 battery left the control of Defendant LG Chem until the time of the Incident, it did not undergo any substantial changes or alterations.

71. Plaintiff was unaware of the hazards posed by the Subject LG HG2 battery, including the risk of explosion, energization and fire.

72. The Subject LG HG2 battery was defective in design, pursuant to Ohio Revised Code §2307.75, and the foreseeable risks of the Subject LG HG2 battery outweighed the benefits associated with its design because, *inter alia*:

- a. The Subject LG HG2 battery was designed in a manner such that it exposed individuals who purchased and used the product, including Plaintiff, to unreasonable risks of harm;

- b. The Subject LG HG2 battery was designed in a manner such that it failed to resist ordinary pressures stress, thermal stress, and fatigue stress;
- c. The Subject LG HG2 battery was designed in a manner that magnified the ordinary pressures stress, thermal stress, and fatigue stress;
- d. The Subject LG HG2 battery was designed in a manner that caused or contributed to cause excessive thermal and pressure build up;
- e. The Subject LG HG2 battery was designed in a manner that caused or contributed to cause a condition whereby heat and energy could rapidly escape from the battery;
- f. The Subject LG HG2 battery was designed without a positive temperature coefficient thermistor or similar device to prevent rapid discharge when short circuited, leading to overheating and catastrophic failure;
- g. The Subject LG HG2 battery was designed without internal temperature controls and/or protection circuitry;
- h. The Subject LG HG2 battery was designed in a manner such that it had inadequate ventilation, which caused or contributed to unreasonable heat and pressure to breach the exterior of the battery;
- i. The Subject LG HG2 battery was designed in a manner which caused or contributed to breaching of the exterior of the battery due to unreasonable heat and pressure;
- j. The Subject LG HG2 battery designed in a manner such that that it was capable of energizing, exploding or catching flame;
- k. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of fire during foreseeable uses of the product;

- l. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of explosion during foreseeable uses of the product;
- m. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of burns from heat, fire or battery acid during foreseeable uses of the product;
- n. The Subject LG HG2 battery was designed and sold without underdoing adequate testing, analysis, surveys or assessments to identify the unreasonable dangers described herein;
- o. The Subject LG HG2 battery was designed and sold with a package or container that did not prevent short circuiting leading to rapid discharge, overheating, and catastrophic failure; and
- p. In such other particulars as the evidence may show.

73. The Subject LG HG2 battery was expected to and did reach Plaintiff without undergoing any substantial changes or alterations affecting the aforementioned conditions.

74. As a direct and proximate result of the defect(s) in its design, the Subject LG HG2 battery energized, exploded and/or caught fire while in Plaintiff's pocket.

75. As a direct and proximate result of the defective design of the Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**THIRD CAUSE OF ACTION
INADEQUATE WARNING OR INSTRUCTION --- OHIO R.C. §2307.76
(AGAINST DEFENDANT LG CHEM)**

76. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

77. This Third Cause of Action is brought by Plaintiff against Defendant LG Chem.

78. Defendant LG Chem is strictly liable because when the Subject LG HG2 battery left its control it was defective and unreasonably dangerous due to inadequate warnings and/or instructions for use because, *inter alia*:

- a. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that there was a significant risk of energizing, explosion, fire, and burn injuries associated with the foreseeable use and/or storage of the Subject LG HG2 battery;
- b. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it failed to resist the ordinary pressures stress, thermal stress, and fatigue stress;
- c. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it could cause or contribute to cause excessive thermal and pressure build up;
- d. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner whereby heat and energy could rapidly escape from the battery;
- e. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it could cause or contribute breaching of the exterior of the battery due to unreasonable heat and pressure;

- f. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it should not be stored in a pocket, and that short circuiting of the battery could lead to catastrophic failure;
 - g. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that its own personnel, its distributors and the end users and consumers of its LG HG2 batteries would not be aware of industry standards, instructions on proper use, and instructions on proper storage of LG HG2 batteries;
 - h. Defendant LG Chem knew, or in the exercise of reasonable care, should have known, that both its own personnel, its distributors, and the end users and consumers of its LG HG2 batteries would not be aware of the dangers associated with the use and storage of LG HG2 batteries;
 - i. Defendant LG Chem failed to provide warnings or instructions that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries, in light of the anticipated, foreseeable and known uses and environments of use of LG HG2 batteries;
 - j. Defendant LG Chem failed to provide adequate warnings that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries associated with the storage of the Subject LG HG2 battery; and
 - k. In such other particulars as the evidence may show.
79. Defendant LG Chem is also strictly liable for inadequate post-marketing warnings and instructions:

- a. Upon information and belief, after receiving post-marketing incident reports or testing data, Defendant LG Chem knew, or in the exercise of reasonable care, should have known that there was a significant risk of energizing, explosion, fire, and burn injuries associated with the use and/or storage of LG HG2 batteries, including the Subject LG HG2 battery
- b. Upon information and belief, Defendant LG Chem failed to provide warnings or instructions that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries, in light of incident reports that some people had suffered burn injuries during anticipated, foreseeable, known and/or ordinary use of LG HG2 batteries; and
- c. Upon information and belief, Defendant LG Chem failed to provide warnings that a manufacturer exercising reasonable care would have provided concerning the energizing, explosion, fire, and burn injuries associated with the use and/or storage of LG HG2 batteries.

80. The risk of LG HG2 batteries, energizing, exploding and/or catching fire when being used and/or stored is not an open and obvious risk, nor is it a risk that is a matter of common knowledge.

81. Defendant LG Chem's failure to provide adequate warnings, both pre-market and post-market, was a direct cause and/or substantial contributing factor in proximately causing the Subject LG HG2 battery product to energizing, explode and/or catch fire, and, as a result, the injuries to Plaintiff described herein.

82. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have purchased the Subject LG HG2 battery.

83. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have used the Subject LG HG2 battery.

84. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have stored the Subject LG HG2 battery on his person.

85. As a direct and proximate result of Defendant LG Chem's inadequate warnings, Plaintiff was exposed to the Subject LG HG2 battery without a proper understanding of the risk of energizing, exploding and/or catching fire, and resulting burn injuries, from anticipated, foreseeable, intended and/or ordinary use and/or storage of the product.

86. As a direct and proximate result of the inadequate warnings and instructions provided with Defendant LG Chem's Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**FOURTH CAUSE OF ACTION
SUPPLIER LIABILITY -- OHIO R.C. §2307.78(A)(1)
(AGAINST DEFENDANT CLEVELAND VAPE)**

87. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

88. This Fourth Cause of Action is brought by Plaintiff against Defendant Cleveland Vape.

89. At all times relevant, Defendant Cleveland Vape is and was a "supplier," as defined in Ohio R.C. §2307.71, responsible for selling, distributing and/or placing into the stream of commerce the Subject LG HG2 battery.

90. Defendant Cleveland Vape was a supplier in the course of business for selling, distributing, or otherwise placing into the stream of commerce LG HG2 batteries, including the Subject LG HG2 battery.

91. Defendant Cleveland Vape owed a duty of reasonable care to Plaintiff.

92. Defendant Cleveland Vape breached that duty of care by, *inter alia*:

- a. Failing to provided adequate warnings to users and consumers, including Plaintiff, of the LG HG2 batteries which they sold and/or distributed;
- b. Failing to provide adequate instructions concerning safe and/or safer methods or use and/or storage of LG HG2 batteries;
- c. Failing to monitor and analyze post-marketing reports observed with regard to individuals using or storing LG H2 batteries and/or substantially similar products; and
- d. Were otherwise negligent in the sale and marketing of LG HG2 batteries.

93. As result of one or more of the foregoing acts or omissions on the part Defendant Cleveland Vape, Plaintiff suffered “harm,” as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**FIFTH CAUSE OF ACTION
SUPPLIER LIABILITY --- OHIO R.C. §§2307.78(A)(2) & (B)(1)
(AGAINST DEFENDANT CLEVELAND VAPE)**

94. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

95. This Fifth Cause of Action is brought by Plaintiff against Defendant Cleveland Vape.

96. Defendant Cleveland Vape is liable to Plaintiff because the Subject LG HG2 battery did not conform to representations with respect to safety during foreseeable use and/or storage of the product.

97. At the time of distribution and/or sale to Plaintiff, Defendant Cleveland Vape represented by specific statements and/or acts of omission that the Subject LG HG2 battery was reasonably safe for use and storage.

98. Plaintiff reasonably relied upon Defendant Cleveland Vape's misrepresentations and used and/or stored the Subject LG HG2 battery.

99. As a direct and proximate result of Defendant Cleveland Vape's misrepresentations, Plaintiff was unaware of the dangers associated with the use and storage of the Subject LG H2 battery, including the risk that product would energize, explode and/or catch fire.

100. The risk of LG HG2 batteries, energizing, exploding and/or catching fire when being used and/or stored is not an open and obvious risk, nor is it a risk that is a matter of common knowledge.

101. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have purchased the Subject LG HG2 battery.

102. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have used the Subject LG HG2 battery.

103. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have stored the Subject LG HG2 battery on his person.

104. Defendant Cleveland Vape's misrepresentations about the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage was a direct and proximate cause of the "harm," as defined in Ohio R.C. §2307.71(A)(7), suffered by Plaintiff, including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering

105. Additionally, to the extent that Defendant LG Chem may be found to not be subject to judicial process in Ohio, Defendant Cleveland Vape is also liable to Plaintiff for compensatory damages as per Ohio R.C. §2307.78(B)(1).

**SIXTH CAUSE OF ACTION
SUPPLIER LIABILITY --- OHIO R.C. §2307.78(A)(1) & (B)(1).
(AGAINST DEFENDANT MIDWEST)**

106. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

107. This Sixth Cause of Action is brought by Plaintiff against Defendant Midwest.

108. At all times relevant, Defendant Midwest and was a "supplier," as defined in Ohio R.C. §2307.71, responsible for selling, distributing and/or placing into the stream of commerce the Subject LG HG2 battery.

109. Defendant Midwest was a supplier in the course of business for selling, distributing, or otherwise placing into the stream of commerce LG HG2 batteries, including the Subject LG HG2 battery.

110. Defendant Midwest owed a duty of reasonable care to Plaintiff.

111. Defendant Midwest breached that duty of care by, *inter alia*:

a. Failing to provided adequate warnings to users and consumers, including Plaintiff, of the LG HG2 batteries which they sold and/or distributed;

b. Failing to provide adequate instructions concerning safe and/or safer methods or use and/or storage of LG HG2 batteries;

c. Failing to monitor and analyze post-marketing reports observed with regard to individuals using or storing LG H2 batteries and/or substantially similar products; and

d. Were otherwise negligent in the distribution, sale and marketing of LG HG2 batteries.

112. As result of one or more of the foregoing acts or omissions on the part Defendant Midwest, Plaintiff suffered “harm,” as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

113. Additionally, to the extent that Defendant LG Chem or Defendant Cleveland Vape may be found to not be subject to judicial process in Ohio or to be insolvent, Defendant Midwest is also liable to Plaintiff for compensatory damages as per Ohio R.C. §2307.78(B)(1).

114.

**SEVENTH CAUSE OF ACTION
PUNITIVE DAMAGES
(DEFENDANT LG CHEM, DEFENDANT CLEVELAND VAPE
& DEFENDANT MIDWEST)**

115. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

116. This Seventh Cause of Action is brought by Plaintiff against Defendant LG Chem. Defendant Cleveland Vape and Defendant Midwest.

117. Defendant LG Chem, Defendant Cleveland Vape and Defendant Midwest each had a duty to refrain from willful and wanton acts, omissions and/or misconduct which would foreseeably expose Plaintiff to an unreasonable risk of harm and cause injury.

118. Upon information and belief, LG Chem, Defendant Cleveland Vape and Defendant Midwest each breached their duties and committed one or more of the following acts or omission amounting to willful and wanton misconduct, in that they acted with reckless disregard for the health, safety and well-being of the Plaintiff and others similarly situated by:

e. Having actual knowledge of the defective condition and/or hazards of the LG HG2 batteries yet acting in a way that contributed to Plaintiff's injuries for material gain;

f. Designing, manufacturing, selling, distributing, marketing, and/or otherwise placing into the stream of commerce the Subject LG HG2 battery which posed an unreasonable risk of energizing, exploding or catching flame to users and consumers, despite knowledge of the product's dangerous, defective condition;

g. Failing to provide any adequate warnings or hazard communications to users and consumers purchasing LG HG2 batteries;

h. Making misrepresentations which indicated that the Subject LG HG2 battery was reasonably safe for use and/or storage;

i. Failing to disclose, and/or concealing, information in their respective possession concerning the risks to users and consumers that LG HG2 batteries would energize, explode or catch fire; and

j. In such other particulars as the evidence may show.

119. Upon information and belief, as a direct and proximate result of one or more of the foregoing willful and wanton acts/and or omissions on the part of each of the Defendants, Plaintiff was exposed to the defective Subject LG HG2 battery which energized, exploded and/or caught fire, resulting in the injuries and damages described herein.

120. An award of punitive damages is necessary and appropriate to punish Defendants for their willful, wanton and/or intentional misconduct and/or reckless disregard for the health, safety and well-being of Plaintiff and others and to deter said Defendants and others similarly situated from engaging in like misconduct in the future.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment against each Defendant, jointly and severally, in an amount in excess of \$25,000 on his complaint for compensatory damages and an amount in excess of \$25,000 on his complaint for punitive damages, as well as attorney's fees, costs, and expenses, pre- and post-judgment interest and such other and further relief as this Court deems just and proper or as may be proven at the trial of this matter.

JURY DEMAND

Plaintiff hereby demands a trial by jury.

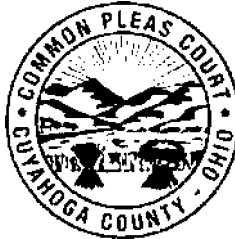
Respectfully submitted,

/s/Tom Merriman

Tom Merriman (0040906)
MERRIMAN, LEGANDO, WILLIAMS &
KLANG LLC
1360 West 9th Street, Suite 200
Cleveland, OH 44113
Phone: 216-522-9000
Fax: 216-522-9007
Email: tom@merrimanlegal.com

T. David Hoyle, Esq. (*pro hac vice*)
W. Taylor Lacy, Esq. (*pro hac vice*)
MOTLEY RICE, LLC
28 Bridgeside Blvd.
Mount Pleasant, SC 29464
Phone: (843) 216-9000
Fax: (843) 216-9450
Email: Dhoyle@motleyrice.com

Attorneys for Plaintiff Nader M. Harb



**NAILAH K. BYRD
CUYAHOGA COUNTY CLERK OF COURTS
1200 Ontario Street
Cleveland, Ohio 44113**

Court of Common Pleas

**New Case Electronically Filed:
June 25, 2019 10:47**

By: THOMAS C. MERRIMAN 0040906

Confirmation Nbr. 1746432

NADER M. HARB

CV 19 917268

vs.

Judge: EMILY HAGAN

LG CHEM. LTD., ET AL

Pages Filed: 26

**IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO**

NADER M. HARB)
3681 W. 116th Street)
Cleveland, Ohio 44111 .)

Plaintiff,)

vs.)

LG CHEM LTD.)
128 Yeoui-Daero)
Yeongdeungpo-Gu Seoul)
Seoul, 07336 South Korea)

and)

CLEVELAND VAPE DISTRIBUTION,)
LLC)
c/o United States Corporation Agents, Inc.)
411 Wolf Ledges Pkwy., Suite 201)
Akron, Ohio 44311)

Also Serve:)
CLEVELAND VAPE DISTRIBUTION,)
LLC)
17114 Detroit Road)
Lakewood, Ohio 44107)

Defendants.)

Case No.

Judge

CIVIL COMPLAINT
(Jury Demand Endorsed Hereon)

NOW COMES the Plaintiff, Nader M. Harb (“Mr. Harb” or “Plaintiff”) by and through the undersigned counsel, and alleges the following:

NATURE OF THE ACTION

1. This is a product liability brought pursuant to Ohio R.C. 2307.71, et seq., arising from Defendants' sale of unreasonably dangerous products that catastrophically failed during normal and foreseeable circumstances with such failure causing Mr. Harb serious bodily injury.

PARTIES, JURISDICTION & VENUE

2. At all times relevant, Plaintiff, Nader M. Harb, is, and has been, a citizen and resident of the City of Cleveland, Cuyahoga County, Ohio.

3. Defendant LG Chem, Ltd., ("LG Chem") is a foreign company organized and existing under the laws of the Republic of Korea ("South Korea") with its principal place of business at 128 Yeoui-Daero, Yeongdeungpo-Gu Seoul, Seoul, 07336 South Korea. Defendant LG Chem may be served via the Hague Convention on the Service Abroad of Judicial and Extra Judicial Documents in Civil and Commercial Matters.

4. Defendant LG Chem is engaged in the business of manufacturing, designing, testing, marketing, certifying, supplying, selling, importing and distributing lithium ion batteries including, but not limited to, the subject LG HG2 18650 battery ("the Subject LG HG2 battery") purchased by Mr. Harb. In addition, Defendant LG Chem has extensive, ongoing, and specific contacts with Ohio that include, but are not limited to, the following:

- a. At all times relevant herein, Defendant LG Chem has had continuing contacts with Cuyahoga County by manufacturing, designing, testing, marketing, certifying, supplying, selling, importing and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this county and which are in fact used, sold, distributed, and retailed in this county;

- b. At all times relevant herein, Defendant LG Chem has had continuing contacts with the State of Ohio by transacting substantial business in this state manufacturing, designing, testing, marketing, certifying, supplying, selling, importing, and distributing goods, including but not limited to the Subject LG HG2 battery, with the reasonable expectation that they will be used in this state and which are in fact used in this state;
- c. Defendant LG Chem designed, manufactured, sold, or otherwise placed into its distribution chain the Subject LG HG2 battery which caused the injuries at issue in this matter; and
- d. In addition, Defendant LG Chem's contacts with Ohio principally relate to the placement of electronic devices, including lithium ion batteries, into the stream of commerce, and all of the conduct associated with placing those products into the stream of commerce in Ohio and associated with this civil action is related to and connected with the placement of batteries used in electronic cigarette devices into the stream of commerce.

5. Therefore, at all times relevant herein, Defendant LG Chem has purposefully availed itself of the privilege of conducting business in the State of Ohio, has transacted business in the State of Ohio, has contracted to supply its products in the State of Ohio, has regularly caused its products to be sold in the State of Ohio, and this action arises out of business transacted in, as well as a tortious actions and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio, and specific personal jurisdiction is proper under one or more provisions of Ohio R.C. 2307.382, as well as the Due Process Clauses of the Fifth and Fourteenth Amendments to the Constitution of the United States of America.

6. Defendant Cleveland Vape Distribution, LLC (“Cleveland Vape”) is an Ohio limited liability company with its principal place of business located in Cuyahoga County at 17114 Detroit Road, Lakewood, Ohio 44107.

7. Defendant Cleveland Vape is registered to do business, and does business, in the State of Ohio and its registered agent for service of process is United States Corporation Agents, Inc., 411 Wolfe Ledges Parkway, Suite 201, Akron, Ohio 44311.

8. Defendant Cleveland Vape sells e-cigarette products and accessories, including the Subject LG HG2 battery purchased by Mr. Harb at issue in this lawsuit.

9. At all times relevant herein, Defendant Cleveland Vape conducted substantial business in Ohio and this cause of action arises out of business transacted in, as well as tortious actions and/or omissions committed in whole or in part within Ohio and which resulted in injuries to Plaintiff in Ohio, and, therefore, both specific personal jurisdiction under Ohio R.C. 2307.382 and general jurisdiction over Defendant Cleveland Vape are proper.

10. Pursuant to Ohio Civ. R. 3(C), venue and jurisdiction are proper in the Common Pleas Court for Cuyahoga County, State of Ohio because, *inter alia*, the acts, events, and circumstances mentioned in this action and complained of herein occurred in Cuyahoga County, State of Ohio, and Defendant Cleveland Vape resides in, and has its principal place of business in, Cuyahoga County, State of Ohio.

FACTS

11. Manufacturers, distributors, and sellers of electronic cigarettes, or “e-cigarettes,” as they are more commonly known, claim to provide a tobacco-free and smoke-free alternative to traditional cigarettes. E-cigarettes offer doses of nicotine via a vaporized solution.

12. All e-cigarettes are designed and function in a similar way. They consist of three primary component parts: a tank or cartridge that is filled with a liquid (known as "juice" or "e-liquid") that usually contains a concentration of nicotine; an atomizer, which heats and converts the contents of the liquid-filled cartridge to a vapor that the user then inhales; and a battery, which provides power for the atomizer. The atomizer itself typically contains three components: the casing; the wire (or "coil"); and the wicking material. The wire is wrapped around the wicking material (usually cotton) in a coil formation; the two ends of the coil are then connected to the casing in a way that permits contact with the battery. When e-liquid is added to the e-cigarette's tank, the wicking material absorbs it. When the user activates the e-cigarette's battery, the coil heats, vaporizing the e-liquid within the wicking material.

13. E-cigarette batteries are typically cylindrical lithium-ion batteries. Some e-cigarette batteries are rechargeable, and others are disposable. Some e-cigarettes are closed systems, in which prefilled tanks are used; others are also open systems that allow the user to manually refill the tank with e-liquid. E-cigarettes come in pen form (these are usually plastic and are modeled after a traditional cigarette) and in a form known as a 'mod.' Mods are metal devices that are heavier than pen e-cigarettes and carry a much higher capacity for juice and creation of vapor. There are many different types of mods, some of which require the use and replacement of atomizer coils like those described above.

14. While e-cigarettes were first patented in 2003, they first entered the market exclusively in China in 2004, and did not first appear in the United States until 2007. Since that time, U.S. sales of electronic cigarettes have risen dramatically — from approximately \$20 million in 2008 to \$2.5 billion in 2014. According to some media sources, industry experts predict the e-cigarette industry will reach \$32.11 billion by 2021.

15. Lithium ion batteries, commonly used in e-cigarettes, pose a risk of fire and explosion.¹ A medical case report of a man in New Jersey, whose e-cigarette exploded in his pocket causing him severe burns, noted, “the potential for serious burn injuries related to device malfunction is of concern.”²

16. In particular, lithium ion batteries are susceptible to a condition known as “thermal runaway,” whereby the internal battery temperature can cause a fire or explosion, and which is often the result of “poor design, use of low quality materials ... [and] manufacturing flaws and defects...”³

17. Some tout e-cigarettes as a safer alternative to traditional cigarettes because e-cigarettes do not contain tobacco, do not actually burn or create smoke, and do not pose the same risks of second-hand smoke inhalation. However, these supposedly ‘safer’ alternatives to traditional cigarettes are still the subject of debate, as they still often provide nicotine, which is a neurotoxin and extremely addictive. Further, the actual and long-term effects of the chemicals in e-liquid and vapor are unknown, as the technology is still relatively new.

18. Only a few federal regulations have been promulgated or proposed regarding e-cigarette sales and use. Many of these products are shipped from China and placed into the stream of commerce without any knowledge as to what is in them, how they were made, or whether they are safe for consumers.

19. In 2009, the United States Food and Drug Administration (“FDA”) first attempted to regulate e-cigarettes under the Food, Drug, and Cosmetic Act (“FDCA”). E-cigarette

¹ Lithium-ion batteries have been referred to as the “mini bomb in your pocket” due to its known ability to spontaneously ignite. See Ben D., Ma B., Liu L, et al., *Unusual Burns with Combined Injuries Caused by Mobile Phone Explosion: Watch Out for the “mini Bomb!”*, J. Burn Care Res. 2009 Nov-Dec; 30(6): 1048.

² *Spontaneous Electronic Cigarette Explosion: A Case Report, American Journal of Medical Case Reports*, 2015, Vol. 3, No. 4, 93-94, 94.

³ See Ben DJ. Burn Care Res. 2009 Nov-Dec; 30(6): 1048.

Act and FDA's implementing regulations; and (2) to establish specific restrictions that are appropriate for the protection of the public health for the newly deemed tobacco products.

23. E-cigarettes and E-cigarette batteries have caused numerous fires and explosions injuring consumers. Federal, state, and local efforts have recently been aimed at protecting public health via regulations on sale and use of e-cigarettes, but not on the safety hazards posed by the products themselves.

24. There is mounting evidence the explosions and fires caused by e-cigarettes and lithium ion batteries are increasing in occurrence. The U.S. Department of Transportation ("DOT") issued a rule banning e-cigarettes from checked bags on airplanes because they have been known to catch fire. The DOT has also determined e-cigarettes may not be used during flight. The explosion of e-cigarettes and lithium ion batteries are not novel occurrences; a California man recently lost his eye as a result of an e-cigarette exploding near him. A southern California woman was set on fire after an e-cigarette exploded while she was a passenger in a car. An Atlanta woman's couch and rug caught on fire after an e-cigarette exploded, almost burning her house down. Complaints of injury caused by e-cigarettes continue to rise as the devices' popularity increases. These products continue to be placed into the stream of commerce in an untested and unsafe condition, and will continue to cause injuries unless and until those responsible are held accountable.

25. Defendant LG Chem its agents, servants and employees, participated in the design, formulation, production, creation, making, construction, assembly, marketing, delivery, and sale of the LG HG2 batteries, including the Subject LG HG2 battery.

26. Defendant Cleveland Vape its agents, servants and employees, participated in marketing, distribution and/or sale of LG HG2 batteries, including the Subject LG HG2 battery.

27. Plaintiff purchased LG HG2 lithium ion batteries designed, manufactured and distributed by Defendant LG Chem, including the Subject LG HG2 battery, from Defendant Cleveland Vape on or about February 27, 2018.

28. At or about 9:00 a.m. on the morning of June 8, 2018, Plaintiff reported to work at his place of employment in Cleveland, Ohio.

29. At all times relevant, Plaintiff worked as a butcher.

30. Plaintiff regularly kept a spare battery on his person for use in his e-cigarette device in the event a replacement was needed to power his e-cigarette device.

31. On the morning of June 8, 2018, Plaintiff had the Subject LG HG2 battery in the right front pocket of the long, heavy duty pants he regularly wore when working.

32. On the morning of June 8, 2018, Plaintiff had the Subject LG HG2 battery in his right front pocket so that it might be utilized in the event that the battery inserted into his e-cigarette device ceased to supply power.

33. At approximately 9:30 a.m. on the morning of June 8, 2018, the Subject LG HG2 battery in Plaintiff's right front pocket spontaneously exploded, setting his pants and leg on fire (hereinafter "the Incident.")

34. Plaintiff then dropped and rolled to the floor and removed to his pants, in an effort to extinguish the flames.

35. Thereafter, on the morning of June 8, 2018, Plaintiff was taken to the MetroHealth Medical Center in Cleveland, Ohio, where the Emergency Department referred him to Burn Clinic for treatment.

36. Plaintiff was joined by his wife at the MetroHealth Medical Center Burn Clinic.

37. While at the MetroHealth Medical Center Burn Clinic, it was determined that Plaintiff had sustained an acute 2% TBSA burn of his right thigh as a result of the Incident.

38. Plaintiff has suffered and will continue to suffer the effects of permanent scarring due the injuries sustained in the Incident.

39. Plaintiff has suffered and will continue to suffer severe physical pain and mental anguish as a result of the injuries sustained in the Incident.

40. As a result of the Incident, Plaintiff has incurred substantial medical bills.

41. Plaintiff has suffered lost wages as a result of the injuries he sustained during the Incident.

42. Upon information and belief, Defendant LG Chem was aware, or should have been aware, that LG HG2 batteries, including the Subject LG HG2 battery, were defective due to their manufacture, construction, design, formulation, due to its inadequate warnings or instructions; and/or due to its failure to conform or adhere to representations made about it.

43. Upon information and belief, Defendant Cleveland Vape was aware, or should have been aware, that LG HG2 batteries, including the Subject LG HG2 battery, were defective due to their manufacture, construction, design, formulation, due to its inadequate warnings or instructions; and/or due to its failure to conform or adhere to representations made about it.

**FIRST CAUSE OF ACTION
DEFECTIVE MANUFACTURE OR CONSTRUCTION --- OHIO R.C. § 2307.74
(AGAINST DEFENDANT LG CHEM)**

44. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

45. This First Cause of Action is brought by Plaintiff against Defendant LG Chem.

- b. The Subject LG HG2 battery was manufactured and/or fabricated with materials that magnified the ordinary pressures stress, thermal stress, and fatigue stress contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- c. The Subject LG HG2 battery was manufactured and/or fabricated using material or materials that caused or contributed to cause excessive thermal and pressure build up, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- d. The Subject LG HG2 battery was manufactured and/or fabricated using material or materials that caused or contributed to cause a condition whereby heat and energy could rapidly escape from the battery, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- e. The Subject LG HG2 battery manufactured and/or fabricated without a positive temperature coefficient thermistor or similar device to prevent rapid discharge when short circuited, leading to overheating and catastrophic failure, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- f. The Subject LG HG2 battery was manufactured and/or fabricated without internal temperature controls and/or protection circuitry, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- g. The Subject LG HG2 battery was manufactured and/or fabricated with inadequate ventilation, contrary to its anticipated and intended design specifications, formulas,

and/or performance standards, which caused or contributed to unreasonable heat and pressure build up;

- h. The Subject LG HG2 battery was manufactured and/or fabricated with a package or container that failed to prevent short circuiting leading to rapid discharge, overheating, and catastrophic failure, contrary to its anticipated and intended design specifications, formulas, and/or performance standards;
- i. The Subject LG HG2 battery was manufactured and/or fabricated with inadequate materials or components which caused or contributed to breaching of the exterior of the battery due to unreasonable heat and pressure, contrary to its anticipated and intended design specifications, formulas, and/or performance standards,
- j. The Subject LG HG2 battery was fabricated and manufactured with materials such that it was capable of energizing, exploding or catching flame, contrary to its anticipated and intended design specifications, formulas, and/or performance standards; and
- k. In such other particulars as the evidence may show.

53. The Subject LG HG2 battery was expected to and did reach Plaintiff without undergoing any substantial changes or alterations affecting the aforementioned conditions.

54. As a direct and proximate result of the defect(s) in its manufacture, the Subject LG HG2 battery energized, exploded and/or caught fire while in Plaintiff's pocket.

55. As a direct and proximate result of the defective manufacture of the Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating personal injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**SECOND CAUSE OF ACTION
DEFECTIVE DESIGN OR FORMULATION --- OHIO R.C. §2307.75
(AGAINST DEFENDANT LG CHEM)**

56. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

57. This Second Cause of Action is brought by Plaintiff against Defendant LG Chem.

58. At all times relevant, Defendant LG Chem is and was engaged in the business of designing, formulating, producing, creating, constructing, assembling, and marketing LG HG2 batteries, including the Subject LG HG2 battery.

59. The foreseeable risks associated with the design of the Subject LG HG2 battery exceeded the benefits associated with that design, pursuant to the provisions of Ohio R.C. §§ 2307.75(B) and (C).

60. As a direct and proximate result of the defective design of the Subject LG HG2 battery, Plaintiff sustained the injuries described herein.

61. Defendant LG Chem is strictly liable because the Subject LG HG2 battery was designed in a defective manner and was in a defective and unreasonably dangerous condition when it was placed into the stream of commerce.

62. The defective condition of the Subject LG HG2 battery existed at the time it was purchased by the Plaintiff from Defendant Cleveland Vape.

63. The defective condition of the Subject LG HG2 battery existed at the time of the Incident which forms the basis of this action.

64. From the time the Subject LG HG2 battery left the control of Defendant LG Chem until the time of the Incident, it did not undergo any substantial changes or alterations.

65. Plaintiff was unaware of the hazards posed by the Subject LG HG2 battery, including the risk of explosion, energization and fire.

66. The Subject LG HG2 battery was defective in design, pursuant to Ohio Revised Code §2307.75, and the foreseeable risks of the Subject LG HG2 battery outweighed the benefits associated with its design because, *inter alia*:

- a. The Subject LG HG2 battery was designed in a manner such that it exposed individuals who purchased and used the product, including Plaintiff, to unreasonable risks of harm;
- b. The Subject LG HG2 battery was designed in a manner such that it failed to resist ordinary pressures stress, thermal stress, and fatigue stress;
- c. The Subject LG HG2 battery was designed in a manner that magnified the ordinary pressures stress, thermal stress, and fatigue stress;
- d. The Subject LG HG2 battery was designed in a manner that caused or contributed to cause excessive thermal and pressure build up;
- e. The Subject LG HG2 battery was designed in a manner that caused or contributed to cause a condition whereby heat and energy could rapidly escape from the battery;
- f. The Subject LG HG2 battery was designed without a positive temperature coefficient thermistor or similar device to prevent rapid discharge when short circuited, leading to overheating and catastrophic failure;
- g. The Subject LG HG2 battery was designed without internal temperature controls and/or protection circuitry;

- h. The Subject LG HG2 battery was designed in a manner such that it had inadequate ventilation, which caused or contributed to unreasonable heat and pressure to breach the exterior of the battery;
- i. The Subject LG HG2 battery was designed in a manner which caused or contributed to breaching of the exterior of the battery due to unreasonable heat and pressure;
- j. The Subject LG HG2 battery designed in a manner such that that it was capable of energizing, exploding or catching flame;
- k. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of fire during foreseeable uses of the product;
- l. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of explosion during foreseeable uses of the product;
- m. The Subject LG HG2 battery was designed in a manner such that it posed an unreasonable risk of burns from heat, fire or battery acid during foreseeable uses of the product;
- n. The Subject LG HG2 battery was designed and sold without underdoing adequate testing, analysis, surveys or assessments to identify the unreasonable dangers described herein;
- o. The Subject LG HG2 battery was designed and sold with a package or container that did not prevent short circuiting leading to rapid discharge, overheating, and catastrophic failure; and
- p. In such other particulars as the evidence may show.

67. The Subject LG HG2 battery was expected to and did reach Plaintiff without undergoing any substantial changes or alterations affecting the aforementioned conditions.

68. As a direct and proximate result of the defect(s) in its design, the Subject LG HG2 battery energized, exploded and/or caught fire while in Plaintiff's pocket.

69. As a direct and proximate result of the defective design of the Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**THIRD CAUSE OF ACTION
INADEQUATE WARNING OR INSTRUCTION --- OHIO R.C. §2307.76
(AGAINST DEFENDANT LG CHEM)**

70. Plaintiff re-alleges and incorporates by reference each and every allegation contained in the preceding paragraphs as though fully set forth herein.

71. This Third Cause of Action is brought by Plaintiff against Defendant LG Chem.

72. Defendant LG Chem is strictly liable because when the Subject LG HG2 battery left its control it was defective and unreasonably dangerous due to inadequate warnings and/or instructions for use because, *inter alia*:

- a. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that there was a significant risk of energizing, explosion, fire, and burn injuries associated with the foreseeable use and/or storage of the Subject LG HG2 battery;
- b. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it failed to resist the ordinary pressures stress, thermal stress, and fatigue stress;

- c. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it could cause or contribute to cause excessive thermal and pressure build up;
- d. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner whereby heat and energy could rapidly escape from the battery;
- e. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it could cause or contribute breaching of the exterior of the battery due to unreasonable heat and pressure;
- f. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that the Subject LG HG2 battery was designed in a manner such that it should not be stored in a pocket, and that short circuiting of the battery could lead to catastrophic failure;
- g. Defendant LG Chem knew, or in the exercise of reasonable care, should have known that its own personnel, its distributors and the end users and consumers of its LG HG2 batteries would not be aware of industry standards, instructions on proper use, and instructions on proper storage of LG HG2 batteries;
- h. Defendant LG Chem knew, or in the exercise of reasonable care, should have known, that both its own personnel, its distributors, and the end users and consumers of its LG HG2 batteries would not be aware of the dangers associated with the use and storage of LG HG2 batteries;

- i. Defendant LG Chem failed to provide warnings or instructions that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries, in light of the anticipated, foreseeable and known uses and environments of use of LG HG2 batteries;
- j. Defendant LG Chem failed to provide adequate warnings that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries associated with the storage of the Subject LG HG2 battery; and
- k. In such other particulars as the evidence may show.

73. Defendant LG Chem is also strictly liable for inadequate post-marketing warnings and instructions:

- a. Upon information and belief, after receiving post-marketing incident reports or testing data, Defendant LG Chem knew, or in the exercise of reasonable care, should have known that there was a significant risk of energizing, explosion, fire, and burn injuries associated with the use and/or storage of LG HG2 batteries, including the Subject LG HG2 battery
- b. Upon information and belief, Defendant LG Chem failed to provide warnings or instructions that a manufacturer exercising reasonable care would have provided concerning the risk of energizing, explosion, fire, and burn injuries, in light of incident reports that some people had suffered burn injuries during anticipated, foreseeable, known and/or ordinary use of LG HG2 batteries; and
- c. Upon information and belief, Defendant LG Chem failed to provide warnings that a manufacturer exercising reasonable care would have provided concerning the

energizing, explosion, fire, and burn injuries associated with the use and/or storage of LG HG2 batteries.

74. The risk of LG HG2 batteries, energizing, exploding and/or catching fire when being used and/or stored is not an open and obvious risk, nor is it a risk that is a matter of common knowledge.

75. Defendant LG Chem's failure to provide adequate warnings, both pre-market and post-market, was a direct cause and/or substantial contributing factor in proximately causing the Subject LG HG2 battery product to energizing, explode and/or catch fire, and, as a result, the injuries to Plaintiff described herein.

76. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have purchased the Subject LG HG2 battery.

77. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have used the Subject LG HG2 battery.

78. Had Defendant LG Chem properly warned the Plaintiff of the risks posed by of the Subject LG HG2 battery, Mr. Harb would not have stored the Subject LG HG2 battery on his person.

79. As a direct and proximate result of Defendant LG Chem's inadequate warnings, Plaintiff was exposed to the Subject LG HG2 battery without a proper understanding of the risk of energizing, exploding and/or catching fire, and resulting burn injuries, from anticipated, foreseeable, intended and/or ordinary use and/or storage of the product.

80. As a direct and proximate result of the inadequate warnings and instructions provided with Defendant LG Chem's Subject LG HG2 battery, Plaintiff suffered "harm," as defined in Ohio R.C. §2307.71(A)(7), including but not limited to debilitating injuries, permanent

scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering.

**FOURTH CAUSE OF ACTION
SUPPLIER LIABILITY --- OHIO R.C. §2307.78(A)(1)
(AGAINST DEFENDANT CLEVELAND VAPE)**

81. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

82. This Fourth Cause of Action is brought by Plaintiff against Defendant Cleveland Vape.

83. At all times relevant, Defendant Cleveland Vape is and was a “supplier,” as defined in Ohio R.C. §2307.71, responsible for selling, distributing and/or placing into the stream of commerce the Subject LG HG2 battery.

84. Defendant Cleveland Vape was a supplier in the course of business for selling, distributing, or otherwise placing into the stream of commerce LG HG2 batteries, including the Subject LG HG2 battery.

85. Defendant Cleveland Vape owed a duty of reasonable care to Plaintiff.

86. Defendant Cleveland Vape breached that duty of care by, *inter alia*:

- a. Failing to provided adequate warnings to users and consumers, including Plaintiff, of the LG HG2 batteries which they sold and/or distributed;
- b. Failing to provide adequate instructions concerning safe and/or safer methods or use and/or storage of LG HG2 batteries;
- c. Failing to monitor and analyze post-marketing reports observed with regard to individuals using or storing LG H2 batteries and/or substantially similar products; and

94. The risk of LG HG2 batteries, energizing, exploding and/or catching fire when being used and/or stored is not an open and obvious risk, nor is it a risk that is a matter of common knowledge.

95. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have purchased the Subject LG HG2 battery.

96. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have used the Subject LG HG2 battery.

97. Had Defendant Cleveland Vape not misrepresented the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage, Plaintiff would not have stored the Subject LG HG2 battery on his person.

98. Defendant Cleveland Vape's misrepresentations about the safety of the Subject LG H2 battery during reasonable, foreseeable use and storage was a direct and proximate cause of the "harm," as defined in Ohio R.C. §2307.71(A)(7), suffered by Plaintiff, including but not limited to debilitating injuries, permanent scarring, lost wages, medical expenses, loss of enjoyment of life, and past and future emotional and physical pain and suffering

99. Additionally, to the extent that Defendant LG Chem may be found to not be subject to judicial process in Ohio, Defendant Cleveland Vape is also liable to Plaintiff for compensatory damages as per Ohio R.C. §2307.78(B)(1).

**SIXTH CAUSE OF ACTION
PUNITIVE DAMAGES
(DEFENDANT LG CHEM AND DEFENDANT CLEVELAND VAPE)**

100. Plaintiff re-alleges and incorporates by reference each and every allegation contained in preceding paragraphs as though fully set forth herein.

101. This Sixth Cause of Action is brought by Plaintiff against Defendant LG Chem and Defendant Cleveland Vape.

102. Defendant LG Chem and Defendant Cleveland Vape each had a duty to refrain from willful and wanton acts, omissions and/or misconduct which would foreseeably expose Plaintiff to an unreasonable risk of harm and cause injury.

103. Upon information and belief, Defendant LG Chem and Defendant Cleveland Vape each breached their duties and committed one or more of the following acts or omission amounting to willful and wanton misconduct, in that they acted with reckless disregard for the health, safety and well-being of the Plaintiff and others similarly situated by:

- a. Having actual knowledge of the defective condition and/or hazards of the LG HG2 batteries yet acting in a way that contributed to Plaintiff's injuries for material gain;
- b. Designing, manufacturing, selling, distributing, marketing, and/or otherwise placing into the stream of commerce the Subject LG HG2 battery which posed an unreasonable risk of energizing, exploding or catching flame to users and consumers, despite knowledge of the product's dangerous, defective condition;
- c. Failing to provide any adequate warnings or hazard communications to users and consumers purchasing LG HG2 batteries;
- d. Making misrepresentations which indicated that the Subject LG HG2 battery was reasonably safe for use and/or storage;

- e. Failing to disclose, and/or concealing, information in their respective possession concerning the risks to users and consumers that LG HG2 batteries would energize, explode or catch fire; and
- f. In such other particulars as the evidence may show.

104. Upon information and belief, as a direct and proximate result of one or more of the foregoing willful and wanton acts/and or omissions on the part of each of the Defendants, Plaintiff was exposed to the defective Subject LG HG2 battery which energized, exploded and/or caught fire, resulting in the injuries and damages described herein.

105. An award of punitive damages is necessary and appropriate to punish Defendants for their willful, wanton and/or intentional misconduct and/or reckless disregard for the health, safety and well-being of Plaintiff and others and to deter said Defendants and others similarly situated from engaging in like misconduct in the future.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment against each Defendant, jointly and severally, in an amount in excess of \$25,000 on his complaint for compensatory damages and an amount in excess of \$25,000 on his complaint for punitive damages, as well as attorney's fees, costs, and expenses, pre- and post-judgment interest and such other and further relief as this Court deems just and proper or as may be proven at the trial of this matter.

JURY DEMAND

Plaintiff hereby demands a trial by jury.

Respectfully submitted,

/s/Tom Merriman

Tom Merriman (0040906)

LANDSKRONER • GRIECO • MERRIMAN, LLC

1360 West 9th Street, Suite 200

Cleveland, Ohio 44113

Phone: (216) 522-9000

Fax: (216) 522-9007

Email: tom@lgmlegal.com

Counsel for Plaintiff

T. David Hoyle, Esq. (*pro hac vice* to be filed)

MOTLEY RICE, LLC

28 Bridgeside Blvd.

Mount Pleasant, SC 29464

Phone: (843) 216-9000

Fax: (843) 216-9450

Email: Dhoyle@motleyrice.com

Attorneys for Plaintiff Nader M. Harb

Cleveland Vape DBA CLE VAPE X

17114 Detroit Road
February 27, 2018 11:16 AM
#0



2 LG HG2	9.99
Uwell Crown 3 Tank Black	35.00
Net Total	54.98
Tax	4.40

This receipt has been modified and cannot be used as proof of purchase



DATE	DOCUMENT ID	DESCRIPTION	FILING	EXPED	CERT	COPY
05/04/2018	201812303544	FOREIGN FOR PROFIT CORPORATION - LICENSE (FLF)	99.00	0.00	0.00	0.00

Receipt

This is not a bill. Please do not remit payment.

CORPORATION SERVICE COMPANY
ATTN: DEANNE E. SCHAUSEIL
50 W. BROAD STREET, SUITE 1330
COLUMBUS, OH 43215

**STATE OF OHIO
CERTIFICATE**

Ohio Secretary of State, Jon Husted

4175575

It is hereby certified that the Secretary of State of Ohio has custody of the business records for

LG CHEM AMERICA, INC.

and, that said business records show the filing and recording of:

Document(s)

FOREIGN FOR PROFIT CORPORATION - LICENSE

Effective Date: 04/23/2018

Document No(s):

201812303544

Authorization to transact business in Ohio is hereby given, until surrender, expiration or cancellation of this license.



United States of America
State of Ohio
Office of the Secretary of State

Witness my hand and the seal of the
Secretary of State at Columbus, Ohio this
4th day of May, A.D. 2018.

Jon Husted
Ohio Secretary of State

Form 530A Prescribed by:

JON HUSTED
Ohio Secretary of State



Toll Free: (877) SOS-FILE (877-767-3453)
Central Ohio: (614) 466-3910
www.OhioSecretaryofState.gov
bussevr@OhioSecretaryofState.gov
File online or for more information: www.OHBusinessCentral.com

Mail this form to one of the following:

Regular Filing (non expedite)
P.O. Box 670
Columbus, OH 43216
Expedite Filing (Two business day processing time.
Requires an additional \$100.00)
P.O. Box 1390
Columbus, OH 43216

For screen readers, follow instructions located at this path.

Foreign For-Profit Corporation Application for License

Filing Fee: \$99
(151-FLF)
Form Must Be Typed

The application is made to procure a Permanent License Temporary License (valid for six months)

Attach Certificate of Good Standing from the jurisdiction of formation (see instructions)

Name of Corporation
(Name must match the name on the Certificate of Good Standing)

Assumed name under which the corporation will do business, if its corporate name is not available in Ohio
(Must attach "Resolution of Foreign Corporation to Qualify Under An Assumed Name" Form 591)

Under the Laws of the Jurisdiction of (Jurisdiction of Formation)
State Country

Date of Incorporation in Jurisdiction of Formation
Date of Incorporation

The location of the principal office is:

Mailing Address

City State Country ZIP Code

If the principal office is located outside Ohio, provide a location in Ohio, if one exists.

Mailing Address

City State ZIP Code

A brief summary of the corporate purpose(s) to be exercised within Ohio

Appointment of Agent

The corporation hereby appoints the following as its statutory agent upon whom process against the corporation may be served in Ohio.

Corporation Service Company

Agent Name

50 West Broad Street, Suite 1330

Mailing Address

Columbus

City

Ohio

State

43215

ZIP Code

The entity above irrevocably consents to service of process on the agent listed above as long as the authority of the agent continues, and to service of process upon the Ohio Secretary of State if:

- A. an agent is not appointed, or
- B. an agent is appointed but the authority of that agent has been revoked, or
- C. the agent cannot be found or served after the exercise of reasonable diligence.

Pursuant to Ohio Revised Code 1703.29(A), a foreign corporation may be required to pay an additional \$250 fee if the application is being made to enable the corporation to prosecute or defend a legal action. Please see the Ohio Revised Code or Instructions for more information.

- No, the corporation is not filing for this purpose and an additional fee is not included.
- Yes, the application is being filed for this purpose and the additional \$250 fee is included with the filing fee.

If yes then:

Pursuant to Ohio Revised Code 1703.29 (B), a foreign corporation that began transacting business in Ohio prior to 2009 without a license may be required to provide a certificate from the tax commissioner which states that the corporation has paid all franchise taxes which it should have paid had it qualified to do business in this state.

Did the corporation begin transacting business in Ohio prior to 2009 without obtaining a license?

- Yes, the Certificate of Tax Clearance from the tax commissioner is attached.
- No, the corporation began transacting business in 2009 or later, therefore, a Certificate of Tax Clearance is not required.

Jaewook Jung , being first duly sworn, deposes and says that he/she is the
 Name of Officer

Treasurer of LG CHEM AMERICA, INC.
 Officer Title Corporation

the corporation described in the foregoing application, and that the statements contained in said application are true and correct to best of my knowledge and belief.

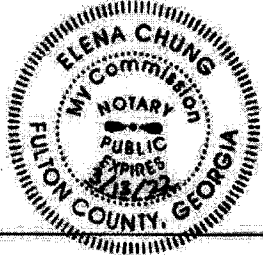
Name Jaewook Jung

Signature [Handwritten Signature]

Sworn before me and subscribed on 04/20/2018
 Date

[Handwritten Signature]
 Notary Public

NOTARY SEAL



Expiration Date of Notary's Commission 3/13/2022
 Date

Delaware

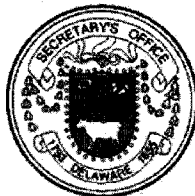
The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "LG CHEM AMERICA, INC." IS DULY INCORPORATED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL CORPORATE EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE TWENTY-THIRD DAY OF APRIL, A.D. 2018.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL REPORTS HAVE BEEN FILED TO DATE.

AND I DO HEREBY FURTHER CERTIFY THAT THE SAID "LG CHEM AMERICA, INC." WAS INCORPORATED ON THE FIRST DAY OF MARCH, A.D. 2009.

AND I DO HEREBY FURTHER CERTIFY THAT THE FRANCHISE TAXES HAVE BEEN PAID TO DATE.



Jeffrey W. Bullock
Jeffrey W. Bullock, Secretary of State

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SR# 20182917929

Authentication: 202559611

Date: 04-23-18

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Financial Statements
June 30, 2018 and 2017

LG Chem, Ltd. and Subsidiaries
Index
June 30, 2018 and 2017

	Page(s)
Report on Review of Interim Financial Statements	1 - 2
Consolidated Interim Financial Statements	
Consolidated Interim Statements of Financial Position	3 - 4
Consolidated Interim Statements of Profit or Loss	5
Consolidated Interim Statements of Comprehensive Income	6
Consolidated Interim Statements of Changes in Equity	7
Consolidated Interim Statements of Cash Flows	8
Notes to the Consolidated Interim Financial Statements	9 - 70



Report on Review of Interim Financial Statements

(English Translation of a Report Originally Issued in Korean)

To the Shareholders and Board of Directors of
LG Chem, Ltd.

Reviewed Financial Statements

We have reviewed the accompanying consolidated interim financial statements of LG Chem, Ltd. and its subsidiaries (collectively referred to as the "Group"). These financial statements consist of the consolidated interim statement of financial position of the Group as at June 30, 2018, and the related consolidated interim statements of profit or loss and comprehensive income for the three-month and six-month periods ended June 30, 2018 and 2017, and consolidated interim statements of changes in equity and cash flows for the six-month periods ended June 30, 2018 and 2017, and a summary of significant accounting policies and other explanatory notes, expressed in Korean won.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated interim financial statements in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS) 1034 *Interim Financial Reporting*, and for such internal control as management determines is necessary to enable the preparation of consolidated interim financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to issue a report on these consolidated interim financial statements based on our review.

We conducted our review in accordance with quarterly or semi-annual review standards established by the Securities and Futures Commission of the Republic of Korea. A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Korean Standards on Auditing and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Samil PricewaterhouseCoopers, 100 Hangang daero, Yongsan-gu, Seoul 04386, Korea, www.samil.com

Conclusion

Based on our review, nothing has come to our attention that causes us to believe the accompanying consolidated interim financial statements are not presented fairly, in all material respects, in accordance with Korean IFRS 1034 *Interim Financial Reporting*.

Other Matters

We have audited the consolidated statement of financial position of the Group as at December 31, 2017, and the related consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for the year then ended, in accordance with Korean Standards on Auditing. We expressed an unqualified opinion on those financial statements, not presented herein, in our audit report dated March 6, 2018. The consolidated statement of financial position as at December 31, 2017, presented herein for comparative purposes, is consistent, in all material respects, with the above audited statement of financial position as at December 31, 2017.

Review standards and their application in practice vary among countries. The procedures and practices used in the Republic of Korea to review such financial statements may differ from those generally accepted and applied in other countries.

The image shows the signature of Samil PricewaterhouseCoopers in a cursive, handwritten style.

Seoul, Korea
August 14, 2018

This report is effective as of August 14, 2018, the review report date. Certain subsequent events or circumstances, which may occur between the review report date and the time of reading this report, could have a material impact on the accompanying consolidated interim financial statements and notes thereto. Accordingly, the readers of the review report should understand that there is a possibility that the above review report may have to be revised to reflect the impact of such subsequent events or circumstances, if any.

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Financial Position
June 30, 2018 (Unaudited) and December 31, 2017

<i>(in millions of Korean won)</i>	Notes	June 30, 2018 (Unaudited)	December 31, 2017
Assets			
Current assets			
Cash and cash equivalents	3, 5, 6	2,351,721	2,249,341
Trade receivables	3, 5, 7, 31	5,145,795	4,448,669
Other receivables	3, 5, 7, 31	644,181	770,776
Prepaid income taxes		270	932
Financial assets	3, 5, 8	169	-
Other current assets	13	530,905	376,814
Inventories	9	3,949,709	3,352,454
Assets held for sale	35	4,268	6,595
Total current assets		12,627,018	11,205,581
Non-current assets			
Other receivables	3, 5, 7	121,179	126,429
Financial assets	3, 5, 8	35,131	23,782
Investments in associates and joint ventures	1, 10, 33	256,686	264,096
Deferred tax assets	28	318,883	281,506
Property, plant and equipment	11	12,077,767	11,211,482
Intangible assets	12	1,857,954	1,823,155
Investment properties		1,021	1,027
Other non-current assets	13	103,643	104,163
Total non-current assets		14,772,264	13,835,640
Total assets		27,399,282	25,041,221
Liabilities			
Current liabilities			
Trade payables	3, 5, 31	2,155,719	2,014,779
Other payables	3, 5, 31	1,448,444	1,847,222
Borrowings	3, 5, 14	1,903,102	1,451,324
Provisions	15	95,622	62,940
Income tax payables	28	248,458	414,110
Other current liabilities	17	770,768	854,283
Liabilities held for sale	35	30	31
Total current liabilities		6,622,143	6,644,689
Non-current liabilities			
Other payables	3, 5	10,265	8,646
Borrowings	3, 5, 14	3,210,899	1,593,625
Financial liabilities	3, 5, 8	534	-
Provisions	15	169,599	163,476
Net defined benefit liabilities	16	251,237	180,681
Deferred tax liabilities	28	39,485	42,627
Other non-current liabilities	17	86,446	68,900
Total non-current liabilities		3,768,465	2,057,955
Total liabilities		10,390,608	8,702,644

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Financial Position
June 30, 2018 (Unaudited) and December 31, 2017

<i>(in millions of Korean won)</i>	Notes	June 30, 2018 (Unaudited)	December 31, 2017
Equity			
Share capital	1, 19	391,406	391,406
Capital surplus		2,274,386	2,274,386
Other components of equity	21	(362,676)	(362,676)
Accumulated other comprehensive income		(93,912)	(173,839)
Retained earnings	20	14,584,854	14,039,250
Equity attributable to owners of the Parent Company		<u>16,794,058</u>	<u>16,168,527</u>
Non-controlling interest		214,616	170,050
Total equity		<u>17,008,674</u>	<u>16,338,577</u>
Total liabilities and equity		<u>27,399,282</u>	<u>25,041,221</u>

The above consolidated interim statements of financial position should be read in conjunction with the accompanying notes.
 Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Profit or Loss
Three-Month and Six-Month Periods Ended June 30, 2018 and 2017 (Unaudited)

<i>(in millions of Korean won, except per share amounts)</i>	Notes	Period Ended June 30			
		2018		2017	
		(Unaudited)		(Unaudited)	
		Three months	Six months	Three months	Six months
Revenue	31, 33	7,051,853	13,605,443	6,382,062	12,868,730
Cost of sales	23, 31	(5,580,273)	(10,792,302)	(5,011,211)	(10,084,263)
Gross profit		1,471,580	2,813,141	1,370,851	2,784,467
Selling and administrative expenses	22, 23, 31	(768,289)	(1,459,009)	(643,981)	(1,260,689)
Operating profit	33	703,291	1,354,132	726,870	1,523,778
Finance income	5, 25	70,032	117,859	63,614	120,557
Finance costs	5, 25	(146,313)	(180,223)	(56,632)	(157,819)
Share of net profit of associates and joint ventures accounted for using the equity method	10	(1,200)	(457)	426	3,657
Other non-operating income	5, 26	179,852	243,804	177,983	271,059
Other non-operating expenses	5, 27	(161,410)	(237,667)	(182,667)	(333,337)
Profit before income tax	32	644,252	1,297,448	729,594	1,427,895
Income tax expense	28	(150,857)	(251,309)	(139,272)	(289,476)
Profit for the period		493,395	1,046,139	590,322	1,138,419
Profit is attributable to:					
Owners of the Parent Company		477,724	1,009,073	577,077	1,108,567
Non-controlling interests		15,671	37,066	13,245	29,852
Earnings per share attributable to the equity holders of the Parent Company (in won)	29				
Basic earnings per ordinary share		6,234	13,169	7,531	14,467
Basic earnings per preferred share		6,247	13,194	7,544	14,492
Diluted earnings per ordinary share		6,177	13,063	7,531	14,467
Diluted earnings per preferred share		6,190	13,088	7,544	14,492

The above consolidated interim statements of profit or loss should be read in conjunction with the accompanying notes.
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LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Comprehensive Income
Three-Month and Six-Month Periods Ended June 30, 2018 and 2017 (Unaudited)

	Notes	Period Ended June 30			
		2018		2017	
		(Unaudited)		(Unaudited)	
		Three months	Six months	Three months	Six months
<i>(in millions of Korean won)</i>					
Profit for the period		493,395	1,046,139	590,322	1,138,419
Other comprehensive income					
<i>Items that will not be reclassified to profit or loss</i>					
Remeasurements of net defined benefit liability	16	(2,010)	(4,673)	(2,897)	(10,218)
Gain on valuation of financial assets at fair value through other comprehensive income		1,247	3,568	-	-
Shares of remeasurements of net defined benefit liabilities of associates		(210)	(60)	2	62
Income tax relating to these items		178	2	700	2,472
<i>Items that may be subsequently reclassified to profit or loss</i>					
Exchange differences on translation of foreign operations		5,824	86,920	59,505	(52,792)
Cash flow hedge		233	233	-	-
Shares of other comprehensive income of joint ventures and associates		135	1,836	(362)	(3,521)
Changes in valuation of available-for-sale financial instruments		-	-	(1,411)	(1,329)
Income tax relating to these items		(358)	(3,689)	1,527	(1,830)
Other comprehensive income for the period, net of tax		5,039	84,137	57,064	(67,156)
Total comprehensive income for the period		498,434	1,130,276	647,386	1,071,263
Total comprehensive income for the period is attributable to:					
Owners of the Parent Company		483,143	1,085,710	629,755	1,045,463
Non-controlling interest		15,291	44,566	17,631	25,800

The above consolidated interim statements of comprehensive income should be read in conjunction with the accompanying notes.
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LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Changes in Equity
Six-Month Periods Ended June 30, 2018 and 2017 (Unaudited)

(in millions of Korean won)

	Notes	Attributable to owners of the Parent Company						Non-controlling interests	Total equity
		Share capital	Capital surplus	Other components of equity	Accumulated other comprehensive income	Retained earnings	Total		
Balance at January 1, 2017		369,500	1,157,772	(15,699)	(36,993)	12,462,772	13,937,352	113,615	14,050,967
Comprehensive income									
Profit for the period		-	-	-	-	1,108,567	1,108,567	29,852	1,138,419
Remeasurements of net defined benefit liability	16	-	-	-	-	(7,749)	(7,749)	3	(7,746)
Exchange differences on translation of foreign operations		-	-	-	(50,888)	-	(50,888)	(4,055)	(54,943)
Change in the fair value of available-for-sale financial instruments		-	-	-	(1,008)	-	(1,008)	-	(1,008)
Others		-	-	-	(3,521)	62	(3,459)	-	(3,459)
Total comprehensive income for the period		-	-	-	(55,417)	1,100,880	1,045,463	25,800	1,071,263
Transactions with owners:									
Business combination	34	21,906	1,116,614	(337,211)	-	-	801,309	-	801,309
Purchase of treasury shares	34	-	-	(2,250)	-	-	(2,250)	-	(2,250)
Dividends	30	-	-	-	-	(368,055)	(368,055)	(17,627)	(385,682)
Others		-	-	-	-	(726)	(726)	(245)	(971)
Total transactions with owners		21,906	1,116,614	(339,461)	-	(368,781)	430,278	(17,872)	412,406
Balance at June 30, 2017 (Unaudited)		391,406	2,274,386	(355,160)	(92,410)	13,194,871	15,413,093	121,543	15,534,636
Balance at January 1, 2018		391,406	2,274,386	(362,676)	(173,839)	14,039,250	16,168,527	170,050	16,338,577
Comprehensive income									
Profit for the period		-	-	-	-	1,009,073	1,009,073	37,066	1,046,139
Remeasurements of net defined benefit liability	16	-	-	-	-	(3,394)	(3,394)	-	(3,394)
Exchange differences on translation of foreign operations		-	-	-	75,795	-	75,795	7,500	83,295
Gain on valuation of financial assets at fair value through other comprehensive income		-	-	-	2,291	-	2,291	-	2,291
Others		-	-	-	2,005	(60)	1,945	-	1,945
Total comprehensive income for the period		-	-	-	80,091	1,005,619	1,085,710	44,566	1,130,276
Transactions with owners:									
Dividends	30	-	-	-	-	(460,058)	(460,058)	-	(460,058)
Others		-	-	-	(164)	43	(121)	-	(121)
Total transactions with owners		-	-	-	(164)	(460,015)	(460,179)	-	(460,179)
Balance at June 30, 2018 (Unaudited)		391,406	2,274,386	(362,676)	(93,912)	14,584,854	16,794,058	214,616	17,008,674

The above consolidated interim statements of changes in equity should be read in conjunction with the accompanying notes.
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LG Chem, Ltd. and Subsidiaries
Consolidated Interim Statements of Cash Flows
Six-Month Periods Ended June 30, 2018 and 2017 (Unaudited)

(in millions of Korean won)

	Notes	Period Ended June 30	
		2018 (Unaudited)	2017 (Unaudited)
Cash flows from operating activities			
Cash generated from operations	32	592,066	1,442,876
Interest received		21,314	13,625
Interest paid		(53,154)	(51,353)
Dividends received		9,992	10,204
Income taxes paid		(451,897)	(236,456)
Net cash inflow from operating activities		118,321	1,178,896
Cash flows from investing activities			
Decrease in other receivables		514,754	622,072
Decrease in other non-current receivables		33,950	40,300
Decrease in other current financial assets		359	-
Proceeds from disposal of investments in subsidiaries		-	343
Proceeds from disposal of investments in associates		19,499	-
Proceeds from disposal of financial assets		8,465	-
Proceeds from disposal of property, plant and equipment		217,071	8,930
Proceeds from disposal of intangible assets		1,137	7,569
Government grants received		-	29,628
Business combination, net of cash acquired		-	43,759
Proceeds from disposal of business		-	2,022
Increase in other receivables		(465,157)	(261,100)
Increase in other non-current receivables		(16,537)	(47,219)
Acquisition of investments in associates and joint ventures		(2,061)	(28,720)
Acquisition of financial assets		(15,187)	(1,709)
Acquisition of property, plant and equipment		(1,804,602)	(762,869)
Acquisition of intangible assets		(49,688)	(34,109)
Net cash inflow (outflow) from investing activities		(1,557,997)	(381,103)
Cash flows from financing activities			
Proceeds from borrowings		2,206,602	1,144,734
Repayments of borrowings		(207,199)	(1,289,363)
Dividends paid		(460,058)	(385,682)
Purchase of treasury shares		-	(2,250)
Net cash outflow from financing activities		1,539,345	(532,561)
Net increase in cash and cash equivalents			
Cash and cash equivalents at the beginning of the period		99,669	265,232
Cash and cash equivalents at the beginning of the period		2,249,341	1,474,367
Effects of exchange rate changes on cash and cash equivalents		2,711	(9,661)
Cash and cash equivalents at the end of the period		2,351,721	1,729,938

The above consolidated interim statements of cash flows should be read in conjunction with the accompanying notes.
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LG Chem, Ltd. and Subsidiaries

Notes to the Consolidated Interim Financial Statements

June 30, 2018 and 2017 (Unaudited), and December 31, 2017

1. General Information

General information about LG Chem, Ltd. (the Parent Company), the controlling company in accordance with Korean IFRS 1110 *Consolidated Financial Statements*, and its subsidiaries (collectively referred to as "the Group") is as follows:

1.1 The Parent Company

The Parent Company was spun off on April 1, 2001, from LG Chem Investment Ltd. (now LG Corp., formerly LG Chemical Ltd.).

As at June 30, 2018, the Parent Company has its manufacturing facilities in Yeosu, Daesan, Ochang, Cheongju, Ulsan, Naju, Iksan, Paju, Osong, Onsan and Gimcheon.

The Parent Company is authorized to issue 292 million shares of ordinary shares with par value of ₩5,000 per share. As at June 30, 2018, the Parent Company has issued 70,592,343 ordinary shares (₩352,962 million) and 7,688,800 preferred shares (₩38,444 million). The largest shareholder of the Parent Company is LG Corp., which owns 33.34% of the Parent Company's ordinary shares. Preferred shareholders have no voting rights but are entitled to receive dividends at a rate 1% more than those paid to ordinary shareholders.

1.2 Business Overview

The Group is engaged in Basic materials & Chemicals business, Energy solutions, IT & Electronics materials and Advanced materials business, and also engaged in Life Sciences business acquired through a merger with LG Life Sciences, Ltd. in January 2017. In addition, the Parent Company acquired 100% shares of FarmHannong Co., Ltd., in April 2016, which is engaged to manufacture crop protection products, seeds, fertilizers and others.

The Basic materials & Chemicals business includes production of olefin petrochemicals, such as ethylene, propylene, butadiene from Naphtha, and aromatic petrochemicals such as benzene. It also includes production of synthetic resin and synthetic components from olefin, and aromatic petrochemicals. This business bears characteristics of a large-volume process industry. The Group's major products are PE, PP, BPA, ABS, EP, PVC, plasticizers, acrylic, SAP, synthetic rubber, a special resin, and others.

The Energy solutions business manufactures and supplies batteries ranging from IT & New application batteries for mobile phones and laptop computers, to automotive batteries for electric vehicles and ESS batteries. Demand of small sized batteries for new applications such as electric tools and electric driving devices as well as traditional IT devices is increasing recently and the automotive battery business is also expected to expand rapidly due to an increasing demand of the batteries in associated with enhanced environment regulation in developed countries. Demand for ESS is expanding with an increasing importance of efficient usage of electricity and generation of renewable energy.

The IT & Electronics material business manufactures and supplies various kinds of IT materials such as polarizer, glass substrate, OLED film, semiconductor materials and RO membranes, which will be the next growth engine for future. Advanced materials business manufactures and supplies display and battery materials for LCD Photoresist, OLED materials, battery materials and others.

The Life Sciences business manufactures and supplies pharmaceutical products, such as quinolone antibiotics 'Factive', human growth hormone 'Eutropin', diabetes drug 'Zemiglo', bovine somatotropin 'Boostin', hyaluronic acid filler 'YVOIRE' and others, as well as fine chemical products, such as herbicide 'PYANCHOR' for rice farming and others.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

FarmHannong Co., Ltd., subsidiary of the Parent Company, manufactures and sells crop protection products, seeds, fertilizers and others. The crop protection business provides high value products such as environmentally-friendly pesticide. The fertilizer business leads developing a next generation fertilizers such as eco-friendly organic and functional fertilizers, and potting soil. The seed business puts priority on retaining various genetic resources and developing rare breeds with high profit in order to remain competitive in a future food industry.

1.3 Consolidated Subsidiaries, Associates and Joint Ventures

June 30, 2018				
	Percentage of ownership (%)	Business location	Closing month	Business activities
Consolidated subsidiaries				
Ningbo LG Yongxing Chemical Co., Ltd. ¹	75	China	December	ABS/SBL manufacturing and sales
Ningbo Zhenhai LG Yongxing Trade Co., Ltd. ¹	75	China	December	ABS sales
LG Chem HK Ltd.	100	Hong Kong	December	Sales and trading
LG Chem America, Inc. ²	100	USA	December	Sales and trading
LG Chemical India Pvt. Ltd. ³	100	India	December	Synthetic resin manufacturing and sales
LG Polymers India Pvt. Ltd. ³	100	India	December	PS manufacturing
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd. ⁴	100	China	December	Battery/ Polarizer Manufacturing and sales
LG Chem (Taiwan), Ltd.	100	Taiwan	December	Polarizer manufacturing and sales
LG Chem Display Materials (Beijing) Co., Ltd.	100	China	December	Polarizer manufacturing
Tianjin LG Bohai Chemical Co., Ltd. ⁵	75	China	December	PVC, VCM, EDC manufacturing and sales
Tianjin LG BOTIAN Chemical Co., Ltd. ⁵	56	China	December	SBS manufacturing and sales
LG Chem (China) Investment Co., Ltd. ⁶	100	China	December	China holding company
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	100	China	December	ABS/EP manufacturing and sales
LG Chem Europe GmbH	100	Germany	December	Sales and trading
LG Chem Poland Sp. z o.o.	100	Poland	December	Polarizer manufacturing
LG Chem Michigan Inc. ²	100	USA	December	Automotive battery research and manufacturing
LGC Petrochemical India Private Ltd.	100	India	December	Synthetic resin manufacturing and sales
HAENGBOKNURI CO., LTD.	100	Korea	December	Facility management and general cleaning
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	100	Turkey	December	Sales and trading
LG Chem Japan Co., Ltd.	100	Japan	December	Sales and trading
LG NanoH2O, Inc. ²	100	USA	December	Water processing membrane research and manufacturing
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	100	China	December	Water processing membrane research and manufacturing
Nanjing LG Chem New Energy Battery Co., Ltd. ⁷	50	China	December	Automotive battery manufacturing and sales
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	100	China	December	EP manufacturing and sales
LG Chem Wroclaw Energy sp. z o.o. ⁸	100	Poland	December	Automotive battery research and manufacturing
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	70	China	December	ABS manufacturing and sales
FarmHannong Co., Ltd. ⁹	100	Korea	December	Agricultural pesticide manufacturing
FarmHwaong Co., Ltd. ^{9,10}	68	Korea	December	Vegetables and fruit farming
Farm Hannong (Heilongjiang) Chemical Co., Ltd. ⁹	100	China	December	Agricultural pesticide manufacturing
LG Life Sciences India Pvt. Ltd.	100	India	December	Pharmaceutical products sales

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

LG Life Sciences (Beijing) Co., Ltd.	100	China	December	Pharmaceutical products sales
LG Life Sciences (Thailand) Ltd.	100	Thailand	December	Pharmaceutical products sales
LG Life Sciences America Inc. ⁶	100	USA	December	Agricultural pesticide sales
Sarangnuri Ltd.	100	Korea	December	Pharmaceutical products packaging
LG Chem Hai Phong Vietnam Co., Ltd.	100	Vietnam	December	Polarizer manufacturing and sales
LG Chem Australia Pty Ltd.	100	Australia	December	ESS sales
LG Chem Mexico S.A. de C.V. ¹¹	100	Mexico	December	Sales and trading
FarmHannong(Thailand) Ltd. ^{9,12}	100	Thailand	December	Research and development on seeds
LG Chem Hai Phong engineering Plastics Ltd. ¹³	100	Vietnam	December	EP manufacturing and sales
LG Chem (Guangzhou) Information & Electronics Materials Co.,Ltd. ¹⁴	100	China	December	Polarizer manufacturing

Associates

LG Holdings (HK) Ltd.	26	Hong Kong	December	Sales and trading
TECWIN Co., Ltd.	21	Korea	December	Environment solution and Construction of chemical plant
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA. ¹⁵	100	Brazil	December	Sales and trading
LG Chem Malaysia SDN.BHD. ¹⁵	100	Malaysia	December	Sales and trading
LG Fuel Cell Systems Inc.	23	USA	December	Power fuel cell research
FJ Composite Material Co., Ltd.	33	Japan	May	Heat diffuser research and manufacturing
WUXI CL New Energy Technology Ltd. ¹⁶	30	China	December	ESS manufacturing and sales
LG Life Sciences Poland Ltd. ¹⁵	100	Poland	December	Pharmaceutical products sales
Combustion Synthesis Co., Ltd. ¹⁷	30	Japan	March	Nitride-based ceramic powder production

Joint ventures

LG VINA Chemical Co., Ltd.	40	Vietnam	December	DOP production and sales
HL Greenpower Co., Ltd.	49	Korea	December	Automotive battery manufacturing and sales
SEETEC Co., Ltd.	50	Korea	December	Plant utility and distribution, research assistance service

¹ As at June 30, 2018, Ningbo LG Yongxing Chemical Co., Ltd. owns 100% of Ningbo Zhenhai LG Yongxing Trading Co., Ltd.'s shares.

² During the period ended June 30, 2018, LG Chem Power Inc. was merged into LG Chem Michigan Inc. In addition, LG Chem Michigan Inc. owns 100% of LG Chem America, Inc. and LG NanoH20, Inc.'s shares.

³ As at June 30, 2018, LG Chemical India Pvt. Ltd. owns 100% of LG Polymers India Pvt. Ltd.'s shares.

⁴ During the period ended June 30, 2018, the Group acquired additional shares of LG Chem (Nanjing) Information & Electronics Materials Co.,Ltd. for ₩ 139,762 million.

⁵ As at June 30, 2018, Tianjin LG Bohai Chemical Co.,Ltd. owns 20.30% shares of Tianjin LG Botian Chemical Co.,Ltd.

⁶ During the period ended June 30, 2018, the Group acquired additional shares of LG Chem (China) Investment Co.,Ltd. for ₩ 29,228 million.

⁷ Although the Group owns less than 50% of the voting rights of Nanjing LG Chem New Energy Battery Co., Ltd., the Group is considered to have control over the investee as the Group can exercise the majority voting rights in its decision-making process in accordance with the shareholders' agreement.

⁸ During the period ended June 30, 2018, the Group acquired additional shares of LG Chem Wroclaw Energy sp. Z o.o. for ₩ 152,506 million.

⁹ As at June 30, 2018, FarmHannong Co., Ltd. owns 100% of Farm Hannong (Heilongjiang) Chemical Co., Ltd., LG Life Sciences America Inc. and FarmHannong(Thailand) Ltd., and also holds 68.36% of FarmHwaong Co., Ltd.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

¹⁰ As at June 30, 2018, FarmHwaong Co., Ltd.'s assets and liabilities are classified as assets and liabilities held for sale (Note 35).

¹¹ During the period ended June 30, 2018, the Group newly acquired 100% shares of LG Chem Mexico S.A. de C.V. for ₩ 394 million.

¹² During the period ended June 30, 2018, the Group newly acquired 100% shares of FarmHannong(Thailand) Ltd. for ₩ 2,586 million.

¹³ During the period ended June 30, 2018, the Group newly acquired 100% shares of LG Chem Hai Phong Engineering Plastics Ltd. for ₩ 15,344 million.

¹⁴ During the period ended June 30, 2018, the Group newly acquired 100% shares of LG Chem (Guangzhou) Information & electronics Materials Co.,Ltd. for ₩ 54,109 million.

¹⁵ Classified as an investment in associate due to its small size.

¹⁶ During the period ended June 30, 2018, the Group acquired additional shares of WUXI CL New Energy Technology Ltd. for ₩ 558 million.

¹⁷ During the period ended June 30, 2018, the Group newly acquired shares of Combustion Synthesis Co., Ltd. for ₩ 1,503 million.

1.4 Summarized Financial Information of Subsidiaries, Associates and Joint Ventures

Summarized financial information (before elimination of intercompany transactions and adjustments for differences in accounting policies) of subsidiaries, associates and joint ventures is as follows:

(in millions of Korean won)

	June 30, 2018				
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the period
Subsidiaries					
Ningbo LG Yongxing Chemical Co., Ltd.	1,111,347	417,644	693,703	1,100,282	114,922
Ningbo Zhenhai LG Yongxing Trade Co., Ltd.	5,547	1,629	3,918	14,036	301
LG Chem HK Ltd.	88,514	70,431	18,083	238,173	214
LG Chem America, Inc.	234,513	212,573	21,940	380,099	1,517
LG Chemical India Pvt. Ltd.	32,718	26	32,692	-	12
LG Polymers India Pvt. Ltd.	141,505	58,949	82,556	126,527	5,328
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	113,460	52,291	61,169	110,085	(6,222)
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd.	2,975,407	1,687,375	1,288,032	1,538,925	(313)
LG Chem (Taiwan), Ltd.	116,780	56,492	60,288	82,043	(267)
LG Chem Display Materials (Beijing) Co., Ltd.	42,588	14,775	27,813	42,659	939
Tianjin LG Bohai Chemical Co., Ltd.	320,752	215,936	104,816	268,828	7,309
Tianjin LG BOTIAN Chemical Co., Ltd.	45,980	40,248	5,732	77,958	3,401
LG Chem (China) Investment Co., Ltd.	391,892	187,900	203,992	28,057	2,251
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	68,231	24,022	44,209	44,224	(3,055)
LG Chem Europe GmbH	282,234	249,000	33,234	338,485	3,639
LG Chem Poland Sp. z o.o.	66,477	32,158	34,319	64,011	1,390
LG Chem Michigan Inc.	414,629	264,763	149,866	156,450	7,829
LGC Petrochemical India Private Ltd.	2,786	503	2,283	2,203	225
HAENGBOKNURI CO., LTD.	2,699	1,147	1,552	4,089	198
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	9,737	8,074	1,663	15,713	370
LG Chem Japan Co., Ltd.	4,062	564	3,498	2,957	293
LG NanoH2O, Inc. ¹	13,727	2,438	11,289	9,366	1,488
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	4,233	1,215	3,018	-	(12)
Nanjing LG Chem New Energy Battery Co., Ltd.	591,938	480,654	111,284	262,793	5,188
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	37,495	9,136	28,359	17,545	(2,150)

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

LG Chem Wroclaw Energy sp. z o.o.	515,581	274,204	241,377	49,875	(37,019)
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	302,079	210,269	91,810	200,618	6,199
FarmHannong Co., Ltd. ¹	1,263,393	696,185	567,208	424,502	36,364
LG Life Sciences India Pvt. Ltd.	6,180	4,173	2,007	5,565	(162)
LG Life Sciences (Beijing) Co., Ltd.	1,144	43	1,101	502	(111)
LG Life Sciences (Thailand) Ltd.	12,375	6,527	5,848	13,426	2,329
Sarangnuri Ltd.	265	52	213	157	46
LG Chem Hai Phong Vietnam Company Ltd.	13,131	6,808	6,323	10,159	2,898
LG Chem Australia Pty Ltd.	726	91	635	812	98
LG Chem Mexico S.A. de C.V.	503	47	456	301	45
LG Chem Hai Phong engineering Plastics Ltd.	15,849	36	15,813	-	(50)
LG Chem (Guangzhou) Information & electronics Materials Co.,Ltd.	54,353	28	54,325	-	4

Associates

LG Holdings (HK) Ltd.	249,538	43,027	206,511	25,129	10,503
TECWIN Co., Ltd.	79,106	32,206	46,900	-	-
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	186	131	55	833	20
LG Chem Malaysia SDN.BHD.	281	22	259	308	8
LG Fuel Cell Systems Inc.	24,605	6,772	17,833	3,030	(25,398)
FJ Composite Material Co., Ltd.	7,197	2,899	4,298	763	(179)
WUXI CL New Energy Technology Ltd.	10,647	5,641	5,006	-	(237)
LG Life Sciences Poland Ltd.	128	92	36	86	(23)
Combustion Synthesis Co., Ltd.	1,277	28	1,249	93	(235)

Joint ventures

LG VINA Chemical Co., Ltd.	20,105	13,168	6,937	28,545	407
HL Greenpower Co., Ltd.	196,244	158,188	38,056	114,126	181
SEETEC Co., Ltd.	333,485	45,866	287,619	245,892	7,184

¹ Included its subsidiaries' financial information from an intermediate parent perspective and not applied adjustments of a fair value evaluation due to the business combination in the consolidated financial statements.

(in millions of Korean won)

	December 31, 2017			2017	
	Assets	Liabilities	Equity	Revenue	Profit (loss) for the period
Subsidiaries					
Ningbo LG Yongxing Chemical Co., Ltd.	1,007,732	449,049	558,683	1,032,967	91,198
Ningbo Zhenhai LG Yongxing Trade Co., Ltd.	10,420	6,927	3,493	21,684	454
LG Chem HK Ltd.	96,752	79,690	17,062	256,931	342
LG Chem America, Inc.	191,011	171,566	19,445	389,815	3,688
LG Chemical India Pvt. Ltd.	32,716	5	32,711	-	19
LG Polymers India Pvt. Ltd.	93,999	15,651	78,348	123,943	7,514
LG Chemical (Guangzhou) Engineering Plastics Co., Ltd.	109,443	44,342	65,101	93,409	1,918
LG Chem (Nanjing) Information & Electronics Materials Co., Ltd.	2,410,548	1,301,136	1,109,412	1,344,654	56,278
LG Chem (Taiwan), Ltd.	122,310	60,462	61,848	93,998	4,278
LG Chem Display Materials (Beijing) Co., Ltd.	40,158	14,196	25,962	33,293	1,681
Tianjin LG Bohai Chemical Co., Ltd.	349,416	255,165	94,251	261,005	13,465
Tianjin LG BOTIAN Chemical Co., Ltd.	48,438	46,298	2,140	82,102	(6,725)
LG Chem (China) Investment Co., Ltd.	324,605	153,146	171,459	29,968	3,046
LG Chem (Tianjin) Engineering Plastics Co., Ltd.	64,708	19,057	45,651	43,117	(166)

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

LG Chem Europe GmbH	231,237	202,012	29,225	254,604	8,810
LG Chem Poland Sp. z o.o.	64,841	30,877	33,964	44,812	1,527
LG Chem Michigan Inc.	232,301	138,085	94,216	105,505	11,426
LG Chem Power Inc.	18,640	6,013	12,627	21,952	1,985
LGC Petrochemical India Private Ltd.	2,502	390	2,112	2,149	187
HAENGBOKNURI CO., LTD.	2,292	939	1,353	3,354	3
LG CHEM TK Kimya SANAYI VE TIC. Ltd. STI.	6,618	5,113	1,505	11,463	207
LG Chem Japan Co., Ltd.	3,462	470	2,992	3,070	334
LG NanoH2O, Inc. ¹	10,269	971	9,298	8,366	1,428
NanoH2O (Jiangsu) Water Processing Technology Co. Ltd.	4,103	1,173	2,930	-	(1,831)
Nanjing LG Chem New Energy Battery Co., Ltd.	478,421	375,998	102,423	87,623	8,335
LG Chem (Chongqing) Engineering Plastics Co., Ltd.	35,028	5,559	29,469	8,974	(2,219)
LG Chem Wroclaw Energy sp. z o.o.	330,033	202,131	127,902	10,256	1,879
LG Chem(HUIZHOU) Petrochemical Co., Ltd.	290,840	208,170	82,670	170,803	1,500
FarmHannong Co., Ltd. ¹	1,152,122	621,754	530,368	439,625	35,072
LG Life Sciences India Pvt. Ltd.	7,143	4,923	2,220	4,851	(910)
LG Life Sciences (Beijing) Co., Ltd.	1,191	20	1,171	399	(7)
LG Life Sciences (Thailand) Ltd.	10,008	6,595	3,413	10,305	1,321
Sarangnuri Ltd.	227	60	167	137	35
LG Chem Hai Phong Vietnam Company Ltd.	4,480	1,266	3,214	-	-
LG Chem Australia Pty Ltd.	559	12	547	-	-
Associates					
LG Holdings (HK) Ltd.	249,896	60,681	189,215	23,624	7,150
TECWIN Co., Ltd.	79,106	32,206	46,900	-	-
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	164	123	41	997	(29)
LG Chem Malaysia SDN.BHD.	252	19	233	288	10
LG Fuel Cell Systems Inc.	48,444	4,701	43,743	987	(20,422)
FJ Composite Material Co., Ltd.	7,052	2,858	4,194	378	(255)
WUXI CL New Energy Technology Ltd.	4,521	1,180	3,341	-	-
LG Life Sciences Poland Ltd.	124	72	52	-	-
Joint ventures					
LG VINA Chemical Co., Ltd.	17,539	9,242	8,297	24,429	1,012
HL Greenpower Co., Ltd.	190,881	151,728	39,153	200,452	2,403
SEETEC Co., Ltd.	344,189	43,751	300,438	242,790	9,349

¹ Included its subsidiaries' financial information from an intermediate parent perspective and not applied adjustments of a fair value evaluation due to the business combination in the consolidated financial statements.

1.5 Changes in Scope for Consolidation

Subsidiaries newly included in the consolidation for the six-month period ended June 30, 2018, are as follows:

Subsidiary	Reason
LG Chem Mexico S.A. de C.V.	Newly established
FarmHannong(Thailand) Ltd.	Newly established
LG Chem Hai Phong Engineering Plastics Ltd.	Newly established
LG CHEM (Guangzhou) Information & Electronics Materials Co., Ltd.	Newly established

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Subsidiaries excluded from the consolidation for the six-month period ended June 30, 2018, are as follows:

Subsidiary	Reason
LG Chem Power Inc.	Merged into LG Chem Michigan Inc.

2. Summary of Significant Accounting Policies

The principal accounting policies applied in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the periods presented, unless otherwise stated.

2.1 Basis of Preparation

The Group maintains its accounting records in Korean won and prepares statutory financial statements in the Korean language (Hangul) in accordance with International Financial Reporting Standards as adopted by the Republic of Korea (Korean IFRS). The accompanying consolidated interim financial statements have been condensed, restructured and translated into English from the Korean language financial statements.

The Group's condensed consolidated interim financial statements for the six-month period ended June 30, 2018, have been prepared in accordance with Korean IFRS 1034 Interim Financial Reporting. The condensed consolidated interim financial statements have been prepared in accordance with Korean IFRS which is effective or early adopted as at June 30, 2018.

(a) New and amended standards adopted by the Group

The Group has applied the following standards and amendments for the first time for their annual reporting period commencing January 1, 2018.

- Korean IFRS 1109 *Financial Instruments*

The Group has applied Korean IFRS 1109 *Financial Instruments* on January 1, 2018, the date of initial application. In accordance with the transitional provisions in Korean IFRS 1109, comparative figures have not been restated, and the impact of the change in accounting policy following the adoption of IFRS 9 are recognized in the opening balance sheet on January 1, 2018. The application of the standard has following impacts on the financial statements.

On the date of initial application, January 1, 2018, the financial instruments of the Group with any reclassifications noted, were as follows:

<i>(in millions of Korean won)</i>	Measurement category		Carrying amount		
	Korean IFRS 1039	Korean IFRS 1109	Korean IFRS 1039	Korean IFRS 1109	Difference
Current financial assets					
		Amortized costs	4,448,669	4,218,196	(230,473)
Trade receivables	Amortized costs	Fair value through other comprehensive income	-	230,473	230,473
Cash and cash equivalents	Amortized costs	Amortized costs	2,249,341	2,249,341	-

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Other receivables	Amortized costs	Amortized costs	770,776	770,776	-
Non-current financial assets					
Equity instruments	Available-for-sale financial assets	Fair value through other comprehensive income	23,782	16,982	(6,800)
Debt instruments	Available-for-sale financial assets	Fair value through profit or loss	-	6,800	6,800
Other receivables	Amortized costs	Amortized costs	126,429	126,429	-

(i) Financial assets at amortized cost classified as fair value through other comprehensive income

Certain trade receivables were reclassified from financial assets at amortized cost to fair value through other comprehensive income, as the Group's business model is achieved both by collecting contractual cash flows and selling of these assets. The contractual cash flows of these investments are solely principal and interest. As a result, debt instruments with a fair value of ₩ 230,473 million were reclassified from financial assets at amortized cost to financial assets at fair value through other comprehensive income on January 1, 2018.

(ii) Reclassification of equity investments from available-for-sale to fair value through other comprehensive income

The Group elected to present changes in the fair value of all its equity investments previously classified as available-for-sale, because these investments are not held for trading, in other comprehensive income. As a result, assets with a fair value of ₩16,982 million were reclassified from available-for-sale financial assets to financial assets at fair value through other comprehensive income. As at January 1, 2018, as related accumulated other comprehensive income of ₩ 418 million were not reclassified to profit or loss even though these assets are disposed of.

(iii) Reclassification of equity investments from available-for-sale to fair value through profit or loss

As at January 1, 2018, the Group classified equity investments, amounted of ₩6,800 million from available-for-sale to fair value through profit or loss, and did not classified to amortized costs as their cash flows are not solely payment of principal.

(iv) Other financial assets

Equity securities held for trading and contingent consideration are all required to be held as fair value through profit or loss under Korean IFRS 1109. There was no impact on the amounts recognized in relation to these assets from the adoption of Korean IFRS 1109.

- Korean IFRS 1115 *Revenue from Contracts with Customers*

The Group has elected to apply Korean IFRS 1115 *Revenue from Contracts with Customers*. In accordance with the transition provisions in Korean IFRS 1115, comparative figures have not been restated. The Group does not expect the amendment to have a significant impact on the financial statements.

- Amendments to Korean IFRS 1028 *Investments in Associates and Joint Ventures*
- Amendments to Korean IFRS 1102 *Share-based Payment*
- Enactment of Interpretation 2122 *Foreign Currency Transaction and Advance Consideration*
- Amendments to Korean IFRS 1040 *Investment Property*

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(b) New standards and interpretations not adopted by the Group

Certain new accounting standards and interpretations that have been published that are not mandatory for annual reporting period commencing January 1, 2018 and have not been early adopted by the Group are set out below.

- Enactment of Korean IFRS 1116 *Leases*

2.2 Significant Accounting Policies

Significant accounting policies and method of computation used in the preparation of the consolidated interim financial statements are consistent with those of the consolidated financial statements for the year ended December 31, 2017, except for the changes due to the application of amendment and enactments of standards described in Note 2.1.(a) and the ones described below.

2.2.1 Income Tax Expense

Income tax expense for the interim period is recognized based on management's best estimate of the weighted average annual income tax rate expected for the full financial year. The estimated average annual tax rate is applied to the pre-tax income.

2.2.2 Financial Assets

(a) Classification

From January 1, 2018, the Group classifies its financial assets in the following measurement categories:

- those to be measured subsequently at fair value (either through other comprehensive income, or through profit or loss), and
- those to be measured at amortized cost

The classification depends on the entity's business model for managing the financial assets and the contractual terms of the cash flows.

For financial assets measured at fair value, gains and losses are recorded in either profit or loss or other comprehensive income. For investments in debt instruments, this will depend on the business model in which the investment is held. The Group reclassifies debt investments only when its business model for managing those assets changes.

For investments in equity instruments that are not held for trading, the Group presents subsequent changes in fair value of the investments in equity instruments in other comprehensive income at initial recognition.

(b) Measurement

At initial recognition, the Group measures a financial asset, in the case of a financial asset not at fair value through profit or loss, at its fair value plus transaction costs that are directly attributable to the acquisition of the financial asset or the issuance of the financial liabilities. Transaction costs of financial assets carried at fair value through profit or loss are expensed in profit or loss.

Hybrid (combined) contracts with embedded derivatives are considered in their entirety when determining whether their cash flows are solely payment of principal and interest.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Debt instruments

Subsequent measurement of debt instruments depends on the Group's business model for managing the asset and the cash flow characteristics of the asset. The Group classifies its debt instruments into one of the following three measurement categories:

- **Amortized cost:** Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. A gain or loss on a debt investment that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets using the effective interest rate method is included in 'finance income'.
- **Fair value through other comprehensive income:** Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal, are measured at fair value through other comprehensive income. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment loss (and reversal of impairment loss), interest income and foreign exchange gains and losses which are recognized in profit or loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in other comprehensive income is reclassified from equity to profit or loss. Interest income from these financial assets using the effective interest rate method is included in 'finance income'. Foreign exchange gains and losses are presented in 'finance income or finance costs' and impairment loss is presented in 'other non-operating expenses'.
- **Fair value through profit or loss:** Assets that do not meet the criteria for amortized cost or fair value through other comprehensive income are measured at fair value through profit or loss. A gain or loss on a debt investment that is subsequently measured at fair value through profit or loss and is not part of a hedging relationship is recognized in profit or loss and presented net in the statement of profit or loss within 'other income or other expenses' in the period in which it arises.

Equity instruments

The Group subsequently measures all equity investments at fair value. Fair value gains and losses on equity investments in other comprehensive income is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment. Dividends from such investments continue to be recognized in profit or loss as 'finance income' when the Group's right to receive payments is established.

Changes in the fair value of financial assets at fair value through profit or loss are recognized in 'other income or other expenses' in the statement of profit or loss as applicable. Impairment loss (and reversal of impairment loss) on equity investments measured at fair value through other comprehensive income are not reported separately from other changes in fair value.

(c) Impairment

The Group assesses the expected credit losses associated with its debt instruments carried at amortized cost or fair value through other comprehensive income on the basis of future prospects. The impairment methodology applied depends on whether there has been a significant increase in credit risk. For trade receivables, the Group applies the simplified approach, which requires expected lifetime losses to be recognized from initial recognition of the receivables.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

2.2.3 Revenue Recognition

From January 1, 2018, the Group has applied Korean IFRS 1115 *Revenue from Contracts with Customers*.

Korean IFRS 1018 and other previous revenue standard identify revenue as income that arises in the course of ordinary activities of an entity and provides guidance on a variety of different types of revenue, such as, sale of goods, rendering of services, interest, dividends, royalties and construction contracts. However, the new standard is based on the principle that revenue is recognized when control of a good or service transfers to a customer so the notion of the control replaces the existing notion of risks and rewards. A new five-step process must be applied before revenue from contract with customers can be recognized:

- Identify contracts with customers
- Identify the separate performance obligation
- Determine the transaction price of the contract
- Allocate the transaction price to each of the separate performance obligations, and
- Recognize the revenue as each performance obligation is satisfied.

The adoption of Korean IFRS 1115 does not have a significant impact on the financial statements.

(a) Identify performance obligation

With regard to the contract of selling products to the customer, the Group identifies the services provided separately to the customer as a different performance obligation. When the Group makes a sales contract with the customer, the standard warranty period for each product and customer is set up considering the legal warranty period. Even though the standard warranty period has been expired, the warranties are recognized as a revenue and is identified as a separate performance obligation when the Group provides additional warranties for the quality of product or when the customer has an option to purchase additional warranties separately.

(b) A performance obligation satisfied at a point in time

The revenue from the sale of goods is recognized at the time they are delivered to the customer. Delivery occurs when the products have been shipped to the specific location, the risks of obsolescence and loss have been transferred to the customer, and either the customer has accepted the products in accordance with the sales contract, the acceptance provisions have lapsed, or the group has objective evidence that all criteria for acceptance have been satisfied.

The goods are often sold with volume discounts, and it is the group's policy to sell its products to the customer with a right of return. Accumulated experience is used to estimate for the discounts and the refund, and the volume discounts is calculated based on the periodical forecast sales. The warranty provision for the sales and refund is reasonably estimated and recognized properly.

(c) Refunds

A gross contract liability for the expected refunds to customers is recognized as adjustment to revenue, and the Group has a right to recover the product from the customer where the customer exercises his right of return and recognizes an asset and a corresponding adjustment to cost of sales. A right to recover the products is measured at former carrying amount of the product less the costs to recover the products.

(d) Significant financing component

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

As a practical expedient, the Group need not adjust the promised amount of consideration for the effects of a significant financing component as the period between when the entity transfers a promised good or service to a customer and when the customer pays for that good or service is generally one year or less.

3. Financial Risk Management

3.1 Financial Risk Factors

The Group's activities expose it to a variety of financial risks: market risk, credit risk and liquidity risk. The Group's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the financial performance of the Group. The Group uses derivative financial instruments to hedge certain risk exposures.

Risk management is carried out by the Group's finance team under policies approved by the Corporate Management Committee. The finance team identifies, evaluates and hedges financial risks in close co-operation with the Group's operating units. The Corporate Management Committee reviews and approves written principles for overall risk management, as well as written policies covering specific areas, such as foreign exchange risk, interest rate risk, and credit risk, use of derivative financial instruments and non-derivative financial instruments, investment of excess liquidity.

(1) Market risk

1) Foreign exchange risk

The Group operates internationally and is exposed to foreign exchange risk arising from foreign currency exposures, primarily with respect to the US dollar. Foreign exchange risk arises from future commercial transactions, recognized assets and liabilities.

Management has set up a policy to require group companies to manage their foreign exchange risk against their functional currency. The Group manages maximum loss for currency risk exposures within acceptable range by using currency risk management model and hires employees who are exclusively responsible for currency risk management.

The Group has certain investments in foreign operations, whose net assets are exposed to foreign currency translation risk. Currency exposure arising from the net assets of the Group's foreign operations is managed primarily through borrowings denominated in the relevant foreign currencies.

As at June 30, 2018 and December 31, 2017, the Group's monetary assets and liabilities denominated in currencies other than its functional currency, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018		December 31, 2017	
	Assets	Liabilities	Assets	Liabilities
USD	2,343,579	2,046,060	2,337,448	1,561,175
EUR	232,491	404,318	174,464	21,226
JPY	21,420	110,028	36,304	109,162
CNY and others	68,739	5,030	60,616	1,512

As at June 30, 2018 and December 31, 2017, if the Group's functional currency had weakened / strengthened by 10% against the US dollar with all other variables held constant, profit before

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

income tax would have been affected as follows:

<i>(in millions of Korean won)</i>	June 30, 2018		December 31, 2017	
	10% Increase	10% Decrease	10% Increase	10% Decrease
USD	29,752	(29,752)	77,627	(77,627)

The above sensitivity analysis has been performed for monetary assets and liabilities denominated in foreign currencies other than the Group's functional currency at the reporting date.

2) Price risk

The Group is exposed to equity securities price risk arises from investments held by the Group and classified in the consolidated interim statement of financial position as non-current financial assets. The Group's equity investments are publicly traded and are related to the KOSPI index.

The table below summarizes the impact of increases/decreases of the listed stock price index on the Group's equity before tax effects as at June 30, 2018 and December 31, 2017. The analysis is based on the assumption that the equity index has increased/decreased by 10% with all other variables held constant, and that all the Group's equity instruments moved in line with the index.

<i>(in millions of Korean won)</i>	June 30, 2018		December 31, 2017	
	10% Increase	10% Decrease	10% Increase	10% Decrease
KOSPI	-	-	553	(553)

3) Interest rate risk

Interest rate risk is defined as the risk that the interest income or expenses arising from deposits and borrowings will fluctuate because of changes in future market interest rate. The interest rate risk mainly arises through floating rate deposits and borrowings. The objective of interest rate risk management lies in maximizing corporate value by minimizing uncertainty in interest rates fluctuations and net interest expense.

The Group adequately minimizes risks from interest rate fluctuations through various policies, such as sharing excess cash within the Group (internal cash sharing) to minimize external borrowings, avoiding high rate borrowings, reforming capital structure, managing an appropriate ratio of fixed rate borrowings and floating rate borrowings, monitoring a fluctuation of domestic and foreign interest rates daily, weekly and monthly, establishing alternatives, and balancing floating rate short-term borrowings with floating rate deposits.

The table below summarizes the impact of increases/decreases of interest rate on the Group's equity and post-tax profit for the six-month periods ended June 30, 2018 and 2017. The analysis is based on the assumption that the interest rate has increased/decreased by 1% (100 basis points) with all other variables held constant.

<i>(in millions of Korean won)</i>	Impact on post-tax profit		Impact on equity	
	2018	2017	2018	2017
Increase	(16,522)	(14,521)	(16,522)	(14,521)
Decrease	16,522	14,521	16,522	14,521

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(2) Credit risk

Credit risk is managed on the Group basis. Credit risk arises from debt instruments at amortized cost or fair value through other comprehensive income. The maximum exposure to credit risk as at June 30, 2018 and December 31, 2017, is as follows:

(in millions of Korean won)

	June 30, 2018		
	Amount before allowance	Impairment allowance	Carrying amount (maximum exposure)
Amortized cost	8,088,010	(11,264)	8,076,746
Fair value through other comprehensive income	186,089	-	186,089
	<u>8,274,099</u>	<u>(11,264)</u>	<u>8,262,835</u>

(in millions of Korean won)

	December 31, 2017		
	Amount before allowance	Impairment allowance	Carrying amount (maximum exposure)
Amortized cost	7,373,206	(8,511)	7,364,695
Fair value through other comprehensive income	230,473	-	230,473
Total	<u>7,603,679</u>	<u>(8,511)</u>	<u>7,595,168</u>

The Group has established the following policies and procedures to manage credit risks.

To manage credit risks relating to trade receivables, the Group evaluates the credit rating of customers and determines credit limit for each customer based on the information provided by credit rating agencies and other available financial information before commencing business with new customers. The credit risks relating to trade receivables are also mitigated by insurance contracts, collateral as well as payment guarantees.

The Group has entered into export bond insurance contracts with Korea Trade Insurance Corporation to mitigate credit risks relating to export trade receivables to overseas customers. The Group is also provided with collateral by customers depending on their credit rating or payment guarantees from the customers' financial institutions if necessary.

The Group has deposited its cash and cash equivalents and other long-term deposits in several financial institutions, such as Woori Bank and others. The Group has also entered into derivative contract with several financial institutions. The Group maintains business relationship with those financial institutions with high credit ratings evaluated by independent credit rating agencies and accordingly, credit risks associated with these financial institutions are limited.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(3) Liquidity risk

Finance team of the Group monitors rolling forecasts of the Group's liquidity requirements to ensure it has sufficient cash to meet operational needs while maintaining sufficient headroom on its undrawn committed borrowing facilities at all times so that the Group does not breach borrowing limits or covenants (where applicable) on any of its borrowing facilities. The Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of liquid assets necessary to meet these, monitoring balance sheet liquidity ratios against internal and external regulatory requirements and maintaining debt financing plans.

The table below analyzes the Group's non-derivative financial liabilities into relevant maturity groupings based on the remaining period at the reporting period to the contractual maturity date. Cash flows presented below are gross cash flows before discount, and includes cash flows for interests.

(in millions of Korean won)

	June 30, 2018			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding financial lease liabilities)	1,958,697	467,422	2,089,678	951,676
Finance lease liabilities	5,192	5,177	15,532	7,944
Trade and other payables	3,604,163	7,138	2,985	142
Total	5,568,052	479,737	2,108,195	959,762

(in millions of Korean won)

	December 31, 2017			
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years
Borrowings (excluding financial lease liabilities)	1,472,881	333,734	1,076,000	327,225
Finance lease liabilities	5,253	5,177	15,532	10,532
Trade and other payables	3,862,001	6,927	1,576	142
Total	5,340,135	345,838	1,093,108	337,899

As at June 30, 2018, the Group has entered into swap contracts for which cash flow hedge accounting is applied, to avoid market price fluctuation of raw materials. Details of derivative assets and liabilities are as follows:

(in millions of Korean won)

	June 30, 2018		December 31, 2017	
	Assets	Liabilities	Assets	Liabilities
Product swap ¹	169	-	-	-
Total	169	-	-	-

¹ Gain (loss) resulting from the contracts to avoid cash flow fluctuation risk of expected future transaction is accounted for as accumulated other comprehensive income (Note 5).

3.2 Capital Risk Management

The Group's objectives for managing capital are to safeguard the Group's ability to continue as a going concern, so the Group can continue to provide returns for shareholders and benefits for other stakeholders, and to maintain an optimal capital structure to reduce the cost of capital.

Consistent with others in the industry, the Group monitors capital on the basis of the gearing ratio.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

This ratio is calculated as net debt divided by total capital. Net debt is calculated as total borrowings less cash and cash equivalents. Total capital is calculated as 'equity' as shown in the consolidated statement of financial position plus net debt.

The gearing ratio and debt-to-equity ratio as at June 30, 2018 and December 31, 2017, were as follows:

<i>(in millions of Korean won, except for ratios)</i>	June 30, 2018	December 31, 2017
Total borrowings (Note 14) (A)	5,114,001	3,044,949
Less: cash and cash equivalents (B)	<u>(2,351,721)</u>	<u>(2,249,341)</u>
Net debt (C=A+B)	2,762,280	795,608
Total liabilities (D)	10,390,608	8,702,644
		16,338,577
Total equity (E)	<u>17,008,674</u>	
Total capital (F=C+E)	19,770,954	<u>17,134,185</u>
Gearing ratio (C/F)	14.0%	4.6%
Debt-to-equity ratio (D/E)	61.1%	53.3%

3.3 Fair Value

(1) Carrying amount and fair value of financial instruments by category as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018		December 31, 2017	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets (current)				
Cash and cash equivalents	2,351,721	1	2,249,341	1
Deposits held by financial institutions	478,209	1	529,701	1
Trade receivables	5,145,795	1	4,448,669	1
Other receivables (excluding deposits held by financial institutions)	165,972	1	241,075	1
Other current financial assets (derivative instruments)	169	169	-	-
Financial assets (non-current)				
Deposits held by financial institutions	63,973	1	64,308	1
Other receivables (excluding deposits held by financial institutions)	57,206	1	62,121	1
Other non-current financial assets (carried at cost)	-	-	17,718	2
Other non-current financial assets (carried at fair value)				
Marketable financial assets	3	3	6,064	6,064
Non-marketable financial assets	35,128	1	-	-
Financial liabilities (current)				
Trade and other payables	3,604,163	1	3,862,001	1
Current borrowings (excluding finance lease liabilities)	1,898,072	1	1,446,187	1
Current finance lease liabilities	5,030	1	5,137	1

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Financial liabilities (non-current)

Non-current borrowings (excluding finance lease liabilities)	3,185,563	3,204,511	1,566,258	1,560,147
Non-current finance lease liabilities	25,336	26,265	27,367	28,776
Other non-current payables	10,265	1	8,646	1
Other non-current financial liabilities (Conversion rights)	534	534	-	-

¹ These financial assets and liabilities are not included in the disclosure above as their carrying amount is a reasonable approximation of the fair value.

² As at December 31, 2017, all other non-current financial assets of the Group consist of available-for-sale equity securities. These equity securities are measured at cost as the range of reasonable fair value estimates is significant and the probabilities of the various estimates cannot be reasonably assessed.

(2) Fair value for measurement and disclosure are determined based on the following method:

Fair values of financial liabilities(non-current) are based on cash outflows discounted by using Korean won currency note yield in the same credit grade with the Parent Company (AA+), and the applied discount rates as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in percentage)</i>	June 30, 2018	December 31, 2017
Discount rate	1.93%~3.13%	1.95%~2.90%

(3) Fair value hierarchy

Items that are measured at fair value or for which the fair value is disclosed are categorized by the fair value hierarchy levels, and the levels are defined as follows:

- Quoted prices (unadjusted) in active markets for identical assets or liabilities (Level 1).
- Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly (that is, prices) or indirectly (that is, derived from prices) (Level 2).
- Inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs) (Level 3).

Fair value hierarchy classifications of the financial instruments that are measured at fair value or their fair value are disclosed as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other current financial assets (derivative instruments)	-	169	-	169
Other non-current financial assets (marketable financial assets)	3	-	-	3
Other non-current financial liabilities (Conversion rights)	-	534	-	534

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Financial assets/liabilities not measured at fair value				
Non-current borrowings				
(excluding finance lease liabilities)	-	3,204,511	-	3,204,511
Non-current finance lease liabilities	-	26,265	-	26,265
<i>(in millions of Korean won)</i>				
	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Financial assets/liabilities measured at fair value				
Other non-current financial assets				
(carried at fair value)	6,064	-	-	6,064
Financial assets/liabilities not measured at fair value				
Non-current borrowings				
(excluding finance lease liabilities)	-	1,560,147	-	1,560,147
Non-current finance lease liabilities	-	28,776	-	28,776

4. Critical Accounting Estimates and Assumptions

The preparation of financial statements requires the Group to make estimates and assumptions concerning the future. Estimates and assumptions are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances. The accounting estimates will, by definition, seldom equal the related actual results.

Significant accounting estimates and assumptions applied in the preparation of these consolidated interim financial statements are the same as those applied to the consolidated financial statements for the year ended December 31, 2017, except for the estimates used to determine income tax expense and the accounting estimates and assumptions for implementation of Korean IFRS 1109 explained as below.

(1) Impairment of financial assets

The allowance for impairment for financial assets under Korean IFRS 1109 is based on assumptions about risk of default and expected loss rates. The Group uses judgement in making these assumptions and selecting the inputs to the impairment calculation based on the Group's past history, existing market conditions as well as forward looking estimates at the end of each reporting period.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

5. Financial Instruments by Category

Categorizations of financial instruments as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

Financial assets	June 30, 2018			Total
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Financial assets at fair value through other comprehensive income	
Cash and cash equivalents	2,351,721	-	-	2,351,721
Trade receivables	4,959,706	-	186,089	5,145,795
Other receivables	644,181	-	-	644,181
Other non-current receivables	121,179	-	-	121,179
Other current financial assets	-	-	169	169
Other non-current financial assets	-	16,082	19,049	35,131
Total	8,076,787	16,082	205,307	8,298,176

(in millions of Korean won)

Financial liabilities	June 30, 2018			Total
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ¹	
Trade payables	-	2,155,719	-	2,155,719
Other payables	-	1,448,444	-	1,448,444
Borrowings (current)	-	1,893,329	9,773	1,903,102
Other non-current financial liabilities	534	-	-	534
Other non-current payables	-	10,265	-	10,265
Borrowings (non-current)	-	3,185,563	25,336	3,210,899
Total	534	8,693,320	35,109	8,728,963

(in millions of Korean won)

Financial assets	December 31, 2017			Total
	Loans and receivables	Financial assets at fair value through profit or loss	Available-for-sale financial assets	
Cash and cash equivalents	2,249,341	-	-	2,249,341
Trade receivables	4,448,669	-	-	4,448,669
Other receivables	770,776	-	-	770,776
Other non-current receivables	126,429	-	-	126,429
Other non-current financial assets	-	-	23,782	23,782
Total	7,595,215	-	23,782	7,618,997

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

Financial liabilities	December 31, 2017			
	Financial liabilities at fair value through profit or loss	Financial liabilities at amortized cost	Other financial liabilities ¹	Total
Trade payables	-	2,014,779	-	2,014,779
Other payables	-	1,847,222	-	1,847,222
Borrowings (current)	-	1,443,683	7,641	1,451,324
Other non-current payables	-	8,646	-	8,646
Borrowings (non-current)	-	1,566,258	27,367	1,593,625
Total	-	6,880,588	35,008	6,915,596

¹ Other financial liabilities include (a) financial lease liabilities that are not subject to the categorizations of financial liabilities and (b) financial liabilities that are related to transfer transactions not qualified for derecognition.

Net gains or losses on each category of financial instruments for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Dividend income				
Financial assets at fair value through other comprehensive income	8	8	-	-
Available-for-sale financial assets	-	-	8	204
Interest income				
Financial assets at fair value through other comprehensive income	-	-	-	5
Financial assets at amortized cost	12,233	23,497	6,340	13,801
Interest expense				
Hedging derivatives	-	-	-	-
Financial liabilities at amortized cost	(35,742)	(63,752)	(26,140)	(50,863)
Other financial liabilities	(263)	(523)	(1,870)	(5,347)
Gain (loss) on valuation				
Financial assets at fair value through profit or loss	-	-	-	-
Hedging derivatives	-	-	-	-
Financial assets at fair value through other comprehensive income	2,510	6,167	-	-
Derivative instruments	2,188	2,188	-	-
Gain (loss) on disposal				
Financial assets at fair value through profit or loss	-	-	-	-
Hedging derivatives	-	-	-	170
Financial assets at fair value through other comprehensive income	(205)	(1,542)	-	-

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Gain (loss) on foreign currency translation				
Financial assets at amortized cost	106,184	90,902	97,154	25,173
Financial liabilities at amortized cost	(151,188)	(109,034)	(7,850)	24,915
Other financial liabilities	349	349	(26,710)	(2,173)
Gain (loss) on foreign currency transaction				
Financial assets at amortized cost	36,112	37,508	(24,229)	(148,037)
Financial liabilities at amortized cost	(16,941)	(7,524)	10,037	52,042
Other financial liabilities	(114)	(207)	15,152	67,836

6. Cash and Cash Equivalents

Details of cash and cash equivalents as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018	December 31, 2017
Bank deposits and cash on hand	568,978	598,712
Deposits held by financial institutions and others	1,782,743	1,650,629
Total	2,351,721	2,249,341

As at June 30, 2018, cash and cash equivalents include ₩7,563 million which is subject to a restriction on the use in association with the national R&D projects.

7. Trade and Other Receivables

Trade and other receivables and its provisions for impairment, as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018		
	Gross amount	Impairment allowance	Carrying amount
Trade receivables ¹	5,156,100	(10,305)	5,145,795
Other current receivables	645,140	(959)	644,181
Other non-current receivables ²	121,179	-	121,179
Total	5,922,419	(11,264)	5,911,155

(in millions of Korean won)

	December 31, 2017		
	Gross amount	Impairment allowance	Carrying amount
Trade receivables ¹	4,456,221	(7,552)	4,448,669
Other current receivables	771,735	(959)	770,776
Other non-current receivables ²	126,429	-	126,429
Total	5,354,385	(8,511)	5,345,874

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

¹ As at June 30, 2018 and December 31, 2017, trade receivables transferred to financial institutions have been collateralized for borrowings (current) and the amount of trade receivables not fully derecognized is as follows (Note 14):

<i>(in millions of Korean won)</i>	Trade receivables collateralized for borrowings	
	June 30, 2018	December 31, 2017
Carrying amount of transferred assets	4,743	2,504
Carrying amount of related liabilities	(4,743)	(2,504)

² As at June 30, 2018, ₩575 million of other non-current receivables represents deposits which are restricted from withdrawal in connection with maintaining checking accounts (2017: ₩550 million).

Details of other receivables as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Current		
Non-trade receivables	122,391	187,314
Deposits held by financial institutions ¹	478,209	529,701
Accrued income	6,445	5,126
Guarantee deposits provided	37,136	48,635
	<u>644,181</u>	<u>770,776</u>
Non-current		
Non-trade receivables	4,677	4,246
Deposits held by financial institutions ²	63,973	64,308
Loans	335	291
Guarantee deposits provided	52,194	57,584
	<u>121,179</u>	<u>126,429</u>
Total	<u>765,360</u>	<u>897,205</u>

¹ As at June 30, 2018, ₩1,338 million (2017: ₩1,338 million) is pledged as a collateral for borrowings and others.

² As at June 30, 2018, ₩63,400 million (2017: ₩63,400 million) is restricted from being withdrawn in relation to large, small and medium-sized companies cooperation agreement and others.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

The aging analysis of trade and other receivables as at June 30, 2018 and December 31, 2017, is as follows:

(in millions of Korean won)

	June 30, 2018		December 31, 2017	
	Trade receivables	Other receivables	Trade receivables	Other receivables
Receivables not past due	5,020,720	741,100	4,302,204	834,882
Past due but not impaired	129,742	24,260	148,908	62,323
Up to 3 months	118,724	16,217	148,043	59,070
Between 3-6 months	9,344	4,695	311	2,078
Over 6 months	1,674	3,348	554	1,175
Impaired receivables	5,638	959	5,109	959
	<u>5,156,100</u>	<u>766,319</u>	<u>4,456,221</u>	<u>898,164</u>

Movements on the provision for impairment of trade and other receivables for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	7,552	-	959	-
Business combination (Note 34)	-	-	-	-
Additions	2,874	-	-	-
Write-off	(112)	-	-	-
Reversals	-	-	-	-
Exchange differences	(9)	-	-	-
Ending balance	<u>10,305</u>	<u>-</u>	<u>959</u>	<u>-</u>

(in millions of Korean won)

	December 31, 2017			
	Trade receivables		Other receivables	
	Current	Non-current	Current	Non-current
Beginning balance	12,219	-	385	990
Business combination (Note 34)	2,018	-	-	-
Additions	-	-	796	-
Write-off	(644)	-	(221)	(990)
Reversals	(4,464)	-	(1)	-
Exchange differences	(1,577)	-	-	-
Ending balance	<u>7,552</u>	<u>-</u>	<u>959</u>	<u>-</u>

As at June 30, 2018 and December 31, 2017, the carrying amounts of trade and other receivables are approximation of their fair values.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

8. Other Financial Assets

Details of other financial assets as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Other financial assets		
Financial assets at fair value through other comprehensive income (current)	169	-
Financial assets at fair value through other comprehensive income (non-current)	19,049	-
Financial assets at fair value through profit or loss (current)	-	-
Financial assets at fair value through profit or loss (non-current)	16,082	-
Available-for-sale financial assets	-	23,782
Less: current portion	(169)	-
	<u>35,131</u>	<u>23,782</u>
Other financial liabilities (non-current)		
Derivative instruments	534	-
	<u>534</u>	<u>-</u>

Changes in other financial assets for the six-month periods ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Beginning balance	23,782	23,448
Business combination (Note 34)	-	2,652
Acquisitions / Transfer	15,187	3,001
Disposals	(10,005)	(195)
Impairment	-	(209)
Gain (loss) on valuation (before income tax effects)	6,336	(5,550)
Less: current portion	(169)	-
Exchange differences	-	635
Ending balance	<u>35,131</u>	<u>23,782</u>

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

9. Inventories

Details of inventories as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018		
	Gross Amount	Valuation allowance	Carrying amount
Merchandise	142,416	(1,317)	141,099
Finished / Semi-finished products	2,211,174	(80,487)	2,130,687
Work-in-process	13,748	-	13,748
Raw materials	1,028,494	(16,023)	1,012,471
Supplies	148,608	-	148,608
Materials-in-transit	503,096	-	503,096
Total	4,047,536	(97,827)	3,949,709

(in millions of Korean won)

	December 31, 2017		
	Gross Amount	Valuation allowance	Carrying amount
Merchandise	141,567	(3,320)	138,247
Finished / Semi-finished products	1,956,436	(95,369)	1,861,067
Work-in-process	9,852	-	9,852
Raw materials	897,227	(14,459)	882,768
Supplies	136,251	-	136,251
Materials-in-transit	324,269	-	324,269
Total	3,465,602	(113,148)	3,352,454

During the six-month period ended June 30, 2018, the cost of inventories recognized as 'cost of sales' is amounted to ₩8,304,042 million (2017: ₩7,870,664 million).

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

10. Investments in Associates and Joint Ventures

Changes in investments in associates and joint ventures for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018						
	Beginning balance	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income of associates and joint ventures	Others	Ending balance
LG VINA Chemical Co., Ltd.	3,327	-	(810)	169	(723)	-	1,963
HL Greenpower Co., Ltd.	20,240	-	-	(1,382)	-	(209)	18,649
LG Holdings (HK) Ltd.	51,029	-	-	2,731	1,766	-	55,526
TECWIN Co., Ltd.	8,008	-	-	1,818	-	-	9,826
SEETEC Co., Ltd.	146,741	-	(10,000)	3,590	-	91	140,422
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	150
LG Fuel Cell Systems Inc.	30,334	-	-	(7,124)	693	59	23,962
FJ Composite Materials Co., Ltd.	2,669	-	-	(119)	97	-	2,647
WUXI CL New Energy Technology Ltd.	1,002	559	-	(71)	8	(1)	1,497
LG Life Sciences Poland Ltd.	17	-	-	-	-	-	17
Combustion Synthesis Co., Ltd. ¹	-	1,503	-	(69)	(5)	19	1,448
	<u>264,096</u>	<u>2,062</u>	<u>(10,810)</u>	<u>(457)</u>	<u>1,836</u>	<u>(41)</u>	<u>256,686</u>

(in millions of Korean won)

	December 31, 2017								
	Beginning balance	Business combination	Acquisitions / transfer	Dividends	Share of profit (loss) of associates and joint ventures	Share of other comprehensive income of associates and joint ventures	Changes in ownership of associates	Others	Ending balance
LG VINA Chemical Co., Ltd.	3,874	-	-	(846)	753	(454)	-	-	3,327
HL Greenpower Co., Ltd.	16,927	-	-	-	3,010	-	-	303	20,240
LG Holdings (HK) Ltd.	74,843	-	-	-	4,281	(8,596)	-	(19,499)	51,029
TECWIN Co., Ltd.	7,214	-	-	-	794	-	-	-	8,008
SEETEC Co., Ltd.	148,333	-	-	(10,000)	8,408	-	-	-	146,741
LG Chem BRASIL INTERMEDIACAO DE NEGOCIOS DO SETOR QUIMICO LTDA.	579	-	-	-	-	-	-	-	579
LG Chem Malaysia SDN.BHD	150	-	-	-	-	-	-	-	150
LG Fuel Cell Systems Inc.	8,908	-	24,527	-	(10,191)	(587)	7,680	(3)	30,334
FJ Composite Materials Co., Ltd.	-	-	3,015	-	(259)	(87)	-	-	2,669
WUXI CL New Energy Technology Ltd.	-	-	1,178	-	(176)	-	-	-	1,002
LG Life Sciences Poland Ltd.	-	17	-	-	-	-	-	-	17
	<u>260,828</u>	<u>17</u>	<u>28,720</u>	<u>(10,846)</u>	<u>6,620</u>	<u>(9,724)</u>	<u>7,680</u>	<u>(19,199)</u>	<u>264,096</u>

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

¹ During the six-month period ended June 30, 2018, the Group newly acquired 29.54% shares of Combustion Synthesis Co., Ltd. for ₩1,503 million.

11. Property, Plant and Equipment

Changes in property, plant and equipment for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018										
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,568,295	2,762,588	654,629	4,169,473	13,654	403,522	105,759	73,399	1,317,877	142,286	11,211,482
Cost	1,605,247	3,438,000	1,190,383	13,157,481	39,945	1,085,752	352,106	211,585	1,361,431	142,286	22,584,216
Accumulated depreciation	-	(637,025)	(521,806)	(8,840,809)	(26,143)	(669,189)	(243,973)	(136,034)	-	-	(11,074,979)
Accumulated impairment	(36,952)	(38,387)	(13,948)	(147,199)	(148)	(13,041)	(2,374)	(2,152)	(43,554)	-	(297,755)
Acquisitions/ Transfer	42,096	306,362	18,360	711,840	1,289	100,146	40,881	7,186	1,645,718	104,392	2,978,270
Disposals/ Transfer	-	(142)	(73)	(215,783)	(24)	(6,126)	(1,460)	(1,051)	(1,231,548)	(34,614)	(1,490,821)
Exchange differences	9	15,043	3,077	29,577	179	2,496	811	-	9,856	-	61,048
Depreciation	-	(44,116)	(22,668)	(477,097)	(1,533)	(68,198)	(19,322)	(33,206)	-	-	(666,140)
Impairment	-	(1,248)	(221)	(14,789)	-	(125)	(1)	-	-	-	(16,384)
Reversal of impairment	-	16	28	252	3	1	11	-	-	-	311
Ending balance	1,610,400	3,038,503	653,132	4,203,473	13,568	431,716	126,679	46,328	1,741,903	212,064	12,077,766
Cost	1,647,352	3,763,830	1,214,038	13,659,231	41,239	1,163,388	390,878	212,453	1,785,715	212,064	24,090,188
Accumulated depreciation	-	(686,401)	(546,479)	(9,299,058)	(27,525)	(720,212)	(261,779)	(163,973)	-	-	(11,705,427)
Accumulated impairment	(36,952)	(38,926)	(14,427)	(156,700)	(146)	(11,460)	(2,420)	(2,152)	(43,812)	-	(306,995)

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of
Korean won)

	December 31, 2017										
	Land	Buildings	Structures	Machinery	Vehicles	Tools	Equipment	Others	Construction -in-progress	Machinery -in-transit	Total
Beginning balance	1,470,226	2,181,396	651,061	4,288,509	8,594	384,777	95,905	100,360	473,111	26,194	9,680,133
Cost	1,507,154	2,796,650	1,145,962	12,656,297	41,183	1,005,567	323,646	238,906	484,950	26,194	20,226,509
Accumulated depreciation	-	(575,932)	(479,210)	(8,305,213)	(32,439)	(611,202)	(225,767)	(138,098)	-	-	(10,367,861)
Accumulated impairment	(36,928)	(39,322)	(15,691)	(62,575)	(150)	(9,588)	(1,974)	(448)	(11,839)	-	(178,515)
Business combination (Note 34)	62,738	81,497	6,590	109,011	197	8,256	2,918	-	164,722	57,392	493,321
Acquisitions/ Transfer	38,594	607,656	51,272	955,563	9,761	180,809	45,578	41,658	2,535,725	133,175	4,599,791
Disposals/ Transfer	(2,972)	(9,888)	(787)	(53,527)	(49)	(31,254)	(1,242)	-	(1,820,436)	(74,475)	(1,994,630)
Exchange differences	(291)	(28,426)	(5,133)	(77,319)	(121)	(6,971)	(1,821)	-	(2,854)	-	(122,936)
Depreciation	-	(75,093)	(46,529)	(955,324)	(4,691)	(125,354)	(35,001)	(66,915)	-	-	(1,308,907)
Impairment	-	(1,390)	(3,039)	(98,125)	(39)	(6,142)	(652)	(1,704)	(32,391)	-	(143,482)
Reversal of impairment	-	6,836	1,194	3,721	2	797	91	-	-	-	12,641
Transfer to assets held for sale (Note 35)	-	-	-	-	-	-	-	-	-	-	-
Ending balance	1,568,295	2,762,588	654,629	4,169,473	13,654	403,522	105,759	73,399	1,317,877	142,286	11,211,482
Cost	1,605,247	3,438,000	1,190,383	13,157,481	39,945	1,085,752	352,106	211,585	1,361,431	142,286	22,584,216
Accumulated depreciation	-	(637,025)	(521,806)	(8,840,809)	(26,143)	(669,189)	(243,973)	(136,034)	-	-	(11,074,979)
Accumulated impairment	(36,952)	(38,387)	(13,948)	(147,199)	(148)	(13,041)	(2,374)	(2,152)	(43,554)	-	(297,755)

During the six-month period ended June 30, 2018, the Group capitalized ₩9,101 million of borrowing costs (2017: ₩2,270 million), which was recognized from borrowings in relation to acquisition of property, plant and equipment. The capitalization rate of borrowings used to determine the amount of borrowing costs eligible for capitalization is 2.32% (2017: 2.12%).

Line items including depreciation in the consolidated statements of profit or loss for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Cost of sales	306,967	608,894	306,000	611,575
Selling and administrative expenses	28,540	55,751	23,607	47,413
Others	660	1,495	828	1,744
Total	336,167	666,140	330,435	660,732

Details of machinery classified as a finance lease as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018	December 31, 2017	
	Machinery	Machinery	Construction-in-progress
Cost- capitalized finance leases	45,025	43,274	1,275
Accumulated depreciation	(15,306)	(12,952)	-
Net book amount	29,719	30,322	1,275

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

The Group leases machinery under non-cancellable finance lease agreements. The lease terms are 3~10 years and the contracts include an agreement that the ownership of the assets is transferred by the end of the lease term.

The Group reviews annually whether there is any indication that an asset may be impaired. During 2017, Glass Substrate business, a CGU in IT & Electronic materials and Advanced materials segment, was tested for impairment as its economic performance was lower than expected.

During 2017, certain equipment in LED Encap business, a CGU in IT & Electronic materials and Advanced materials segment, was tested for reversal of impairment as the future economic performance of OLED material division was estimated to exceed the previous expectation due to a transfer of LED Encap business to OLED material compound process.

The amount of impairment loss recognized as other non-operating (income) expense and key assumptions used for calculation of value in use for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	2017	
	Glass Substrate ¹	LED Encap
Impaired amount		
Property, plant and equipment	124,138	(11,320)
Intangible assets	2,345	(6)
Key assumptions		
Pre-tax discount rate	N/A	12.3%
Growth rate for subsequent years exceeding five years	N/A	-

¹ The recoverable amount is calculated based on fair value less costs to sell and it is a non-recurring fair value measured by an observable transaction price. It is categorized as level 2 of the fair value hierarchy.

During 2017, the Group decided to dispose of certain of non-current assets and recognized the difference between the fair value and the carrying amount as impairment losses (Note 35).

12. Intangible Assets

Changes in intangible assets for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018					
	Development costs	Industrial property rights	Goodwill	Memberships	Others	Total
Beginning balance	192,046	371,381	925,593	50,806	283,329	1,823,155
Separate acquisitions/ Transfer	36,831	25,986	-	65	19,988	82,870
Additions – internal development	6,123	-	-	-	-	6,123
Disposals/Transfer	(6,223)	(20)	-	(623)	-	(6,866)
Exchange differences	437	1,974	4,729	20	156	7,316
Amortization	(20,992)	(14,793)	-	-	(17,155)	(52,940)
Impairment	(1,704)	-	-	-	-	(1,704)
Ending balance	206,518	384,528	930,322	50,268	286,318	1,857,954

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

	December 31, 2017					
	Development costs	Industrial property rights	Goodwill	Memberships	Others	Total
Beginning balance	102,853	344,882	252,253	52,793	79,363	832,144
Business combination (Note 34)	53,913	12,770	686,229	3,723	203,144	959,779
Separate acquisitions/ Transfer	66,432	47,005	-	1,538	34,921	149,896
Additions – internal development	20,843	-	-	-	-	20,843
Disposals/ Transfer	(8,066)	(55)	-	(6,080)	(308)	(14,509)
Exchange differences	(1,107)	(1,985)	(12,889)	(35)	(349)	(16,365)
Amortization	(33,764)	(30,010)	-	-	(32,944)	(96,718)
Impairment	(9,064)	(868)	-	(1,133)	(498)	(11,563)
Reversal of impairment	6	-	-	-	-	6
Transfer to assets held for sale (Note 35)	-	(358)	-	-	-	(358)
Ending balance	192,046	371,381	925,593	50,806	283,329	1,823,155

Line items including amortization of intangible assets for the three-month and six-month periods ended June 30, 2018 and 2017, as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Cost of sales	6,023	11,870	5,155	9,557
Selling and administrative expenses	20,820	41,070	17,620	34,429
Total	26,843	52,940	22,775	43,986

The Group recognized total research and development costs of ₩ 475,941 million (2017: ₩ 427,580 million) as expenses.

Changes in greenhouse gas emission permits for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

(in thousands of tons and millions of Korean won)

	June 30, 2018					
	2017		2018		Total	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Beginning balance	7,520	18,635	6,648	-	14,168	18,635
Allocation with nil consideration	171	-	11	-	182	-
Purchase	370	9,556	-	-	370	9,556
Business combination	-	-	-	-	-	-
Borrowings	(28)	-	28	-	-	-
Surrendered to the government	-	-	-	-	-	-
Ending balance	8,033	28,191	6,687	-	14,720	28,191

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

<i>(in thousands of tons and millions of Korean won)</i>	December 31, 2017					
	2016		2017		Total	
	Quantity	Amount	Quantity	Amount	Quantity	Amount
Beginning balance	6,191	-	6,475	-	12,666	-
Allocation with nil consideration	350	-	799	-	1,149	-
Purchase	250	5,133	873	18,635	1,123	23,768
Business combination	62	-	58	-	120	-
Borrowings	685	-	(685)	-	-	-
Surrendered to the government	(7,538)	(5,133)	-	-	(7,538)	(5,133)
Ending balance	<u>-</u>	<u>-</u>	<u>7,520</u>	<u>18,635</u>	<u>7,520</u>	<u>18,635</u>

13. Other Current and Non-Current Assets

Details of other current and non-current assets as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Current		
Prepayments and prepaid expenses	135,288	129,387
Prepaid value added tax	365,625	225,790
Others	29,992	21,637
Total	<u>530,905</u>	<u>376,814</u>
Non-current		
Long-term prepayments and long-term prepaid expenses	103,550	104,072
Others	93	91
Total	<u>103,643</u>	<u>104,163</u>

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

14. Borrowings

Borrowings as at June 30, 2018 and December 31, 2017, consist of:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Current		
Short-term borrowings	1,338,789	957,868
Current-portion of long-term borrowings	409,354	318,441
Current-portion of debentures	149,929	169,878
Finance lease liabilities	5,030	5,137
	<u>1,903,102</u>	<u>1,451,324</u>
Non-current		
Long-term borrowings	455,052	518,955
Debentures	2,730,511	1,047,303
Finance lease liabilities	25,336	27,367
	<u>3,210,899</u>	<u>1,593,625</u>
Total	<u>5,114,001</u>	<u>3,044,949</u>

Details of short-term borrowings as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	Bank	Latest maturity date	Interest rate(%) as at June 30, 2018	June 30, 2018	December 31, 2017
Notes discounted ¹ (Negotiable notes)	Woori Bank, others	Nov. 29, 2018	Libor + 0.52 and others	4,743	2,504
Bank loans	Nonghyup Bank, others	Apr. 20, 2019	2.17 and others	<u>1,334,046</u>	<u>955,364</u>
Total				<u>1,338,789</u>	<u>957,868</u>

¹ As at June 30, 2018, trade receivables transferred to financial institutions have been collateralized for borrowings (current) (Note 7).

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Details of long-term borrowings as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)	June 30, 2018				
	Bank	Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KEB Hana Bank ¹	1.75	529	353	176
Borrowings in foreign currencies	HSBC	3LIBOR+1.00	244,362	244,362	-
	Agricultural Bank of China	PBOC ×0.90, 3LIBOR ×0.80	48,794	9,932	38,862
	Construction Bank of China	PBOC ×90%	26,817	3,903	22,914
	Communications Bank of China	PBOC	12,401	2,380	10,021
	CITI	3LIBOR+0.64 EURIBOR+0.90	38,904	-	38,904
	Bank of America	3LIBOR+1.11, PBOC ×92.9	44,844	44,844	-
	ING BANK	3LIBOR+0.83	64,839	-	64,839
	UOB	6LIBOR+1.25	30,723	614	30,109
	Standard Chartered Bank	3LIBOR+1.15, 1LIBOR+0.75	26,306	17,537	8,769
	Sumitomo Mitsui Banking Corporation	3LIBOR+0.93	87,483	11,209	76,274
	Mizuho Banking Corporation	3LIBOR+0.96, PBOC ×102.0	78,424	44,837	33,587
	BNP PARIBAS	1LIBOR+0.70, 3EURIBOR+0.99	19,451	-	19,451
	CNOOC Finance	PBOC ×90	74,032	16,941	57,091
	Hangseng	3LIBOR+1.00	33,626	3,363	30,263
	Bank of China	3LIBOR+0.95	32,871	9,079	23,792
Total			864,406	409,354	455,052

¹ Other receivables are pledged as collateral for the above long-term borrowings (Note 18).

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)	December 31, 2017				
	Bank	Annual interest rate (%)	Amount in Korean won	Current	Non-current
Borrowings in Korean won	KEB Hana Bank ¹	1.75	706	353	353
Borrowings in foreign currencies	Sumitomo Mitsui Banking Corporation	Libor + 1.05	53,463	5,346	48,117
	Standard Chartered Bank	Libor + 1.60	25,095	-	25,095
	Construction Bank of China	PBOC × 0.90	27,791	3,770	24,021
	Communications Bank of China	PBOC	12,896	1,841	11,055
	Agricultural Bank of China	USD: Libor + 0.80 CNY: PBOC × 0.90	51,637	9,496	42,141
	Bank of America	Libor + 0.90~1.50	69,579	32,080	37,499
	Bank of China	Libor + 0.95	34,246	5,775	28,471
	BNP PARIBAS	EUR:EURIBOR + 0.99 PLN: WIBOR + 0.55	19,151	-	19,151
	CNOOC Finance	PBOC × 0.90	71,515	16,365	55,150
	HSBC	Libor + 1.00~1.05	236,320	198,894	37,426
	JP Morgan	Libor + 0.85~1.05	42,765	42,765	-
	Mizuho Banking Corporation	Libor + 1.02	42,773	-	42,773
	CITI	EURIBOR + 0.90	38,298	-	38,298
	United Overseas Bank	Libor + 1.55	15,255	152	15,103
	Hangseng	Libor + 1.00	32,077	1,604	30,473
	ING	EURIBOR + 0.83	63,829	-	63,829
Total			837,396	318,441	518,955

¹ Other receivables are pledged as collateral for the above long-term borrowings (Note 18).

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Details of debentures as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>		June 30, 2018				
		Annual interest rate (%)	Latest maturity date	Amount in Korean won	Current	Non-current
48th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.77	2019.02.21	50,000	50,000	-
49th Debenture (non-guaranteed/private)	KB Asset Management Co., Ltd and others	2.82	2018.12.12	100,000	100,000	-
50-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.95	2020.05.19	120,000	-	120,000
50-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.05.19	400,000	-	400,000
50-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.05.19	280,000	-	280,000
51-1st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.56	2021.02.20	190,000	-	190,000
51-2nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.88	2023.02.20	240,000	-	240,000
51-3rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.07	2025.02.20	270,000	-	270,000
51-4th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.29	2028.02.20	300,000	-	300,000
1-1st USD Overseas Convertible bonds¹	Credit Suisse	0.00	2021.04.16	246,775	-	246,775
1-2nd EUR Overseas Convertible bonds²	Credit Suisse	0.00	2021.04.16	408,820	-	408,820
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd. and others	1.93	2020.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.26	2022.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.71	2021.03.02	50,000	-	50,000
	NH Investment & Securities Co., Ltd. and others	3.00	2023.03.02	40,000	-	40,000
Less: discount on debentures				(15,155)	(71)	(15,084)
Total				2,880,440	149,929	2,730,511

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

¹ Details of 1-1st USD overseas convertible bonds are as follows:

	Details
Aggregate principal amount	USD 220,000,000
Issue price	USD 220,000,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	509,606 registered ordinary shares (treasury shares)
Conversion price (Korean won/shares)	460,000
Conversion period	From May 27, 2018 to April 06, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of conversion price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

² Details of 1-2nd EUR overseas convertible bonds are as follows:

	Details
Aggregate principal amount	EUR 315,200,000
Issue price	EUR 315,200,000
Coupon rate (%)	0.00
Issue date	April 16, 2018
Maturity date	April 16, 2021
Redemption	- Redemption at maturity: Outstanding bond principal, which is not repaid early or which call option is not exercised on, is repaid at maturity as a lump sum. - Prepayment: The issuer has a call option.
Underlying shares	775,128 registered ordinary shares (treasury shares)
Conversion price (Korean won/shares)	533,600
Conversion period	From May 27, 2018 to April 06, 2021
Call option by the issuer	- Share price (based on closing price) is higher than 130% of conversion price for more than 20 trading days during 30 consecutive trading days in a row, after 1 year from the closing date. - The amount of outstanding bonds is less than 10% in aggregate principal amount of the bonds originally issued (clean up call). - As a result of changes relating to tax laws in Korea, the issuer becomes obliged to pay any additional amounts.
Call option by bondholders	- The shares cease to be listed or admitted to trading or are suspended for a period equal to or exceeding 30 consecutive trading days. - The occurrence of a change of control

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

		December 31, 2017				
	Financial institution	Annual interest rate (%)	Latest maturity date	Amount in Korean won	Current	Non-current
47 th Debenture (non-guaranteed/private)	Government Employees Pension Service and others	3.20	2018.04.30	30,000	30,000	-
48 th Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	3.77	2019.02.21	50,000	-	50,000
49 th Debenture (non-guaranteed/private)	KB Asset Management Co., Ltd. and others	2.82	2018.12.12	100,000	100,000	-
50-1 st Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	1.95	2020.05.19	120,000	-	120,000
50-2 nd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.28	2022.05.19	400,000	-	400,000
50-3 rd Debenture (non-guaranteed/public)	NH Investment & Securities Co., Ltd. and others	2.53	2024.05.19	280,000	-	280,000
Debentures in Korean won (collateralized) ¹	IBK Securities Co., Ltd. and others	4.70	2018.03.05	40,000	40,000	-
Debentures in Korean won (non-guaranteed)	NH Investment & Securities Co., Ltd. and others	1.93	2020.02.16	100,000	-	100,000
	NH Investment & Securities Co., Ltd. and others	2.26	2022.02.16	100,000	-	100,000
Less: discount on debentures				(2,819)	(122)	(2,697)
Total				1,217,181	169,878	1,047,303

¹ Certain property, plant and equipment are pledged as collateral for the above debentures (Note 18).

Details of finance lease liabilities as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

		June 30, 2018			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank	3.12	2024.12.31	29,209	4,885	24,324
Others	3.7 ~ 4.13	2023.12.31	1,157	145	1,012
Total			30,366	5,030	25,336

(in millions of Korean won)

		December 31, 2017			
Leaser	Annual interest rate (%)	Latest maturity date	Total amount	Current	Non-current
Hyundai Oil Bank	3.12	2024.12.31	31,226	4,886	26,340
Others	3.7 ~ 4.13	2023.12.31	1,278	251	1,027
Total			32,504	5,137	27,367

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

The present value of finance lease liabilities as at June 30, 2018 and December 31, 2017, is as follows:

<i>(in millions of Korean won)</i>	June 30, 2018			December 31, 2017		
	Minimum lease payments	Future finance costs	Present value	Minimum lease payments	Future finance costs	Present value
Within 1 year	5,192	162	5,030	5,253	116	5,137
Between 1-5 years	20,710	1,958	18,752	20,710	2,006	18,704
Over 5 years	7,944	1,360	6,584	10,532	1,869	8,663

15. Provisions

Changes in provisions for other liabilities and charges for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, as follows:

<i>(in millions of Korean won)</i>	June 30, 2018				
	Warranty ¹	Greenhouse gas emission ²	Legal Claims ³	Restoration ⁴	Total
Beginning balance	92,662	23,069	20,629	90,056	226,416
Additions	75,580	14,620	7,714	1,146	99,060
Used	(44,307)	-	(9,763)	(6,185)	(60,255)
Ending balance	123,935	37,689	18,580	85,017	265,221
Less : current portion	(37,385)	(37,689)	-	(20,548)	(95,622)
Total	86,550	-	18,580	64,469	169,599

<i>(in millions of Korean won)</i>	December 31, 2017				
	Warranty ¹	Greenhouse gas emission ²	Legal Claims ³	Restoration ⁴	Total
Beginning balance	51,838	27,801	10,102	95,774	185,515
Business combination	5,994	59	-	-	6,053
Additions	94,603	342	72,787	1,641	169,373
Used	(59,773)	(5,133)	(62,260)	(7,359)	(134,525)
Ending balance	92,662	23,069	20,629	90,056	226,416
Less : current portion	(19,521)	(23,069)	-	(20,350)	(62,940)
Total	73,141	-	20,629	69,706	163,476

¹ Warranty provisions have been accrued for the estimated warranty costs to be incurred due to quality control, exchange, refunds with regard to products based on historical experience.

² Greenhouse gas emission provisions have been accrued for estimated expenditures to be obligated for any excess emission. The estimated emission for the six-month period ended June 30, 2018 amounts to 3,953 thousand tons (2017: 3,857 thousand tons).

³ Lawsuit provisions have been accrued for certain pending cases.

⁴ As at June 30, 2018, restoration provisions have been accrued for the estimated expenses to

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

restore land pollutions and others.

16. Net Defined Benefit Liabilities

Details of net defined benefit liabilities recognized in the consolidated interim statements of financial position as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Present value of defined benefit obligations ¹	1,075,732	1,049,511
Fair value of plan assets	(824,495)	(868,830)
Liabilities in the consolidated interim statement of financial position	251,237	180,681

¹ The present value of retirement benefit obligations is net of existing contributions to the National Pension Plan of ₩843 million as at June 30, 2018 (2017: ₩862 million).

The amounts recognized in the consolidated interim statements of profit or loss for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

<i>(in millions of Korean won)</i>	2018		2017	
	Three months	Six months	Three months	Six months
Current service cost ¹	36,078	71,986	33,160	68,069
Interest cost	1,447	2,884	726	1,452
Total, included in employee benefit expenses	37,525	74,870	33,886	69,521

¹ The above amounts excluded ₩490 million (2017: ₩403 million) of expenses capitalized to construction in progress and development costs.

Post-employment benefits recognized for defined contribution plan for the six-month period ended June 30, 2018, amounted to ₩3,321 million (2017: ₩310 million).

Post-employment benefits recognized in the consolidated interim statements of profit or loss for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

<i>(in millions of Korean won)</i>	2018		2017	
	Three months	Six months	Three months	Six months
Cost of sales	26,452	52,626	23,620	47,612
Selling and administrative expenses	12,764	25,565	10,434	22,219
Total	39,216	78,191	34,054	69,831

Movements in the present value of defined benefit obligations for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Beginning balance	1,049,511	885,259
Business combination (Note 34)	-	69,693

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Transfer in	2,558	7,452
Transfer out	(2,054)	(2,278)
Current service cost	72,476	137,355
Past service cost	-	656
Interest expense	16,235	26,572
Remeasurements:		
Actuarial loss from change in demographic assumptions	-	4,100
Actuarial gain from change in financial assumptions	-	(41,917)
Actuarial loss from experience adjustments	-	30,059
Others	-	1,060
Exchange differences	(396)	(437)
Payments from plans	(62,598)	(68,018)
Changes in consolidation scope	-	(45)
Ending balance	1,075,732	1,049,511

Movements in the fair value of plan assets for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Beginning balance	868,830	793,087
Business combination (Note 34)	-	57,771
Transfer in	(538)	(504)
Interest income	13,351	23,604
Remeasurements:		
Return on plan assets (excluding amounts included in interest income)	(4,673)	(7,398)
Contributions:		
Employers	7	59,288
Payments from plans	(51,808)	(56,106)
Administrative costs	(674)	(912)
Ending balance	824,495	868,830

The actual return on plan assets for the six-month period ended June 30, 2018, was ₩8,678 million (December 31, 2017: ₩16,206 million).

The significant actuarial assumptions as at June 30, 2018 and December 31, 2017, are as follows:

	June 30, 2018	December 31, 2017
Discount rate	3.2% ~ 3.5%	3.1% ~ 3.5%
Salary growth rate	2.2% ~ 5.0%	2.2% ~ 5.0%

The sensitivity analysis for changes in key actuarial assumptions as at June 30, 2018, is as follows:

<i>(in millions of Korean won)</i>	Increase by 1%	Decrease by 1%
Discount rate:		
Increase (decrease) in defined benefit obligations	(108,455)	129,876
Salary growth rate:		
Increase (decrease) in defined benefit obligations	126,386	(107,892)

A decrease in corporate bond yields may lead most significantly to an increase in defined benefit

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

liabilities.

The above sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. The sensitivity of the defined benefit obligation to changes in principal actuarial assumptions is calculated using the projected unit credit method, the same method applied when calculating the defined benefit obligations recognized on the statement of financial position.

The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to the prior period.

Plan assets as at June 30, 2018 and December 31, 2017, consist of:

(in millions of Korean won)

	June 30, 2018			
	Quoted price	Unquoted price	Total	Composition (%)
Insurance contracts with guaranteed yield	810,192	-	810,192	98
Equity linked bonds	11,265	-	11,265	1
Time deposits	3,038	-	3,038	1
	<u>824,495</u>	<u>-</u>	<u>824,495</u>	<u>100</u>

(in millions of Korean won)

	December 31, 2017			
	Quoted price	Unquoted price	Total	Composition (%)
Insurance contracts with guaranteed yield	854,368	-	854,368	98
Equity linked bonds	11,286	-	11,286	1
Time deposits	3,176	-	3,176	1
	<u>868,830</u>	<u>-</u>	<u>868,830</u>	<u>100</u>

17. Other Current and Non-Current Liabilities

Details of other current and non-current liabilities as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018	December 31, 2017
Current		
Advances from customers	497,706	493,595
Withholdings	66,538	91,589
Unearned revenues	16,437	9,842
Accrued expenses	190,087	259,257
Total	<u>770,768</u>	<u>854,283</u>
Non-current		
Long-term accrued expenses	46,674	44,663
Long-term unearned revenues	39,772	24,237
	<u>86,446</u>	<u>68,900</u>

18. Commitments and Contingencies

(1) As at June 30, 2018, the Parent Company and certain subsidiaries have been guaranteed from the Seoul Guarantee Insurance Company for the execution of contracts and others.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(2) As at June 30, 2018, the Parent Company has provided one blank promissory note to the Korea National Oil Corporation as a collateral in relation to petroleum import surcharges.

(3) As at June 30, 2018, the Parent Company and certain subsidiaries have various specific line of credit agreements with several financial institutions, as follows:

(unit: Korean won in millions, foreign currencies in millions)

Classification	The Parent Company		Certain Subsidiaries					
	KRW	USD	KRW	USD	CNY	EUR	INR	THB
Limit of bank overdraft	59,100	50	-	140	1,200	29	-	9
Limit of the letter of credit	32,000	398	-	320	200	2	-	-
Limit of discount of notes from export	-	1,343	-	-	-	-	-	-
Limit of payment guarantees in other foreign currency	-	60	-	-	-	-	-	-
Limit of loan arrangements	-	-	87,529	2,052	7,586	115	3,200	-

The Group also entered into credit line agreements with other financial institutions relating to trade finance and import/export amounting to ₩20,000 million and USD 55 million.

(4) As at June 30, 2018, the Parent Company and certain subsidiaries have B2B purchase arrangements with several financial institutions with limit of ₩310,000 million and ₩101,000 million, respectively.

(5) As at June 30, 2018, in relation to price fixing of mobile batteries, the consumers in U.S., Canada and Israel have filed three class actions against the Parent Company and certain overseas subsidiaries. However, the ultimate outcome of these cases cannot be determined at the reporting date.

(6) In addition, as at June 30, 2018, the Parent Company and certain subsidiaries have been named as a plaintiff in 13 and 24 legal actions, respectively, involving ₩16,721 million and ₩4,314 million in claims, respectively. They have been named as a defendant in 38 and 23 legal actions, respectively, with ₩59,173 million and ₩17,628 million in claims, respectively. The ultimate outcome of these cases cannot be determined at the reporting date.

(7) As at June 30, 2018, the Parent Company has technology license agreements with STYRON EUROPE GmbH and other companies for the production of Polycarbonate products. Further, the Parent Company has entered into manufacture and production technical contracts with Exxon Mobile and others.

(8) The Parent Company has entered into a license agreement with LG Corp. to use trademarks on the products that the Group manufactures and sells, and on the services the Group provides in relation to its business.

(9) As at June 30, 2018, the Parent Company has entered into payment guarantee contract of USD 1 million and EUR 5 million with financial institutions to guarantee the warrant of certain installed products. Also, certain subsidiaries have entered into payment guarantee contract of CNY 365 million with financial institutions in relation to custom of imported raw materials.

(10) As at June 30, 2018 and December 31, 2017, assets pledged as collateral for the borrowings are as follows:

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

	June 30, 2018			
	Secured amount	Borrowings / Loan	Limit	Secured party
Other receivables	300	Non-current borrowings (Won currency)	529	KEB Hana Bank
	<u>300</u>		<u>529</u>	

(in millions of Korean won)

	December 31, 2017			
	Secured amount	Borrowings / Loan	Limit	Secured party
Other receivables	300	Non-current borrowings (Won currency)	705	KEB Hana Bank
Gumi facility, Anseong facility, Genetics institute	52,000	Collateralized debentures (Won currency)	40,000	Creditors
	<u>52,300</u>		<u>40,705</u>	

(11) Capital expenditure arrangement that has not incur at the end of the reporting period is as follows:

(in millions of Korean won)

	June 30, 2018	December 31, 2017
Property, plant and equipment	4,134,055	1,734,663

(12) The Group has entered into operating lease agreements for offices, equipment, ports and others. Most of the agreements will be terminated within a year after the end of the reporting period.

19. Share Capital

Changes in share capital and share premium for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

(in millions of Korean won and in shares)

	Ordinary shares		Preferred shares		Share premium
	Number of shares	Share capital	Number of shares	Share capital	
January 1, 2017	66,271,100	331,356	7,628,921	38,144	897,424
Share issuance due to business combination	<u>4,321,243</u>	<u>21,606</u>	<u>59,879</u>	<u>300</u>	<u>1,116,614</u>
December 31, 2017	<u>70,592,343</u>	<u>352,962</u>	<u>7,688,800</u>	<u>38,444</u>	<u>2,014,038</u>
June 30, 2018	<u>70,592,343</u>	<u>352,962</u>	<u>7,688,800</u>	<u>38,444</u>	<u>2,014,038</u>

Changes in treasury shares for the six-month period ended June 30, 2018 and for the year ended December 31, 2017, are as follows:

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

<i>(in millions of Korean won and in shares)</i>	Number of shares		Carrying amount	Gain on disposal of treasury shares
	Ordinary shares	Preferred shares		
January 1, 2017	359,795	5,519	15,484	13,855
Purchase of treasury shares due to business combination	1,284,891	10,328	337,211	-
Acquisition of fractional shares due to business combination	7,730	520	2,250	-
December 31, 2017	1,652,416	16,367	354,945	13,855
June 30, 2018	1,652,416	16,367	354,945	13,855

20. Retained Earnings

Retained earnings as at June 30, 2018 and December 31, 2017, consist of:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Legal reserve ¹	324,135	312,894
Discretionary reserve ²	12,541,819	11,410,610
Retained earnings before appropriation	1,718,900	2,315,746
Total	14,584,854	14,039,250

¹ The Commercial Code of the Republic of Korea requires the Parent Company to appropriate for each financial period, as a legal reserve, an amount equal to a minimum of 10% of cash dividends paid until such reserve equals 50% of its issued share capital. The reserve is not available for cash dividends payment, but may be transferred to share capital or used to reduce accumulated deficit. When the accumulated legal reserves (the sum of capital reserves and earned profit reserves) are greater than 1.5 times the paid-in capital amount, the excess legal reserves may be distributed in accordance with a resolution of the shareholders' meeting.

² The Group separately accumulates a discretionary reserve for research and human resource development through appropriation of retained earnings, which has been included as deductible expense for the corporate income tax return according to the Special Tax Treatment Law. The reserve could be reversed in accordance with the terms of related tax laws.

21. Other Components of Equity

Details of other components of equity as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Treasury shares (Note 19)	(354,945)	(354,945)
Capital transactions within the Group ¹	(7,731)	(7,731)
Total	(362,676)	(362,676)

¹ Includes gain or loss on disposal of investments and investment differences due to changes in equity, net of deferred tax.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

22. Selling and Administrative Expenses

Selling and administrative expenses for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Wages and salaries	209,171	401,204	179,235	364,231
Post-employment benefits (Note 16)	12,764	25,565	10,434	22,219
Employee benefits	38,219	72,324	36,904	68,861
Travel expense	14,888	28,158	13,233	24,694
Water & utilities	8,875	22,569	8,631	19,027
Packaging expense	2,039	4,033	2,009	3,432
Rental expenses	24,471	44,784	22,103	41,995
Commission expenses	104,440	198,804	83,545	163,011
Depreciation (Note 11)	28,543	55,757	23,614	47,428
Advertising expense	10,596	16,103	7,472	12,657
Freight expenses	140,005	272,891	135,108	263,341
Training expense	5,967	9,944	4,681	7,809
Amortization (Note 12)	20,820	41,070	17,620	34,429
Sample expense	5,045	9,126	5,230	9,306
Development costs	50,244	89,610	33,337	61,050
Others	92,202	167,067	60,825	117,199
Total	768,289	1,459,009	643,981	1,260,689

23. Breakdown of Expenses by Nature

Cost of sales, and selling and administrative expenses by nature for the three-month and six-month periods ended June 30, 2018 and 2017, consist of:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Changes in inventories of merchandise, finished goods, semi-finished goods and work in process	(21,878)	(276,369)	90,338	(5,457)
Raw materials and consumables used	4,025,658	7,943,159	3,384,270	7,209,585
Purchase of merchandise	341,923	637,252	344,856	666,536
Employee benefit expenses (Note 24)	619,935	1,180,724	541,919	1,084,800
Advertising expenses	10,975	16,685	7,822	13,167
Freight expenses	149,384	292,254	144,236	281,736
Commission expenses	168,325	324,583	140,577	269,981
Depreciation and amortization	362,353	717,591	352,389	702,989
Operating lease payments	22,646	46,094	22,049	43,851
Other expenses	669,241	1,369,338	626,736	1,077,764
Total	6,348,562	12,251,311	5,655,192	11,344,952

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

24. Employee Benefit Expenses

Details of employee benefit expenses for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Salaries	523,448	994,721	454,258	912,710
Post-employment benefits – Defined benefit plan (Note 16)	37,525	74,870	33,886	69,521
Post-employment benefits – Defined contribution plan (Note 16)	1,691	3,321	168	310
Others	57,271	107,812	53,607	102,259
Total	619,935	1,180,724	541,919	1,084,800

25. Finance Income and Costs

Details of finance income and costs for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Finance income				
Interest income ¹	12,233	23,497	6,340	13,806
Dividend income	8	8	8	204
Gain on foreign exchange	43,396	79,046	34,019	77,612
Gain on foreign currency translation	12,376	13,289	23,247	28,765
Gain on valuation of derivative instruments	2,019	2,019	-	-
Gain on disposal of hedging derivatives	-	-	-	170
Total	70,032	117,859	63,614	120,557
Finance costs				
Interest expense ²	29,595	55,174	26,851	53,940
Loss on foreign exchange	32,296	68,131	22,811	96,159
Loss on foreign exchange translations	84,422	56,905	6,970	7,720
Loss on redemption of debentures	-	13	-	-
Total	146,313	180,223	56,632	157,819

¹ Details of interest income for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Deposits held by financial institutions	11,349	21,192	5,208	11,709
Non-current financial assets	-	-	-	5
Other loans and receivables	884	2,305	1,132	2,092
Total	12,233	23,497	6,340	13,806

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

² Details of interest expense for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Interest on bank overdraft and borrowings	23,447	33,317	20,270	41,186
Interest on finance lease liabilities	260	513	293	1,030
Interest on debentures	10,691	27,438	5,643	10,676
Other interest expenses	1,607	3,007	1,804	3,318
Capitalized interest for qualifying assets	(6,410)	(9,101)	(1,159)	(2,270)
Total	29,595	55,174	26,851	53,940

26. Other Non-Operating Income

Details of other non-operating income for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Gain on foreign exchange	68,105	122,413	58,532	179,621
Gain on foreign currency translation	100,755	104,192	104,815	43,493
Gain on disposal of property, plant and equipment	2,884	3,019	875	1,632
Gain on disposal of intangible assets	2	2	-	4,867
Reversal of impairment loss on property, plant and equipment (Note 11)	311	311	-	-
Gain on disposal of investments in associates	-	-	1,952	1,952
Others	7,795	13,867	11,809	39,494
Total	179,852	243,804	177,983	271,059

27. Other Non-Operating Expenses

Details of other non-operating expenses for the three-month and six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Three months	Six months	Three months	Six months
Loss on foreign exchange	60,149	103,552	68,780	189,233
Loss on foreign currency translation	73,363	78,359	58,498	16,623
Loss on disposal of property, plant and equipment	3,851	17,061	4,972	26,107
Loss on disposal of intangible assets	28	77	1,020	1,807
Impairment loss on property, plant and equipment (Note 11)	15,110	16,385	107	12,869
Impairment loss on intangible assets (Note 12)	1,704	1,704	1,123	4,272
Donations	2,172	5,668	13,379	17,120

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Others	5,033	14,861	34,788	65,306
Total	<u>161,410</u>	<u>237,667</u>	<u>182,667</u>	<u>333,337</u>

28. Tax Expense and Deferred Tax

Income tax expense is recognized based on the best estimate of weighted average annual income tax rate expected for the full financial year. The estimated average annual income tax rate used for the year ending December 31, 2018, is 23.9% (the estimated tax rate for the year ended December 31, 2017: 21.2%).

29. Earnings per Share

Basic earnings per share is calculated by dividing the profit attributable to owners of the Parent Company by the weighted average number of shares in issue excluding shares purchased by the Parent Company and held as treasury shares. As at the reporting date, the Parent Company has no potential ordinary shares. Preferred shares have a right to participate in the profits of the Parent Company. These participation rights have been considered in presenting the EPS for ordinary shares and preferred shares.

Basic earnings per share attributable to the owners of the Parent Company for the three-month and six-month periods ended June 30, 2018 and 2017, is computed as follows:

Basic earnings per ordinary share

*(in millions of Korean won and
in number of shares)*

	<u>2018</u>		<u>2017</u>	
	Three months	Six months	Three months	Six months
Profit attributable to ordinary shares ¹	429,796	907,846	519,199	997,376
Weighted average number of ordinary shares outstanding ²	<u>68,939,927</u>	<u>68,939,927</u>	<u>68,940,610</u>	<u>68,940,610</u>
Basic earnings per share attributable to the ordinary shares (in won)	<u>6,234</u>	<u>13,169</u>	<u>7,531</u>	<u>14,467</u>

Basic earnings per preferred share

*(in millions of Korean won and
in number of shares)*

	<u>2018</u>		<u>2017</u>	
	Three months	Six months	Three months	Six months
Profit attributable to preferred shares ¹	47,928	101,227	57,878	111,191
Weighted average number of preferred shares outstanding ²	<u>7,672,433</u>	<u>7,672,433</u>	<u>7,672,479</u>	<u>7,672,479</u>
Basic earnings per share attributable to the preferred shares (in won)	<u>6,247</u>	<u>13,194</u>	<u>7,544</u>	<u>14,492</u>

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

¹ Profit attributable to ordinary and preferred shares are as follows:

*(in millions of Korean won and
in number of shares)*

	2018		2017	
	Three months	Six months	Three months	Six months
Profit attributable to the equity holders of the Parent Company				
Dividends to the ordinary shares (A)	477,724	1,009,073	577,077	1,108,567
Dividends to the preferred shares (B)	103,410	206,820	86,175	172,351
Dividends to the preferred shares (B)	11,604	23,209	9,687	19,373
Undistributed earnings for the year	362,710	779,044	481,215	916,843
Undistributed earnings available for the ordinary shares (C)	326,386	701,026	433,024	825,025
Undistributed earnings available for the preferred shares (D)	36,324	78,018	48,191	91,818
Profit for the period attributable to the ordinary shares (A+C)	429,796	907,846	519,199	997,376
Profit for the period attributable to the preferred shares (B+D)	47,928	101,227	57,878	111,191

² Weighted average numbers of shares are calculated as follows:

Ordinary shares outstanding	2018			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2018. 1. 1 - 2018. 6. 30	68,939,927	181	12,478,126,787
Total				12,478,126,787

Weighted average number of ordinary shares outstanding: 12,478,126,787 / 181 = 68,939,927 shares

Preferred shares outstanding	2018			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2018. 1. 1 - 2018. 6. 30	7,672,433	181	1,388,710,373
Total				1,388,710,373

Weighted average number of preferred shares outstanding: 1,388,710,373 / 181 = 7,672,433 shares

Ordinary shares outstanding	2017			
	Period	Number of shares	Number of days	Number of shares x days
Beginning balance	2017. 1. 1 - 2017. 6. 30	65,911,305	181	11,929,946,205
Share issuance due to business combination	2017. 1. 1 - 2017. 6. 30	4,321,243	181	782,144,983
Purchase of treasury shares	2017. 1. 1 - 2017. 6. 30	(1,284,891)	181	(232,565,271)
Purchase of treasury shares	2017. 1. 17 - 2017. 6. 30	(7,730)	165	(1,275,450)
Total				12,478,250,467

Weighted average number of ordinary shares outstanding: 12,478,250,467 / 181 = 68,940,610 shares

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Preferred shares outstanding	Period	2017		
		Number of shares	Number of days	Number of shares x days
Beginning balance	2017. 1. 1 - 2017. 6. 30	7,623,402	181	1,379,835,762
Share issuance due to business combination	2017. 1. 1 - 2017. 6. 30	59,879	181	10,838,099
Purchase of treasury shares	2017. 1. 1 - 2017. 6. 30	(10,328)	181	(1,869,368)
Purchase of treasury shares	2017. 1. 17 - 2017. 6. 30	(520)	165	(85,800)
Total				1,388,718,693

Weighted average number of preferred shares outstanding: $1,388,718,693 / 181 = 7,672,479$ shares

Diluted earnings per share is calculated based on the weighted average number of ordinary shares outstanding, adjusted for the assumption that all of dilutive potential ordinary shares to be converted. The Group has one category of dilutive potential ordinary shares: convertible bonds, which were issued during this period. Convertible bonds are considered to be converted into potential ordinary shares and the amount, subtracting income tax effect from related gain and loss such as interest expense on convertible bonds, is added to profit for the period attributable to ordinary shares and preferred shares.

(in millions of Korean won and in number of shares)

	2018	
	Three months	Six months
Diluted earnings per ordinary shares		
Profit for the period attributable to the ordinary shares	429,796	907,846
Gain and loss on convertible bonds	(619)	(247)
Profit used in calculating diluted earnings per share	429,177	907,599
Weighted average number of ordinary shares outstanding	68,939,927	68,939,927
Adjustments for calculation of diluted earnings per share	539,446	539,446
Weighted average number of ordinary shares and potential ordinary shares used as the denominator in calculating diluted earnings per share	69,479,373	69,479,373
Diluted earnings per share attributable to the ordinary shares (in won)	6,177	13,063

(in millions of Korean won and in number of shares)

	2018	
	Three months	Six months
Diluted earnings per preferred shares		
Profit for the period attributable to preferred shares	47,928	101,227
Gain and loss on convertible bonds	(439)	(811)
Profit used in calculating diluted earnings per share	47,489	100,416
Weighted average number of preferred shares outstanding	7,672,433	7,672,433
Adjustments for calculation of diluted earnings per share	-	-
Weighted average number of preferred shares and potential preferred shares used as the denominator in calculating diluted earnings per share	7,672,433	7,672,433
Diluted earnings per share attributable to the preferred shares (in won)	6,190	13,088

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

30. Dividends

The ₩ 460,058 million (2017: ₩ 368,055 million) of dividends for the year ended December 31, 2017, was paid to the shareholders of the Parent Company in April 2018.

31. Related Party Transactions

As at June 30, 2018 and December 31, 2017, LG Corp. is an entity exercising a significant influence over the Group, which owns 33.34% of the Parent Company's ordinary shares.

Details of associates and other related parties that have sales and other transactions with the Group or have receivables and payables balances as at June 30, 2018 and December 31, 2017, are as follows, and the details of investments in subsidiaries, associates and joint ventures are described in Note 1.3:

Related party	Related party's subsidiary (Domestic)	Related party's subsidiary (overseas)	Details
SERVEONE	-		Subsidiary of LG Corp.
LG CNS Co., Ltd.	LG N-Sys Inc. and others	LG CNS America Inc. and others	Subsidiary of LG Corp.
LG Siltron Incorporated	-	-	Subsidiary of LG Corp.
LG Management Development Institute	-	-	Subsidiary of LG Corp.
LG Sports Ltd.	-	-	Subsidiary of LG Corp.
LG Holdings Japan	-	-	Subsidiary of LG Corp.
LG MMA Corporation	-	-	Joint venture of LG Corp.
LG Display Co., Ltd.	-	LG Display (China) Co., Ltd. and others	LG Enterprise group ¹
LG Electronics, Inc.	LG Innotek Co., Ltd. and others	Inspur LG Digital Mobile Communications Co., Ltd. and others	LG Enterprise group ¹
LG International Corp.	Pantos Logistics Co., Ltd. and others	LG International (Japan) Ltd. and others	LG Enterprise group ¹
LG Hausys, Ltd.	-	LG Hausys Tianjin Co., Ltd. and others	LG Enterprise group ¹
LG Household & Health Care Ltd.	Coca-Cola Beverage Co.	-	LG Enterprise group ¹
LG Uplus Corp.	-	-	LG Enterprise group ¹
G II R Inc.	HS AD Inc.	-	LG Enterprise group ¹
Silicon Works Co., Ltd.	-	-	LG Enterprise group ¹

¹ Although the entity is not the related party of the Group in accordance with Korean IFRS 1024, the entity belongs to a large enterprise group in accordance with the Monopoly Regulation and Fair Trade Act.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Sales and purchases with related parties for the six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018			
	Sales and others	Purchase and others		
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Others
Entity with a significant influence over the Group				
LG Corp.	-	-	-	33,144
Associates and joint ventures				
SEETEC Co., Ltd.	11,466	57,504	124	40,520
TECWIN Co., Ltd.	-	131	2,055	160
HL Greenpower Co., Ltd.	164,654	-	-	364
Others	26	-	-	1,310
Other related parties				
LG MMA Corporation	60,519	132,692	-	3,635
SERVEONE and its subsidiaries	6,891	273,594	297,062	83,402
LG CNS Co., Ltd. and its subsidiaries	36,747	1,105	87,738	47,758
Others	-	-	-	7,746
Others				
LG Display Co., Ltd. and its subsidiaries	576,206	-	1,564	-
LG Electronics Inc. and its subsidiaries	495,524	199,196	395,763	66,755
LG International Corp. and its subsidiaries	140,827	263,955	576	186,883
LG Hausys, Ltd. and its subsidiaries	105,503	1,582	942	3,661
Others	9,124	14,148	2,216	5,495
Total	1,607,487	943,907	788,040	480,833

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

	2017			
	Sales and others	Purchase and others		
		Purchase of raw materials /merchandises	Acquisition of property, plant and equipment and intangible assets	Others
Entity with a significant influence over the Group				
LG Corp.	-	-	-	31,044
Associates and joint ventures				
SEETEC Co., Ltd.	9,147	58,921	17	45,204
TECWIN Co., Ltd.	-	138	1,730	44
HL Greenpower Co., Ltd.	116,217	324	-	-
Others	4	-	-	1,350
Other related parties				
LG MMA Corporation	41,128	107,017	-	3,094
SERVEONE and its subsidiaries	7,206	241,546	98,634	141,859
LG CNS Co., Ltd. and its subsidiaries	8,961	292	46,780	33,283
Others	6	-	-	6,219
Others				
LG Display Co., Ltd. and its subsidiaries	649,891	-	-	12
LG Electronics Inc. and its subsidiaries	477,203	122,640	63,704	9,085
LG International Corp. and its subsidiaries	157,935	242,645	167	175,120
LG Hausys, Ltd. and its subsidiaries	107,551	4,700	-	3,849
Others	13,610	14,417	362	3,888
Total	1,588,859	792,640	211,394	454,051

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Balances of receivables and payables arising from sales and purchases of goods and services with related parties as at June 30, 2018 and December 31, 2017, are as follows:

(in millions of Korean won)

	June 30, 2018			
	Receivables			
	Trade receivables and others	Loan receivables	Other receivables	Total
Entity with a significant influence over the Group				
LG Corp.	-	-	11,279	11,279
Associates and joint ventures				
SEETEC Co., Ltd.	1,564	-	260	1,824
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	87,235	-	-	87,235
Others	-	-	832	832
Other related parties				
LG MMA Corporation	10,295	-	374	10,669
SERVEONE and its subsidiaries	1,575	-	27,948	29,523
LG CNS Co., Ltd. and its subsidiaries	17,095	-	-	17,095
Others	-	-	4,900	4,900
Others				
LG Display Co., Ltd. and its subsidiaries	198,785	-	1,753	200,538
LG Electronics Inc. and its subsidiaries	191,303	-	24,446	215,749
LG International Corp. and its subsidiaries	38,915	-	711	39,626
LG Hausys, Ltd. and its subsidiaries	41,691	-	175	41,866
Others	1,913	-	1,279	3,192
Total	590,371	-	73,957	664,328

(in millions of Korean won)

	June 30, 2018			
	Payables			
	Trade payables	Borrowings	Other payables	Total
Entity with a significant influence over the Group				
LG Corp.	-	-	7,468	7,468
Associates and joint ventures				
SEETEC Co., Ltd.	11,782	-	10,555	22,337
TECWIN Co., Ltd.	-	-	798	798
HL Greenpower Co., Ltd.	-	-	-	-
Others	-	-	126	126
Other related parties				
LG MMA Corporation	19,901	-	-	19,901
SERVEONE and its subsidiaries	102,477	-	229,107	331,584
LG CNS Co., Ltd. and its subsidiaries	2,679	-	106,596	109,275
Others	-	-	576	576
Others				
LG Display Co., Ltd. and its subsidiaries	152	-	-	152
LG Electronics Inc. and its subsidiaries	173,792	-	106,558	280,350
LG International Corp. and its subsidiaries	18,394	-	54,652	73,046
LG Hausys, Ltd. and its subsidiaries	1,654	-	1,295	2,949
Others	1,987	-	6,334	8,321
Total	332,818	-	524,065	856,883

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

(in millions of Korean won)

	December 31, 2017			
	Receivables			Total
	Trade receivables and others	Loan receivables	Other receivables	
Entity with a significant influence over the Group				
LG Corp.	-	-	9,183	9,183
Associates and joint ventures				
SEETEC Co., Ltd.	1,752	-	279	2,031
TECWIN Co., Ltd.	-	-	-	-
HL Greenpower Co., Ltd.	60,726	-	-	60,726
Others	16	-	-	16
Other related parties				
LG MMA Corporation	8,663	-	482	9,145
SERVEONE and its subsidiaries	2,893	-	27,948	30,841
LG CNS Co., Ltd. and its subsidiaries	20,209	-	-	20,209
Others	-	-	4,873	4,873
Others				
LG Display Co., Ltd. and its subsidiaries	240,427	-	6,057	246,484
LG Electronics Inc. and its subsidiaries	287,566	-	46,116	333,682
LG International Corp. and its subsidiaries	48,332	-	891	49,223
LG Hausys, Ltd. and its subsidiaries	40,089	-	92	40,181
Others	318	-	398	716
Total	710,991	-	96,319	807,310

(in millions of Korean won)

	December 31, 2017			
	Payables			Total
	Trade payables	Borrowings	Other payables	
Entity with a significant influence over the Group				
LG Corp.	-	-	7,897	7,897
Associates and joint ventures				
SEETEC Co., Ltd.	10,698	-	10,759	21,457
TECWIN Co., Ltd.	-	-	2,195	2,195
HL Greenpower Co., Ltd.	-	-	-	-
Others	-	-	-	-
Other related parties				
LG MMA Corporation	19,140	-	-	19,140
SERVEONE and its subsidiaries	12,630	-	442,860	455,490
LG CNS Co., Ltd. and its subsidiaries	994	-	116,422	117,416
Others	-	-	557	557
Others				
LG Display Co., Ltd. and its subsidiaries	-	-	8,660	8,660
LG Electronics Inc. and its subsidiaries	114,892	-	127,946	242,838
LG International Corp. and its subsidiaries	35,962	-	40,581	76,543
LG Hausys, Ltd. and its subsidiaries	3,409	-	1,811	5,220
Others	2,151	-	5,779	7,930
Total	199,876	-	765,467	965,343

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Fund transactions with related parties for the six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018		2017	
	Equity contributions in cash (capital reduction)	Loan (Repayment)	Equity contributions in cash (capital reduction)	Loan (Repayment)
Associates and joint ventures				
FJ Composite Materials Co., Ltd.	-	-	3,015	-
WUXI CL New Energy Technology Ltd.	559	-	1,178	-
LG Fuel Cell Systems Inc.	-	-	24,527	(9,584)
Combustion Synthesis Co., Ltd.	1,503	-	-	-
Total	2,062	-	28,720	(9,584)

Dividends received from related parties for the six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Associates and joint ventures		
SEETEC Co., Ltd.	10,000	10,000
LG VINA Chemical Co., Ltd.	810	846
Total	10,810	10,846

Dividends paid to related parties for the six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Entity with a significant influence over the Group		
LG Corp.	141,205	111,097
Total	141,205	111,097

Compensation for key management of the Group for the six-month periods ended June 30, 2018 and 2017, consists of:

(in millions of Korean won)

	2018	2017
Short-term employee benefits	37,580	39,375
Post-employment benefits	2,954	1,737
Total	40,534	41,112

Key management includes directors and audit committee members having duties and responsibilities over planning, operations and controlling of the Group's business activities.

There are no provisions recognized against receivables from related parties as at June 30, 2018.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

As at June 30, 2018, there is no payment guarantees provided by the Group for related parties.

32. Cash Generated from Operations

Reconciliation between profit before income tax and cash generated from operations for the six-month periods ended June 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018	2017
Profit before income tax	1,297,448	1,427,895
Adjustments for:		
Depreciation	666,140	659,003
Amortization	52,940	43,986
Post-employment benefits	74,870	69,521
Finance income	(146,568)	(85,793)
Finance costs	185,071	78,853
Foreign exchange differences	(256)	(71,632)
Loss on valuation of inventories	(2,701)	(10,494)
Gain on disposal of property, plant and equipment	(3,019)	(1,632)
Gain on disposal of intangible assets	(2)	(4,867)
Loss on disposal of property, plant and equipment	17,061	26,107
Loss on disposal of intangible assets	77	1,807
Impairment loss on property, plant and equipment	16,385	12,869
Reversal of impairment loss on property, plant and equipment	(310)	-
Impairment loss on intangible assets	1,704	4,272
Gain on disposal of investments in associates	-	(1,952)
Additions to provisions	99,060	93,255
Other expense	9,602	265
Increase in inventories	(558,770)	(11,860)
Increase in trade receivables	(548,007)	(553,662)
Decrease (increase) in other receivables	47,265	(1,647)
Decrease (increase) in other current assets	4,366	(53,172)
Increase in settlement of derivatives	-	(2,114)
Increase (decrease) in trade payables	30,518	(141,797)
Decrease in other payables	(373,341)	(41,059)
Increase (decrease) in other current liabilities	(204,929)	43,672
Decrease in net defined benefit liabilities	(9,374)	(6,421)
Decrease in provisions	(60,255)	(32,100)
Other cash flows from operations	(2,909)	1,573
Cash generated from operations	<u>592,066</u>	<u>1,442,876</u>

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

Changes in liabilities arising from financial activities for the six-month period ended June 30, 2018, are as follows:

(in millions of Korean won)

	2018						At June 30, 2018
	At January 1, 2018	Cash flows from financing activities	Exchange differences	Amortization (transfer)	Reclassification of current portion	Effect of change in exchange rate	
Short-term borrowings	1,451,324	266,318	10,497	-	130,796	40,167	1,903,102
Long-term borrowings	546,322	72,908	15,153	-	(130,796)	(19,199)	480,388
Debentures	1,047,303	1,657,645	4,253	1,186	-	20,124	2,730,511
Conversion rights	-	2,532	(1,998)	-	-	-	534
Total	3,044,949	1,999,403	27,905	1,186	-	41,092	5,114,535

The significant non-cash transactions for the six-month periods ended June 30, 2018 and 2017, are as follows:

(in millions of Korean won)

	2018	2017
Transfer of construction-in-progress	1,231,548	529,146
Transfer of machinery-in-transit	34,614	38,006
Reclassification of long-term borrowings into current portion	187,400	372,111
Reclassification of asset held for sale	-	3,405
Acquisition of an entity by means of the issuance of equity instruments	-	1,138,593

33. Segment Information

General information about the Group's reportable segments is as follows:

Segment	Products or services	Major customers
Basic materials & Chemicals	ABS, PC, EP, PE, PP, Acrylic, Alcohol, SAP, PVC, Synthetic rubber, Special resin, BPA, Ethylene, Propylene and others	LG Electronics Inc., OCI Company Co. Ltd., Mitsubishi Corp. and others
Energy solutions	Mobile batteries, Automotive batteries, Electricity storage batteries and others	Hewlett-Packard Co., General Motors Corp., and others
IT & Electronic materials and Advanced materials ¹	Polarizers, 3D FPR, LCD Photoresist, OLED materials, Battery materials and others	LG Display Co., Ltd., Samsung Display Co., Ltd., BOE, AUO and others
Life sciences ²	Growth hormone, Vaccine, Antidiabetic, agricultural chemicals and others	HUADONG NINGBO, UNICEF, Intervet and others
Common and others	Crop protection products, Seeds, Fertilizers, General management, sales and R&D and others	National Agriculture Cooperative Federation and others

¹ The Group presents IT & Electronic materials and Advanced materials as Advanced materials business has been included in IT & Electronic materials since 2017. The comparative

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

information was restated to reflect such changes.

² Life Sciences segment was disclosed separately as LG Life Sciences, Ltd. was merged into the Parent Company on January 1, 2017.

The segment information on revenue, profit and loss for the six-month periods ended June 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	9,030,264	2,738,466	1,523,876	282,066	408,610	13,983,282
Inter-segment revenue	133,978	1	241,630	1,713	517	377,839
Revenue from external customers ¹	8,896,286	2,738,465	1,282,246	280,353	408,093	13,605,443
Operating profit (loss) ²	1,341,403	29,047	(31,597)	22,819	(7,540)	1,354,132

<i>(in millions of Korean won)</i>	2017					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others ³	Total
Total segment revenue	8,813,848	2,119,164	1,475,236	264,660	440,024	13,112,932
Inter-segment revenue	88,996	-	148,901	1,050	5,255	244,202
Revenue from external customers ¹	8,724,852	2,119,164	1,326,335	263,610	434,769	12,868,730
Operating profit (loss) ²	1,419,233	(2,894)	52,763	39,469	15,207	1,523,778

¹ Revenue from external customers consists of sales of goods. Interest income and dividend income are included in finance income.

² Management assesses the performance of the operating segments based on a measurement of operating profit of segment.

³ Common and other segments include operating segments not qualifying as a reportable segment, supporting divisions as well as R&D divisions.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

The segment information on assets and liabilities as at June 30, 2018 and December 31, 2017, is as follows:

<i>(in millions of Korean won)</i>	June 30, 2018					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	9,941,806	6,626,978	3,591,821	1,833,169	5,405,508	27,399,282
Investments in associates and joint ventures	2,693	20,144	-	17	233,832	256,686
Reportable segment liability ¹	2,859,358	3,193,659	792,643	171,813	3,373,135	10,390,608

<i>(in millions of Korean won)</i>	December 31, 2017					
	Basic materials & Chemicals	Energy solutions	IT & Electronic materials and Advanced materials	Life sciences	Common and others	Total
Reportable segment asset ¹	9,307,132	5,460,448	3,503,330	1,809,248	4,961,063	25,041,221
Investments in associates and joint ventures	4,057	21,242	-	17	238,780	264,096
Reportable segment liability ¹	3,317,393	2,176,990	731,585	427,667	2,049,009	8,702,644

¹ Assets and liabilities are measured in a manner consistent with those in the financial statements, and allocated on the basis of segment operation.

The external sales and non-current assets by geographical segments from continuing operations for the six-month periods ended June 30, 2018 and 2017, and as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	Sales		Non-current assets ¹	
	2018	2017	June 30, 2018	December 31, 2017
Korea ²	4,429,468	4,275,362	11,019,415	10,618,989
China	4,464,091	4,257,396	2,227,858	1,887,324
Asia	2,394,528	2,412,192	38,264	31,671
America	784,228	717,567	321,390	235,481
Europe	1,355,101	1,031,754	329,815	262,199
Others	178,027	174,459	-	-
Total	13,605,443	12,868,730	13,936,742	13,035,664

¹ Represents aggregate amount of property, plant and equipment, intangible assets and investment properties.

² Domestic sales include the exports made through local letters of credit.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

There is no single external customer that contributes over 10% of the Group's revenue for the six-month periods ended June 30, 2018 and 2017.

34. Business Combination

In order to enhance future-oriented business portfolio and leap into a global player of red bio industry by enlarging investment in long-term and stable new drugs development, the Parent Company merged LG Life Sciences, Ltd. on January 1, 2017.

Goodwill of ₩ 686,229 million arising from the acquisition is attributable to sales increase expected from combining the operations of the Group and Life Sciences business. Goodwill recognized through the business combination is not deductible for income tax purpose.

The following table summarizes the consideration paid for business combination, the fair value of assets acquired and liabilities assumed at the acquisition date:

(in millions of Korean won)

	Amount
Consideration	
Equity securities (Ordinary 4,321,243 shares, Preferred 59,879 shares) ¹	1,138,593
Total consideration	<u>1,138,593</u>
Recognized amounts of identifiable assets acquired and liabilities assumed	
Cash and cash equivalents	43,832
Trade and other (non-current) receivables	112,703
Inventories	123,083
Property, plant and equipment	493,321
Intangible assets	273,550
Other assets	8,315
Trade payables	(38,736)
Borrowings	(729,745)
Provisions	(6,053)
Net defined benefit liabilities	(11,922)
Other liabilities	(153,195)
Treasury shares (Ordinary 1,284,891 shares, Preferred 10,328 shares) ¹	337,211
Fair value of identifiable net assets	<u>452,364</u>
Goodwill	686,229
Total	<u>1,138,593</u>

¹ The fair value of ordinary shares, preferred shares and treasury shares acquired were based on the market price at the acquisition date.

With regard to the above business combination, share issuance cost of ₩ 73 million was deducted from equity.

LG Chem, Ltd. and Subsidiaries
Notes to the Consolidated Interim Financial Statements
June 30, 2018 and 2017 (Unaudited), and December 31, 2017

35. Assets Held for sale

The Group decided to dispose of Electrolyte business, 2CCL business and others upon the approval of management in February 2016 and January 2017, respectively. The related assets were reclassified as assets held for sale, and the disposal is expected to be completed in 2018. Assets and liabilities of Research Institute and FarmHwaong Co., Ltd., which were acquired during the course of the business combination of FarmHannong Co., Ltd., are also included. The assets and liabilities of Electrolyte business was completely disposed during this period, and the assets and liabilities of 2CCL business and others are expected to be disposed in 2018.

Details of assets and liabilities of disposal group classified as held for sale as at June 30, 2018 and December 31, 2017, are as follows:

<i>(in millions of Korean won)</i>	June 30, 2018	December 31, 2017
Assets of disposal group		
Property, plant and equipment	3,178	5,486
Intangible assets	358	358
Other receivables and others	732	751
Total	<u>4,268</u>	<u>6,595</u>
Liabilities of disposal group		
Other payables and others	30	31
Total	<u>30</u>	<u>31</u>

Assets of the disposal group were measured at fair value immediately before the initial classification of the assets as held for sale and the related other non-operating expenses (income) for the six-month periods ended June 30, 2018 and 2017, is as follows:

<i>(in millions of Korean won)</i>	2018	2017
Impairment loss on property, plant and equipment	-	10,382
Impairment loss on intangible assets	-	4
Total	<u>-</u>	<u>10,386</u>

EXHIBIT 4



Sun Oct 06 2019

Entity#: 1653994
Filing Type: FOREIGN CORPORATION
Original Filing Date: 10/13/2006
Location: --
Business Name: LG FUEL CELL SYSTEMS INC.

Status: Active
Exp. Date: -

Agent/Registrant Information

CORPORATION SERVICE COMPANY
 50 WEST BROAD STREET
 SUITE 1330
 COLUMBUS OH 43215
 11/10/2016
 Active

Filings

Filing Type	Date of Filing	Document ID
FOREIGN LICENSE/FOR-PROFIT	10/13/2006	200628900262
FOREIGN/AMENDMENT	06/29/2012	201218500124
FOREIGN/AGENT CHANGE OF ADDRESS	11/10/2016	201632602630

Prior Business Names

Prior Business Name	Effective Date
ROLLS-ROYCE FUEL CELL SYSTEMS (US) INC.	06/29/2012

Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

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I, Frank LaRose, Secretary of State of the State of Ohio, do hereby certify that this is a list of all records approved on this business entity and in the custody of the Secretary of State.



*Witness my hand and the seal of the
Secretary of State at Columbus,
Ohio this 6th of October, A.D. 2019*

Ohio Secretary of State

Frank LaRose

BUSINESS

Rolls-Royce sells 51% of its Ohio fuel cell company to LG

Updated Jan 12, 2019;
Posted Jun 28, 2012

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By **John Funk, The Plain Dealer**

NORTH CANTON, Ohio -- Korean industrial and electronic conglomerate LG is investing \$45 million in Ohio's premier fuel cell development company.

LG now owns a 51 percent share of Rolls-Royce Fuel Cell Systems Inc., which is based in North Canton on the campus of Stark State College.

LG, of Seoul, South Korea, and London-based Rolls-Royce Holdings announced the agreement in a joint statement Thursday. The company will now be called LG Fuel Cell Systems.

Fuel cells generate electricity by combining hydrogen with oxygen from the air in the presence of a catalyst. The process produces heat and water. A commercial fuel cell system is a complicated piece of equipment, requiring many sub-systems. Ohio manufacturers already make many of the myriad parts that go into these systems.

Electronically Filed 12/09/2019 12:00 / BRIEF / CV 1



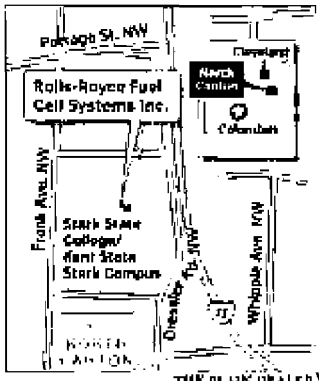
1888732 / BATCH

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The new company's mission is unchanged: to develop very large fuel cells for industrial, commercial and

utility use. The plan has been to connect the fuel cells to natural gas pipelines. Natural gas contains hydrogen.



THE PLAIN DEALER [View full size](#)

There are already a number of U.S. fuel cell companies that manufacture and market small fuel cells. For example, many cell phone companies now use fuel cells to provide back-up power. There are also industrial fork lifts that run on fuel cells rather than batteries or combustion engines.

The commercialization of such large fuel cells -- one million watts -- designed to run on the hydrogen from natural gas comes just as Ohio's shale gas boom gets underway.

Chief Executive Mark Fleiner said LG's entry into the company "is very good news."

"We will have an infusion of capability, an infusion of engineers and an infusion of capital," he said.

"If you look at a fuel cell system and the technologies that go into its manufacturing, and the processes that are needed to support it, that is where a company like LG has tremendous capability and strengths that are very complimentary to what Rolls-Royce brings," he said.

The company now has 45 employees. Fleiner declined to say how many additional employees he expects LG to send.

LG invested in the company, according to an LG spokeswoman quoted in the Korea Times, "because we expect a synergy between its fuel cell production technology and LG's existing capabilities."

The Korea Herald, quoting an unnamed official, reported that LG Fuel Cell Systems wants to commercialize its own fuel cells within four years.

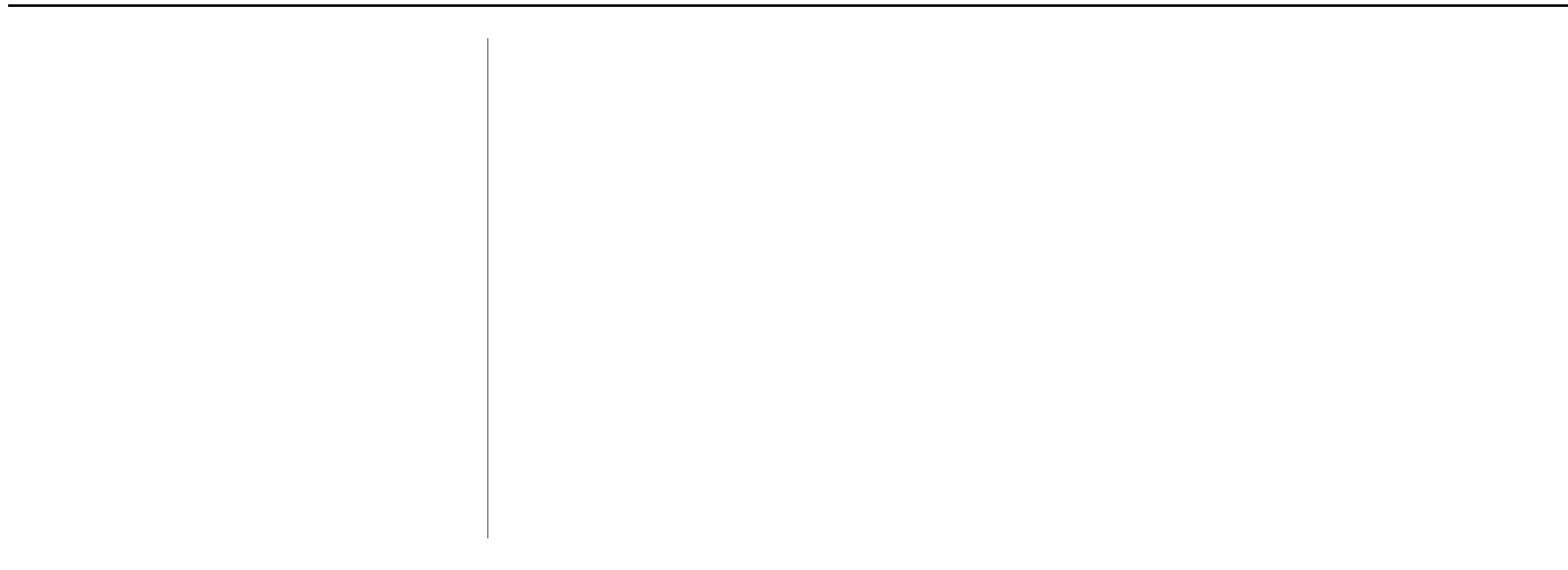
The U.S. headquarters for Rolls-Royce Fuel Cell Systems has been at Stark State since 2009. With the Thursday agreement, the facility will now be the global headquarters of LG Fuel Cell Systems.

Rolls-Royce won more than \$5 million in Ohio Third Frontier grants during the decade. The state also built the \$8 million facility on the Stark State campus that houses the company.

Reaction from the Kasich Administration to the investment and change of ownership was cautious but optimistic.

"The successful commercialization of research is one of the Ohio Third Frontier's goals," said Katie Sabatino, spokeswoman for the Ohio Department of Development. " We're happy to see it's working and we hope that other companies can follow this lead."

Rolls-Royce said the joint venture will continue to have complete access to Rolls-Royce technical expertise and the new company intends to continue its relationship with the US Department of Energy's program to develop fuel cells.



Fleiner added that his company will continue to work with researchers at Case Western Reserve University. The CWRU fuel cell program and the Third Frontier grants were two of the reasons Rolls-Royce chose Ohio over other states, he said.

Whether the company will manufacture the fuel cells here is another open question.

"I think it is still early to determine," he said. "But one of the things we collectively do know is that there is a big market opportunity in North America, and big market opportunity in South Korea and opportunities

a big market opportunity in North America, and big market opportunity in South Korea and opportunities in Europe and the UK . You want to keep manufacturing close to where the market opportunities are.

Ohio Fuel Cell Coalition Executive Director Patrick Valente said the new partnership will be good for the industry.

Rolls-Royce is a global manufacturer of land, sea and air power systems and services, from aircraft engines to naval turbines to generators used in oil and gas well fields. The company has operations in more than 50 countries.

LG manufactures electronics, telecommunications equipment and chemicals and has operations in more than 100 countries.

Last fall the company said it would spend nearly \$7 billion globally by 2015 investing in "green" technologies. Fuel cells, even those running on natural gas, are considered green compared to traditional power plants.

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Subsidy Tracker Parent Company Summary

Parent Company Name: LG

Ownership Structure: publicly traded

Headquartered in: South Korea

Major Industry: diversified

Specific Industry: diversified

Subsidy Summary	Subsidy Value	Number of Awards
State/Local	\$330,002,717	14
Federal (grants and allocated tax credits)	\$376,583,790	24
TOTAL	\$706,586,507	38

Loan / Bailout Summary	Total Face Value	Number of Awards
State/Local loans, bond financing and venture capital	\$0	0
Federal loans, loan guarantees and bailout assistance (not including repayments)	\$5,000,000	2
TOTAL	\$5,000,000	2

Time Period for State and Local Awards:

Earliest year of data: 2004. Availability of data for earlier years varies greatly from program to program. The majority of the listings for this parent company are for the period since 2010.

Time Period for Federal Awards:

FY2000 to the present

Notes:

The dollar total above adjusts for the fact that there is an overlap between the amount in the Megadeal entry and that of one or more of the other entries. Dollar totals do not include awards for which no subsidy value is disclosed.

Associated Names:

COMPACT POWER; LG; LG Chem; LG Hausys

Links:

For a summary of this company's regulatory violations see its Violation Tracker summary page [here](#).

For an overview of this company's accountability track record, read its Corporate Rap Sheet [here](#).

Top 5 States for state/local awards	Total Subsidy \$	Number of Awards
Michigan	\$326,179,000	6
Ohio	\$3,124,645	5

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Top 5 States for state/local awards	Total Subsidy \$	Number of Awards
Georgia	\$690,000	2
Oregon	\$9,072	1

Individual Subsidy Records:

Click on the company name for more information on each subsidy award.

Download results as [CSV](#) or [XML](#)

Company	Location	Subsidy Source	Year	Subsidy Value ▼	Loan/Bailout Value	Type of Subsidy
LG Chem-Compact Power	Michigan	multiple	2009	\$198,000,000		MEGADEAL ?
LG CHEM MICHIGAN INC.	United States	federal	2017	\$151,431,953		federal grant
LG CHEM MICHIGAN INC.	United States	federal	2010	\$151,342,047		federal grant
Compact Power, Inc.	Michigan	state	2009	\$100,000,000		tax credit/rebate
LG Chem Michigan, Inc.	Michigan	state	2010	\$100,000,000		tax credit/rebate
Compact Power, Inc.	Michigan	state	2009	\$25,259,000		tax credit/rebate
LG Chem Michigan, Inc.	Michigan	state	2010	\$25,259,000		tax credit/rebate
LG FUEL CELL SYSTEMS INC.	United States	federal	2014	\$7,405,040		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2018	\$7,405,040		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2019	\$7,405,040		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2011	\$6,144,547		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2018	\$5,696,566		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2019	\$5,696,566		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2013	\$5,100,000		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2017	\$5,078,249		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2012	\$4,625,000		federal grant
LG Electronics USA, Inc.	Michigan	state	2018	\$2,920,000		tax credit/rebate
LG FUEL CELL SYSTEMS INC.	United States	federal	2009	\$2,500,000		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2015	\$2,500,000		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2018	\$2,500,000		federal grant
LG FUEL CELL SYSTEMS INC.	United States	federal	2018	\$2,500,000		federal grant

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<u>Company</u>	<u>Location</u>	<u>Subsidy Source</u>	<u>Year</u>	<u>Subsidy Value</u> ▼	<u>Loan/Bailout Value</u>	<u>Type of Subsidy</u>
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2010	\$2,004,954		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2010	\$1,287,000		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2009	\$1,233,680		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2009	\$1,227,260		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2010	\$1,000,000		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2010	\$1,000,000		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	Ohio	state	2011	\$999,875		grant/loan hybrid program
<u>LG FUEL CELL SYSTEMS INC.</u>	Ohio	state	2010	\$999,770		grant/loan hybrid program
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2019	\$970,224		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	Ohio	state	2010	\$750,000		grant/loan hybrid program
<u>LG Chem</u>	Georgia	state	2004	\$490,000		grant
<u>LG FUEL CELL SYSTEMS INC.</u>	United States	federal	2009	\$485,671		federal grant
<u>LG FUEL CELL SYSTEMS INC.</u>	Ohio	state	2010	\$250,000		grant
<u>LG Hausys America Inc.</u>	Georgia	state	2011	\$200,000		grant
<u>LG FUEL CELL SYSTEMS INC.</u>	Ohio	state	2010	\$125,000		grant
<u>LG CHEM MICHIGAN INC.</u>	United States	federal	2010	\$44,953		federal grant
<u>LG Electronics USA Inc</u>	Oregon	state	2010	\$9,072		tax credit/rebate
<u>Compact Power Inc.</u>	United States	federal	2008		\$3,000,000	federal loan or loan guarantee
<u>Compact Power Inc.</u>	United States	federal	2009		\$2,000,000	federal loan or loan guarantee
<u>LG ELECTRONICS ALABAMA INC.</u>	Texas	state	2005	undisclosed		enterprise zone
<u>LG ELECTRONICS ALABAMA INC.</u>	Texas	state	2007	undisclosed		enterprise zone

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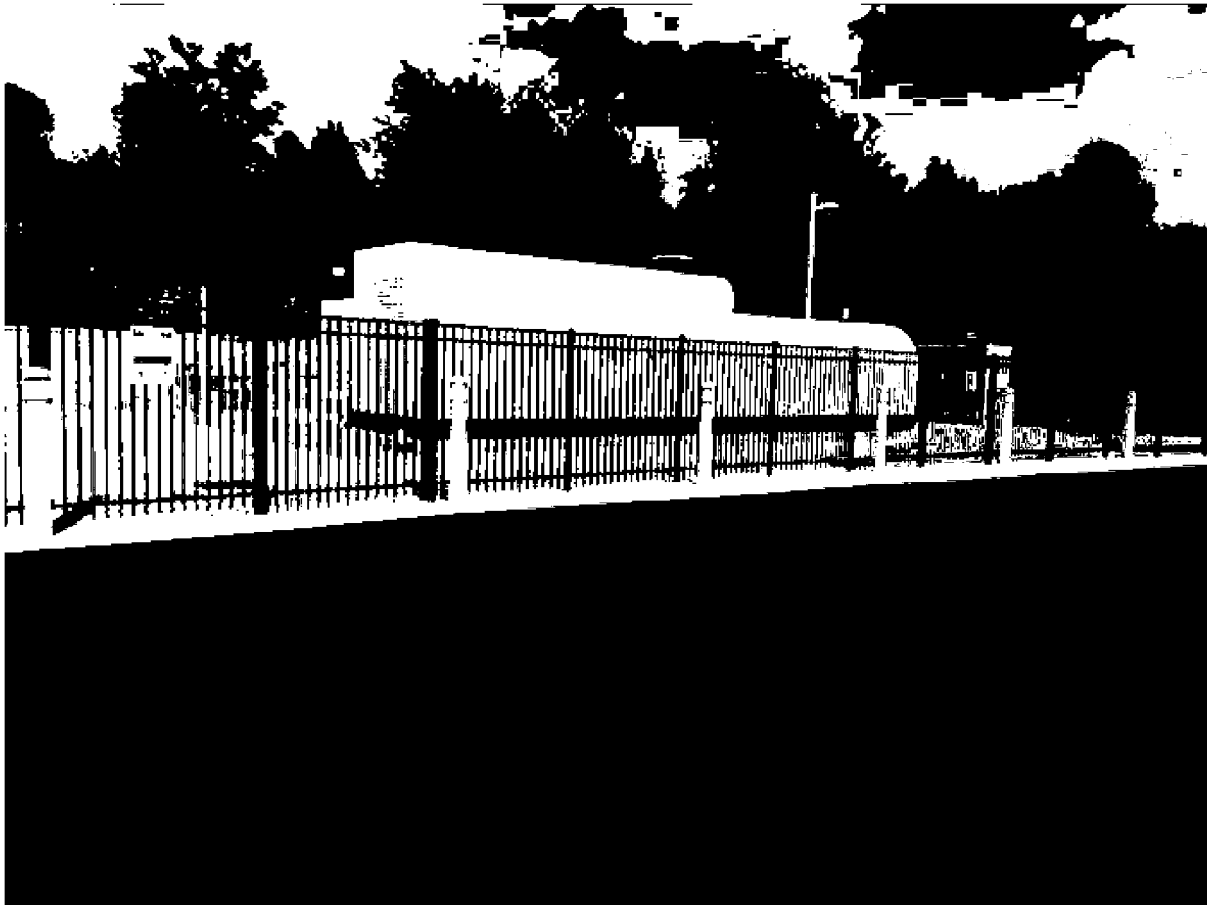


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BUSINESS

LG Fuel Cell Systems quitting Ohio after receiving \$18 million in state and federal grants

Updated Dec 12, 2018;
Posted Dec 11, 2018



LG Fuel Cell Systems has operated this 250,000-watt fuel cell near its state-built laboratory on the Stark State College campus in North Canton for about 1,800 hours, sending electricity directly into the grid. LG is pulling the plug on research and is closing the Stark prototyping lab by the end of the year.

NORTH CANTON, Ohio -- LG Fuel Cell Systems is shutting the doors on its Fuel Cell Prototyping Center, laying off about 70 employees and unilaterally ending a 12-year relationship with the state of Ohio and Stark State College.

The state spent \$4.7 million to build the lab on the Stark State campus in 2006 for Rolls-Royce Fuel Cell Systems and SOFCo-EFS Holdings, a small Ohio company that had developed a fuel-cell and hydrogen-processing technology. Rolls-Royce acquired SOFCo's assets in 2007, and Ohio agreed to begin funding research at the facility.

In 2012, Korean industrial and electronic conglomerate LG Corp. bought a 51 percent share of Rolls-Royce Fuel Cell Systems. LG now owns about 67 percent. As majority shareholder, LG took control of the center at Stark State.

Now, after millions of dollars of public and private spending, the lab will cease operations. John Taylor, a spokesman for LG North America, confirmed in an email Tuesday that the facility will close this month.

"This decision was made, when in the course of their annual business portfolio review, the LGFCS shareholders, both LG and Rolls-Royce, determined that they want to focus their resources more on their own core business areas," he wrote.

A fuel cell combines hydrogen with oxygen from the air in an electrochemical reaction that produces electricity and water. Fuel-cell power plants are potentially competitive with other sources of electricity, such as coal, nuclear and gas-turbine.

Ohio and several federal agencies have poured more than \$18 million into LG's effort to develop and build utility-scale fuel cells that run on hydrogen atoms pulled from pipeline natural gas.

"LG appreciates the support," Taylor said during a phone interview.

The closure comes mere months after LG completed and started running a 250,000 watt prototype fuel cell on the site. That fuel cell operated for about 1,800 hours, sending power directly into the local grid owned by AEP Ohio, before being shut down this week.

Sources close to the project said that, between them, LG and Rolls-Royce spent as much as \$350 million in an effort to perfect the technology in preparation for mass production. But LG now has no plans for further development, despite accomplishing the construction of the working prototype.

The company will continue to own the intellectual property rights to the technology but is interested in selling the fuel cell itself, Taylor said.

Despite LG's decision, the technology developed over the last decade on the Stark State campus still has a future, said Rodger McKain, former president of SOFCo, a onetime interim chief executive officer of LG Fuel Cell Systems and, until recently, a consultant to the company. "I continue to be very optimistic," he said in an interview.

But Pat Valente, executive director of the Ohio Fuel Cell Coalition, had a different take. The coalition has been organizing Ohio companies that make parts for fuel cells since 2000 and has included Rolls-Royce and LG among its members.

"This is a dark day for Ohio's fuel cell industry," Valente said.

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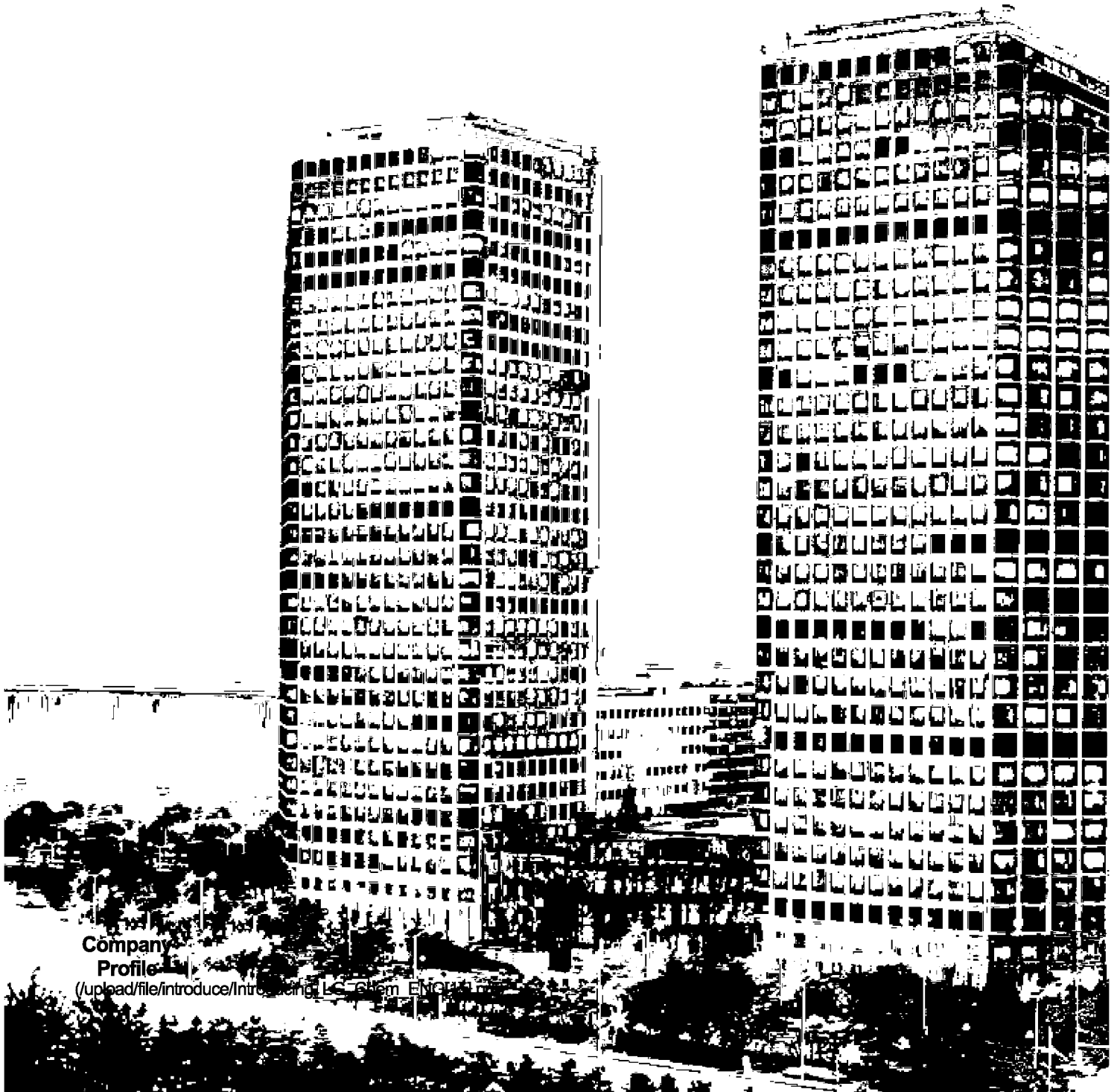
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Having continued to grow over 7 decades since founded in 1947, LG Chem is literally the company leading the chemical industry in Korea.

The company has built the global network for production, sales and R&D not only in Korea but also in main bases across the world and has provided globally competitive products including ABS, polarizers and EV battery cells, raising its global position as a material supplier.

The company has strengthened market dominance starting from the Petrochemicals business to Energy Solution, Advanced Materials and has expanded its business into Life Science area, building a future-oriented business portfolio. In the long term, the company will build the foundation for sustainable growth by selecting and concentrating on the 'energy', 'water' and 'bio' businesses as the new growth engines.

LG Chem is committed to becoming a global company that realizes the vision of "growing with customers by providing innovative materials and solutions" and provides new values to customers.

LG Chem, Ltd.

Foundation	January 1947	Milestone (/company/company-information/company-history)
CEO	Shin Hak Cheol	
Employees (As of December 2018)	33,694	
Headquarters	LG Twin Towers, 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, South Korea	

Financial Snapshot (As of December 2018)

Sales **KRW 28.2 trillion**
Operating Income **KRW 2.25 trillion**

Global Network

Business Areas

**Petrochemicals, Energy Solutions,
Advanced Materials, Life Sciences**

5
Europe
(/company/company-information/global-network/overseas-corporation/europe)

19
Korea(HQ)
(/company/company-information/global-network/domestic-corporation)

7
America
(/company/company-information/global-network/overseas-corporation/america)

30
Asia
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1
Oceania
(/company/company-information/global-network/overseas-corporation/oceania)

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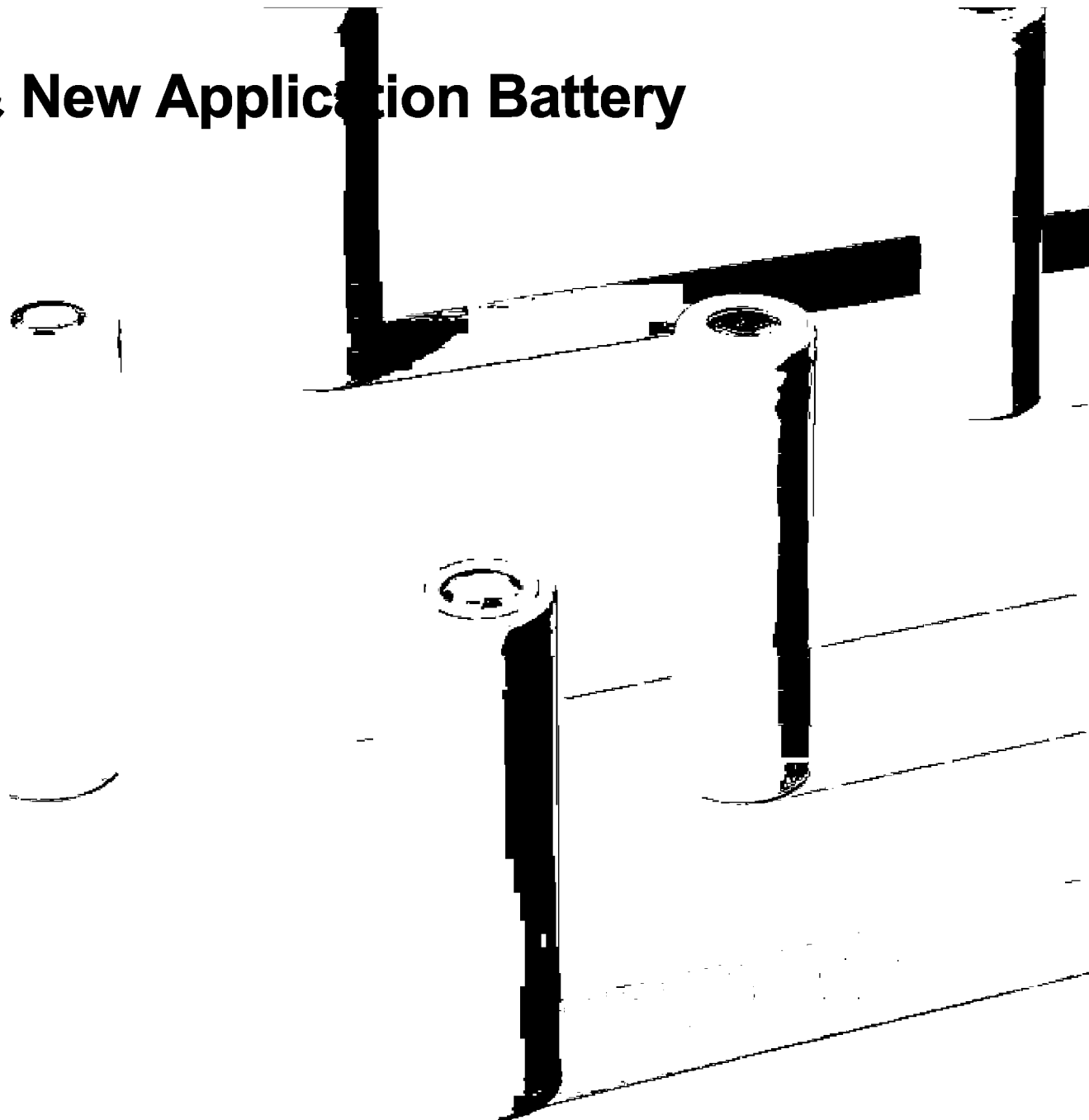
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Product inquiry

Cylindrical

Prismatic

Polymer

Free Form

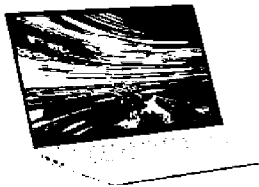
Features

High energy density

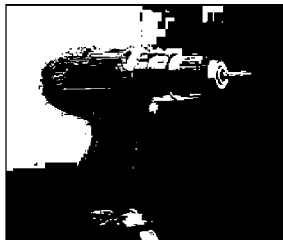
High output

Standardized size

Applications



Laptop



Power Tool



Electric Bicycle



Electric Motorcycle



Vacuum Cle

Competitiveness

Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

[High Capacity]

Advanced Materials, Cutting-edge High-Voltage Technology, Differentiated Design Structure(Polymer)



**Battery with the highest capacity
in the industry**



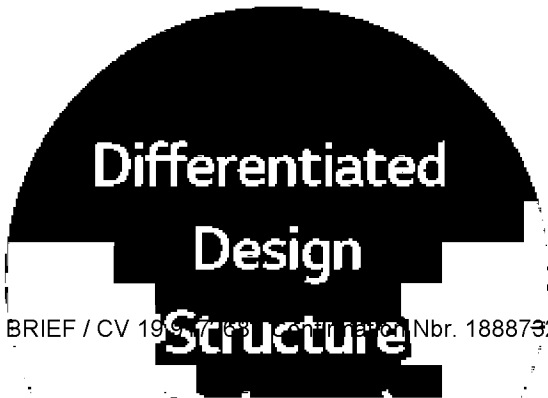
Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

- Optimum ratio of high-capacity cathode materials
- Improved material mixing method
 - · Added capacity by the application of high-capacity anode material (Si-O)



**Cutting-edge
High-Voltage
Technology**

- High voltage through the use of cathode material with excellent thermal stability



**Differentiated
Design
Structure**

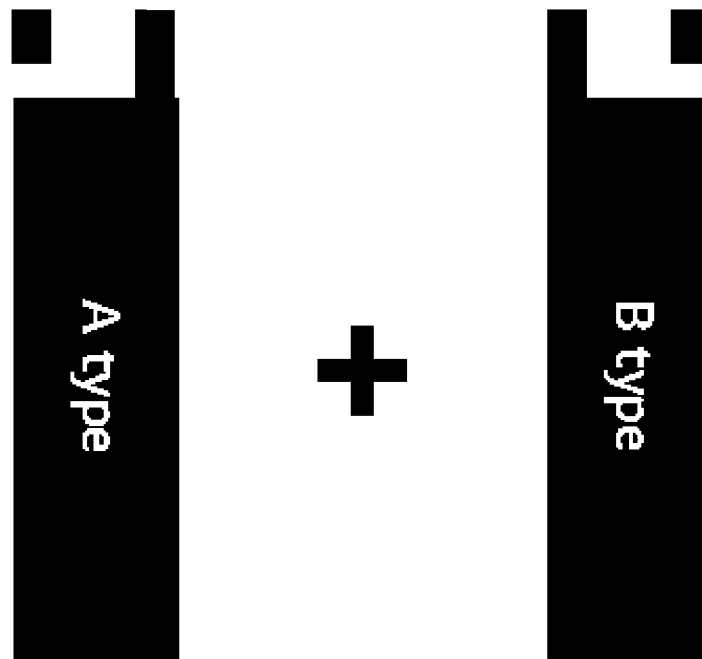
Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19-57 / Tech. Ref. Nbr. 1888792 / BATCH



- LG Chem's patented 'Stack & Folding' structure increases internal density and maximizes available space in polymer battery

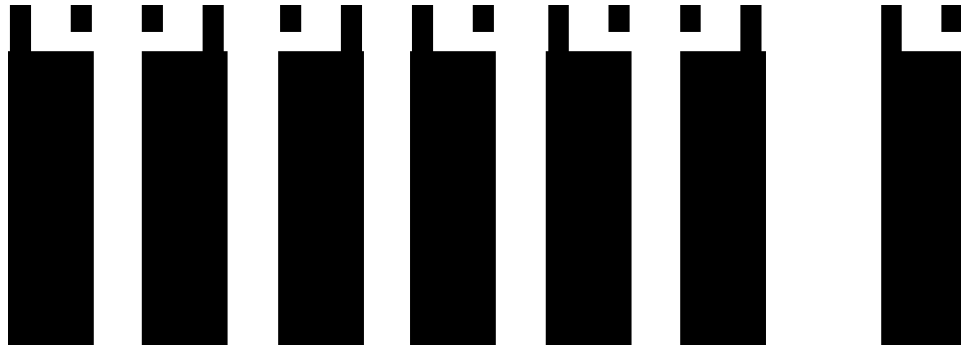
[Ultra-slim Shape] LG Chem's patented 'Stack & Folding' structure

LG Chem's patented 'Stack & Folding' structure by which one or more bi-cells are stacked and folded on the separator can implement ultra-slim batteries with a thickness. This is a differentiated solution that cannot be implemented by the conventional winding polymerstructure and can only be offered by LG Chem's polymer batteries.



Electronically Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

Bi-cell Lamination



Bi-cell folding

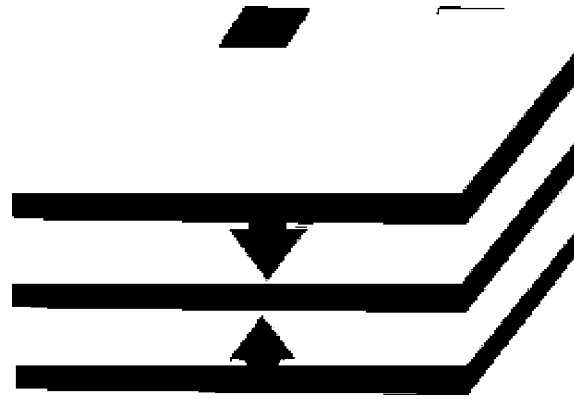
[Safety]

LG Chem's proprietary SRS®(Safety Reinforced Separator) technology

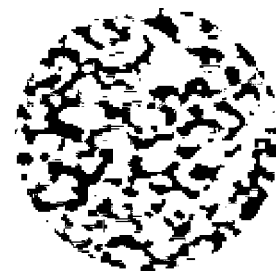
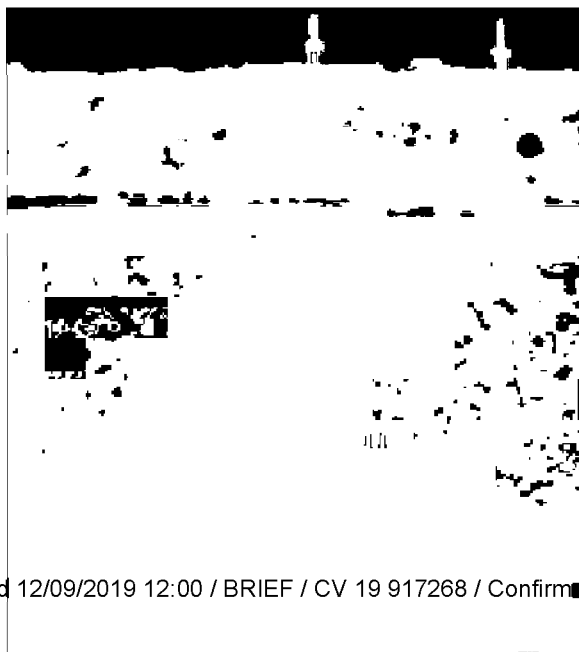
LG Chem's SRS® offers superior safety through the improvement of the durability and heat resistance of batteries by applying nano ceramic coating and through reducing of short circuits inside the battery by using porous PO material with high ventilation.

Filed 12/09/2019 12:00 / BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH

Proprietary, patented stability-reinforced separator (SRS®)



Separator



Nano ceramic coating layer

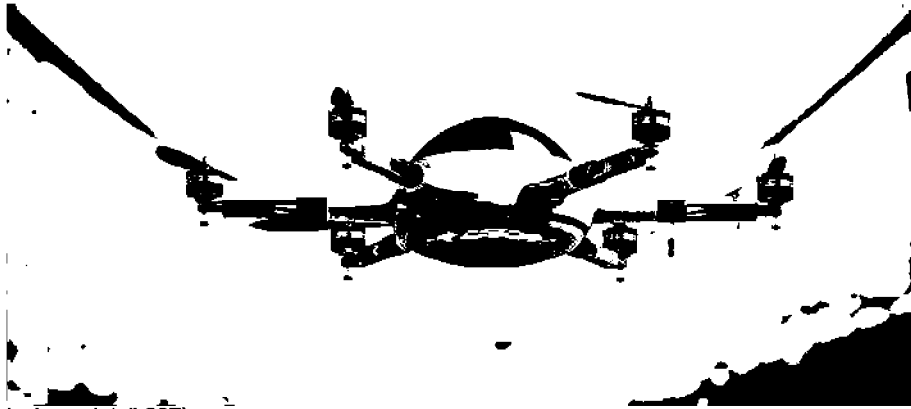




**Porous PU
material
(Polyolefin)**

Cross-section of SRS® separator

LG Chem in Everyday Life



(/company/information-center/life-in-lgchem/life-in-

lgchem-detail-897)

(/company/information-center/life-in-lgchem/life-in-lgchem-detail-897)

Video



NASA's Suggestions! LG Chem's battery goes to space
(<https://youtu.be/yEUult24jKs>)

Wears battery-LG Chem
(<https://youtu.be/u3bCwQ-HV5I>)

Related Sites

History Highlights

[Privacy Policy \(/privacy/privacy_v7\)](#) [Rejection of unauthorized e-mail collection](#)

[Ethics Hotline \(http://ethics.lg.co.kr/realName/insertDetailForm.do\)](http://ethics.lg.co.kr/realName/insertDetailForm.do)

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**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION
3:14-cv-43**

CELGARD, LLC,)	
)	
Plaintiff,)	
)	
Vs.)	ORDER
)	
LG CHEM, LTD. and)	
LG CHEM AMERICA, INC.,)	
)	
Defendant.)	
<hr/>		

THIS MATTER is before the Court on LG Chem, Ltd. (“LG Chem”) and LG Chem America, Inc.’s (“LGCAI”) (together, “Defendants”) Motion to Dismiss for Lack of Personal Jurisdiction (#30); Defendants’ Motion to Transfer Venue (#71); and Celgard, LLC’s (“Celgard” or “Plaintiff”) Motion for Preliminary Injunction (#15) and Motion for Jurisdictional Discovery (#58). The Court heard oral arguments on these motions on May 14, 2014.

Having considered the motion and reviewed the pleadings, the Court enters the following Findings, Conclusion, and Order granting Plaintiff’s Motion for Jurisdictional Discovery and Motion for Preliminary Injunction to be reviewed after 60 days.

FINDINGS AND CONCLUSIONS

I. Background

A. The ‘586 Patent

Plaintiff brought this action for patent infringement, alleging that defendant is infringing upon its interest in United States Patent No. 6,432,586 (the “‘586 patent”). The patent relates to “separators” used in the construction of high energy rechargeable lithium-ion batteries. Compl. ¶ 7, ECF No. 1; ‘586 Patent Abstract 1, ECF No. 1-A. These separators are designed to address

“dendrite growth” in lithium batteries, a common problem associated with the high energy anodes used in such high energy batteries. Abstract 1:20-22. Dendrite growth penetrates the separator, creating direct contact between the anode and cathode within each cell of the battery, thereby causing “electronic” shorting of the battery. Abstract 1:22-31. A minimal amount of shorting may only reduce the efficiency of the battery; however, electronic shorting can also cause a phenomenon known as “thermal runaway” of the battery, a serious safety problem for rechargeable lithium batteries. Id. at 1:33-35. According to the Patent Abstract, the dendrite growth limits the commercial application of lithium-ion batteries. Id. at 1:36-39.

The instant invention contemplates a separator designed to address these problems. Id. at 1:45-51. A ceramic composite layer is designed to block dendrite growth and prevent direct contact between the anode and cathode, and a polymeric micro-porous layer is designed to address “thermal runaway” in the event of contact between the anode and cathode. Id. at 2:52-60. A battery with such a separator is less likely to fail, catch fire, or experience a short, and is more likely to last longer. Pl. Mem. in Supp. Prel. Inj. 4, ECF No. 16. Celgard filed a patent application for the invention on April 10, 2000, and the Patent Office issued the patent on April 13, 2002.

B. Alleged Infringement

Plaintiff brings two claims against Defendants: direct and induced infringement of the ‘586 Patent in violation of 35 U.S.C. § 271(a)-(b). The Complaint generally alleges that Defendants obtains, either from a third-party manufacturer or through its own production, “uncoated polymeric base films” to which it applies a ceramic coating layer to create battery separators that fall within the scope of the ‘586 Patent. Compl. ¶ 10-12. The separators are then either sold to third parties or are used in Defendants’ own production of lithium-ion batteries, all

allegedly in violation of the '586 Patent. Id. at 13. According to the Complaint, batteries containing the infringing separator—whether manufactured by Defendants or a third-party—are used in various consumer electronic devices such as laptops and tablets, and are also used in electric vehicles. Id. at ¶ 19.

C. Factual Setting of this Dispute

In contrast to the typical patent litigation in which the parties produce the same or similar product, compete for the same customers, and have little or no prior relationship with the opposition, the parties in this case have been involved with each other in the production of lithium ion batteries since 2005. According to the Complaint and accompanying affidavits, beginning in 2005 and continuing through 2008, Celgard supplied LGC, on an as-needed purchase order basis, with uncoated base films to be used in the production of lithium-ion batteries for consumer-electronic products. In 2008, at LGC's request, the relationship significantly expanded as the parties entered into discussions regarding the prospect of Celgard becoming LGC's exclusive supplier of base film for lithium-ion batteries to be used in electric vehicles ("EVs").

As the parties began negotiating the terms of a Long Term Supply Agreement ("LTA") that would solidify their new relationship, LGC notified Celgard that it would need to increase its production capacity to satisfy LGC's supply demands. Pulwer Decl. ¶ 8, ECF No. 18. Negotiating the terms of the LTA for Celgard was its Vice President and General Manager Mitch Pulwer. Id. at ¶ 1. During these negotiations, Jai Ham, a Vice President of LGC, explained to Pulwer that if Celgard "demonstrated its commitment" to LGC and their new relationship by expanding its production capacity, LGC would enter into the LTA, with Celgard becoming the exclusive supplier of base film in its EV program. Id. at ¶ 9. In reliance on this representation

and in order to meet LGC's supply demands, Celgard began a five-phase expansion project including an expansion to its Charlotte, North Carolina, facility and the construction of a new facility in Concord, North Carolina, costing in excess of \$300,000,000. Id. at ¶ 9.

Despite Celgard's expansion, the parties were unable to reach an agreement on the LTA. According to Celgard, LGC continuously rejected terms to which the parties had previously agreed, made counterproposals that included only minor changes, and requested changes that included terms that it had rejected during previous rounds of negotiations. Id. at ¶ 11. The parties were able to agree to a Memorandum of Understanding ("MOU") as a precursor to an LTA. MOU 1, ECF No. 18-1 ("MOU . . . is made in anticipation of the parties entering into a long-term supply agreement").

Under the MOU the parties agreed to "work together in a collaborative effort" during the Collaborative Period which ran from March 11, 2011, to December 31, 2015. Id. However, the agreement was non-binding and stated that neither party was bound to enter into a subsequent supply agreement. Id. Generally speaking, the MOU includes the following principal terms: (1) that LGC will purchase separator "primarily" from Celgard as long as Celgard is able to supply separator to LGC meeting certain qualifications and "overall program objectives which includes price competitiveness, in the quantity needed"; (2) that "LGC intends to purchase the majority of separator required for each application in which Celgard is qualified as long as the Celgard separator" meets the above conditions; and (3) that LGC will give "priority" to Celgard separator in any new application for the electric drive vehicle ("EDV") and energy storage system ("ESS") markets. Id.

Following the execution of the MOU in 2011, the parties' relationship began to sour over price and quantity disputes. According to Celgard, between 2009 and July 2013, LGC purchased

all its base film requirements for the EV industry from Celgard. In November of 2012, LGC demanded that Celgard significantly reduce its prices and threatened to use other base film suppliers should Celgard refuse. Pulwer Decl. ¶ 19. Believing the LGC's price demands were contrary to past negotiations and course of dealings, Celgard refused to lower its prices. After that, the parties' relationship spiraled downward. In June 2013, LGC gave notice that Celgard was being phased out of the EV program beginning in September 2013, with Celgard being completely out by April 2014. Id. at ¶ 25. Celgard filled all outstanding orders but stopped taking additional purchase orders. Its final shipment of base film material to LG Chem was in July 2013. Celgard filed this suit in January 2014.

II. Personal Jurisdiction and Venue

Defendants move to dismiss the Complaint for lack of personal jurisdiction, contending that they lack the minimum contacts necessary to establish personal jurisdiction in the state of North Carolina. LGC is a Korean Company with no offices or personnel in the United States. It contends that it does not manufacture the allegedly infringing batteries within the United States. Instead, the batteries are manufactured in Asia and then sold to customers outside of the State of North Carolina. LGCAI is a Delaware company with headquarters in New Jersey. It contends that it has little involvement in the production of the lithium ion batteries. It further contends that while it is registered to do business in the State of North Carolina, it has no offices or personnel in the state, and "simply does not sell the accused products or conduct the accused business" in the State of North Carolina. Def.'s Mem. 1.

Federal Circuit case law applies in determining whether this Court has personal jurisdiction over an out-of-state accused infringer. Beverly Hills Fan Co. v. Royal Sovereign Corp., 21 F.3d 1558, 1564-65 (Fed. Cir. 1994). Federal courts apply the relevant state statute

when determining whether a federal court, sitting in a particular case, has personal jurisdiction over a defendant, even when the cause of action is purely federal. Id. at 1569. Because North Carolina's long-arm statute is co-extensive with federal due process requirements, the jurisdictional inquiry collapses into a single determination of whether this Court's exercise of jurisdiction over Defendants comports with due process. Dillon v. Numismatic Funding Corp., 291 N.C. 674, 676 (1977). "The constitutional touchstone for determining whether an exercise of personal jurisdiction comports with due process 'remains whether the defendant purposefully established minimum contacts in the forum State.'" Nuance Commc'ns, Inc. v. Abbyy Software House, 626 F.3d 1222, 1230-31 (Fed. Cir. 2010) (quoting Burger King Corp. v. Rudzewicz, 471 U.S. 462, 474, (1985) (internal quotation marks omitted)).

Having considered such threshold motions, the Court will allow Celgard's Motion for Jurisdictional Discovery (#58) into whether LGC and LGCAI have established minimum contacts in North Carolina such that the maintenance of a suit in this forum would not "offend traditional notions of fair play and substantial justice." Helicopteros Nacionales de Colombia, S.A. v. Hall, 466 U.S. 408, 414, 104 S. Ct. 1868, 1872, 80 L. Ed. 2d 404 (1984). The Court does not agree with Defendants assertion that by filing this motion Plaintiff has "essentially concede[d]" that it has failed to establish a prima facie case of personal jurisdiction over Defendants. Def.'s Resp., ECF No. 75 at 1. The Court will refer this matter, as well as the Motion to Change Venue, back to the Magistrate Judge for limited discovery and disposition of those motions.

III. Preliminary Injunction

A preliminary injunction is an extraordinary remedy, the primary function of which is to protect the status quo and to prevent irreparable harm during the pendency of a lawsuit. In re

Microsoft Corp. Antitrust Litigation, 333 F.3d 517, 525 (4th Cir.2003). A plaintiff seeking a preliminary injunction must give notice to the opposing party under Federal Rule of Civil Procedure 65 and, at the hearing, must establish the following: (1) plaintiff is likely to succeed on the merits; (2) plaintiff is likely to suffer irreparable harm in the absence of preliminary relief; (3) the balance of the equities tips in plaintiff's favor; and (4) an injunction is in the public interest. Winter v. Natural Res. Def. Council, Inc., 555 U.S. 7, 129 S.Ct. 365, 374 (2008); Moore v. Kempthorne, 465 F.Supp.2d 519, 525 (E.D.Va.2006) (“[t]he standard for granting either a TRO or a preliminary injunction is the same”).

The most recent test was adopted by the Court of Appeals for the Fourth Circuit in The Real Truth About Obama, Inc. v. Fed. Election Comm'n, 575 F.3d 342, 346–47 (4th Cir.2009), *vacated on other grounds*, 130 S.Ct. 2371, 176 L.Ed.2d 764 (2010)(memorandum opinion), *reissued in pertinent part*, 607 F.3d 355 (4th Cir.2010), *overruling* Blackwelder Furniture Co. v. Selig Mfg. Co., 550 F.2d 189 (4th Cir.1977) (providing a four-pronged balance of the hardships test). The Winter Court emphasized that a plaintiff must demonstrate more than just a “possibility” of irreparable harm and a strong showing of likelihood of success on the merits. Winter, 129 S.Ct. at 375.

A. Likelihood of Success on the Merits

The court finds that plaintiff is likely to prevail on the merits of its claim. To establish likelihood of success on the merits, plaintiff must show that (1) it will likely prove infringement of one or more claims of the patent and (2) if validity is challenged, that the infringed claims are likely valid. Sanofi-Synthelabo v. Apotex, Inc., 470 F.3d 1368, 1374 (Fed. Cir. 2006). Whether plaintiff has made an adequate showing is viewed by considering “presumptions and burdens that will inhere at trial on the merits.” Id. If the court ultimately finds that defendants likely

infringe on any claim of the patent, this factor must be weighed in favor of plaintiff. Having reviewed description of the claims detailed the claim charts, it appears likely that the SRS sold, offered for sale, used, and imported into this country by defendants infringes at least claim 1 of the '586 patent.

Thus, the court finds this factor weighs in favor of preliminary injunctive relief.

B. Irreparable Harm

While it is clear that plaintiff has already suffered harm, the court has concluded that if the alleged infringing activity were allowed to continue, it is very likely that plaintiff will suffer irreparable harm in the absence of preliminary relief. This harm includes plaintiff losing goodwill, laying off employees, and loss of market share to at least some competitors who appear to be engaged in infringing activity. The court finds that this factor weighs heavily in favor of preliminary injunctive relief.

C. Balance of the Equities

Defendants' right to source materials from whatever vendor it is confident in and can receive the lowest price is a cornerstone of the free market carries with it substantial weight. On the other hand, the property interest plaintiff has in its patented technology, and protecting that intellectual property from misappropriation, also carries with it substantial weight. Such equitable consideration is further informed by the impact this court's action on the motion will have on either party's ability to compete: without the injunction, plaintiff is likely to be shut out of automotive marketplace; with the injunction, defendants will have to pay slightly more for supplies from plaintiff. The former harm appears to be irreparable, while the latter harm is compensable in that defendants can be reimbursed if plaintiff fails to prevail in this action. The court finds this factor weighs in favor of preliminary injunctive relief.

D. Public Interest

Finally, the court has considered the public interest. While the public is certainly interested in being able to buy end products at the lowest possible price through a free and robust market, a public market place that contains goods sourced or produced in a manner that trammels on the very intellectual property that has allowed the product to come to market, while perhaps enjoying lower prices in the short term, is harmed in the long run as such activity discourages investment research and development. Here, plaintiff holds a patent for a very important technological development that ultimately benefits consumers by allowing for the delivery of *safe* electric power to mobile devices by reducing the risk of fire posed by dendrite growth. The court need not look far past the headlines in recent years to understand how important such development is in preventing fire.

The imposition such proposed injunction will place on defendants is minimal in protecting the public interest which is not only in low-priced goods, but in protecting the property interests of those who apply resources to solving not only technological problems, but problems that could have great impact on public safety. Put another way, an injunction which ultimately prevents an upstream misappropriator from profiting from its alleged theft of protected technology by limiting the downstream user is not a hardship because it “simply prevents [the misappropriator] from doing that which the law already prohibits.” Universal Furniture Int'l, Inc. v. Collezione Europa USA, Inc., No. 1:04CV977, 2007 WL 4262725, at *3 (M.D.N.C. Nov. 30, 2007); Prudential Ins. Co. v. Inlay, 728 F.Supp.2d 1022, 1032 (N.D.Iowa 2010) (noting that balance of harms favors plaintiff where an injunction restricts the defendant's ability “from using information that it appears he should not be able to use at all for the [applicable] period.”). The court has no reason to believe that defendants ability to produce

goods will be in any way impacted as it appears that plaintiff is able to provide the products necessary for production.

Having carefully considered all four factors, the court finds that the entry of a preliminary injunction is necessary to protect plaintiff from ongoing and irreparable harm during the pendency of this action. Such harm to plaintiff significantly outweighs any harm that defendants may incur as a result of the entry of the injunction. Finally, the Federal Rules of Civil Procedure state that “[n]o ... preliminary injunction shall issue except upon the giving of security by the applicant, in such sum the court deems proper, for the payment of such costs and damages as may be incurred or suffered by any party who is found to have been wrongfully enjoined or restrained.” Fed.R.Civ.P. 65(c). The amount of bond is within the discretion of the Court. Maryland Dept. of Human Resources v. U.S. Dept. of Agriculture, 976 F.2d 1462, 1483 (4th Cir.1992). The Court here finds that a bond of \$1,000,000.00, is sufficient to cover defendant's costs or damages should it later be determined that defendant was wrongfully enjoined.

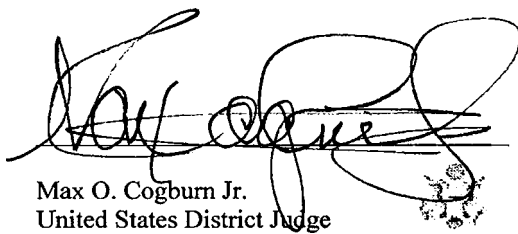
ORDER

IT IS THEREFORE ORDERED that plaintiff's Motion for Preliminary Injunction is hereby **GRANTED**, and defendants are preliminarily enjoined from (1) making, using, selling, or offering for sale in the United States, (2) importing into the United States, and (3) activity inducing others in the United States to make, use, sell, or offer for sale in the United States or to import into the United States the following: any battery, separator, or system that uses or constitutes (i) LG Chem's SRS technology, (ii) an infringing ceramic-coated separator, or (iii) any rechargeable lithium-ion battery, cell, pack, module, or other device, vehicle, or product that includes an infringing ceramic-coated separator. Plaintiff shall secure a bond in the face amount

of \$1,000,000.00. Upon motion filed by any party, the court will review the impact of such preliminary injunction after a period of 60 days if requested to do so.

IT IS FURTHER ORDERED that defendants' Motion to Dismiss for Lack of Personal Jurisdiction (#30) and Motion to Transfer Venue (#71) are REFERRED to the Magistrate Judge for consideration after jurisdictional discovery, and plaintiff's Motion for Jurisdictional Discovery (#58) is ALLOWED and jurisdictional discovered is opened for a period of 60 days, which shall also be directed by the magistrate judge.

Signed: July 17, 2014



Max O. Cogburn Jr.
United States District Judge



Celgard, LLC v. LG Chem, Ltd.

United States District Court, W.D. North Carolina, Charlotte Division. | May 21, 2015 | Not Reported in F.Supp.3d | 2015 WL 2412467

Document Details

KeyCite: **KeyCite Yellow Flag - Negative Treatment**
Distinguished by Rosinbaum v. Flowers Foods, Inc., W.D.N.C., June 8, 2016
KeyCite Overruling Risk - Negative Treatment
Overruling Risk TC Heartland LLC v. Kraft Foods Group Brands LLC, U.S., May 22, 2017

standard Citation: Celgard, LLC v. LG Chem, Ltd., No. 3:14-CV-00043-MOC-DC, 2015 WL 2412467 (W.D.N.C. May 21, 2015)

All Citations: Not Reported in F.Supp.3d, 2015 WL 2412467

Outline

Attorneys and Law Firms

ORDER
All Citations

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June 8, 2016

KeyCite Overruling Risk - Negative Treatment
Overruling Risk *TC Heartland LLC v. Kraft Foods Group
Brands LLC*, U.S., May 22, 2017

2015 WL 2412467

Only the Westlaw citation is currently
available.

United States District Court, W.D. North
Carolina,
Charlotte Division.

CELGARD, LLC, Plaintiff,
v.
LG CHEM, LTD., and LG Chem America,
Inc., Defendants.

No. 3:14-cv-00043-MOC-DCK.

Signed May 21, 2015.

Attorneys and Law Firms

Charles Bailey King, Jr., Fred M. Wood, Jr., Smith
Moore Leatherwood LLP, Charlotte, NC, Richard
A. Coughlin, Smith Moore LLP, Greensboro, NC,
Andrew Douglas Hedden, Robins Kaplan LLP,
Minneapolis, MN, Bryan J. Vogel, Robins Kaplan
LLP, New York, NY, Jamie R. Kurtz, Martin R.
Lueck, Robins, Kaplan, Miller & Ciresi, L.L.P.,
Minneapolis, MN, for Plaintiff.

David Matthew Wilkerson, Larry Stephen
McDevitt, Van Winkle Buck Wall Starnes & Davis
PA, Asheville, NC, Kevin C. Wheeler, Leah A.
Edelman, Michael J. McKeon, Fish & Richardson
P.C., Washington, DC, F. Lane Williamson, Tin
Fulton Walker & Owen, Charlotte, NC, for
Defendant.

ORDER

MAX O. COGBURN, JR., District Judge.

***1 THIS MATTER** is before the court on Plaintiff's "Objections to Magistrate Judge's Order Granting Defendants' Alternative Motion to Transfer Venue" (Document No. 266), the associated response (Document No. 269), and the supplemental briefs allowed by the court (Document Nos. 275-1; 278). The court heard oral argument on the objections on April 8, 2015. Also before the court are Defendants' "Motion To Dismiss Counts III, IV, V, VI of Celgard's First Amended Complaint ..." (Document No. 222), Defendants' "Motion To Dismiss Plaintiff's First Amended Complaint For Lack Of Personal Jurisdiction" (Document No. 226), and the associated briefs. Having considered the briefs, the oral arguments of counsel as to the objections, the Magistrate Judge's Order, and the record in this matter, the court enters the following Order.

I. INTRODUCTION

Celgard, LLC ("Plaintiff" or "Celgard") initiated this patent infringement action on January 30, 2014, asserting claims against LG Chem, Ltd. ("LGC") and LG Chem America, Inc. ("LGCAI") (together "LG Chem" or "Defendants") for: (1) direct infringement of U.S. Patent No. 6,432,586; and (2) induced infringement of U.S. Patent No. 6,432,586. (Document No. 1, pp. 10-12). The underlying patent, U.S. Patent No. 6,432,586 (the "'586 patent"), is titled "Separator for a High Energy Rechargeable Lithium Battery," and relates to "separators" used in the construction of high energy rechargeable lithium-ion batteries. *See* (Document No. 1, ¶ 7); (Document No. 1-A, p. 1). Put simply, this technology reduces the likelihood that a battery will fail, catch fire, or experience a short. *See* (Document Nos. 16, p. 4; 1-A, p. 1).

Plaintiff's Amended Complaint generally alleges that LG Chem obtains uncoated polymeric base films from third parties, to which it applies a ceramic coating layer to create battery separators that fall within the scope of the '586 Patent. (Document No. 217, ¶ 51). The separators are then sold by LGC and/or LGCAI to third parties, or used in Defendants' own production of lithium-ion batteries, all allegedly in violation of the '586

Patent. *Id.* at ¶¶ 106–09. Plaintiff alleges that batteries containing infringing separators manufactured by Defendants are used in various consumer electronic devices and electric vehicles that are sold throughout the United States, including North Carolina. *Id.* at ¶¶ 16, 52–53, 106.

A. Factual Background and Relationship Of The Parties

As previously discussed by this court, *see* (Document No. 128), the factual setting of this patent dispute is somewhat unique and, as it relates to the contested issue of personal jurisdiction, bears repeating here. In contrast to the typical patent litigation in which the parties produce the same or similar product, compete for the same customers, and have little or no prior relationship with the opposition, the parties in this case have been involved with each other in the production of lithium ion batteries since 2005. Beginning in 2006 and continuing through 2008, Celgard supplied LGC, on an as-needed purchase order basis, with uncoated base films to be used in the production of lithium-ion batteries for consumer-electronic (“CE”) products. (Document No. 18, Declaration of Mitchell Pulwer (“Pulwer Decl.”), ¶¶ 4–5; Document No. 217, ¶ 67). In 2008, at LGC’s request, the relationship significantly expanded as the parties entered into discussions regarding the prospect of Celgard becoming LGC’s exclusive supplier of base film for lithium-ion batteries to be used in electric vehicles (“EVs”). (Pulwer Decl., ¶ 6; Document No. 217, ¶ 17).

*2 As the parties began negotiating the terms of a Long Term Supply Agreement (“LTA”) that would solidify their new relationship, LGC notified Celgard that it would need to increase its production capacity to satisfy LGC’s supply demands. (Pulwer Decl. ¶ 8). Negotiating the terms of the LTA for Celgard was its Vice President and General Manager Mitch Pulwer. *Id.* at ¶ 1. During these negotiations, Jai Ham, a Vice President of LGC, explained to Pulwer that if Celgard “demonstrated its commitment” to LGC and their new relationship by expanding its production capacity, LGC would enter into the LTA, with Celgard becoming the exclusive supplier of base film for LGC’s EV program. *Id.* at ¶ 8. Plaintiff states that in reliance on this representation and in order to meet LGC’s supply demands, Celgard

began a five-phase expansion project including an expansion to its Charlotte, North Carolina facility and the construction of a new facility in Concord, North Carolina, costing in excess of \$300,000,000. *Id.* at ¶ 9; (Document No. 217, ¶ 68–70). LGC stopped purchasing base film for use in CE devices in 2008 in order for Plaintiff to be able to focus exclusively on producing base film for EVs. (Pulwer Decl. ¶ 6).

Despite Celgard’s expansion, the parties were unable to reach an agreement on the LTA. According to Celgard, LGC continuously rejected terms to which the parties had previously agreed, made counterproposals that included only minor changes, and requested changes that included terms that it had rejected during previous rounds of negotiations. *Id.* at ¶ 11. The parties were able to agree to a Memorandum of Understanding (“MOU”) as a precursor to an LTA. *Id.* at ¶ 13; MOU (Document No. 18–1), p. 2 (“LGC and Celgard understand that this is a non-binding MOU and is made in anticipation of the parties entering into a long-term supply agreement”).

Under the MOU, the parties agreed to “work together in a collaborative effort” during the “Collaboration Period,” which ran from March 11, 2011, to December 31, 2015. *Id.* at p. 2–3. However, the agreement was non-binding and stated that neither party was bound to enter into a subsequent supply agreement. *Id.* Generally speaking, the MOU includes the following principal terms: (1) that LGC will purchase separators¹ “primarily” from Celgard as long as Celgard is able to supply separators to LGC meeting certain qualifications and “overall program objectives which includes price competitiveness, in the quantity needed”; (2) that “LGC intends to purchase the majority of separator required for each application in which Celgard is qualified as long as the Celgard separator” meets the above conditions; and (3) that LGC will give “priority” to Celgard separators in any new application for the electric drive vehicle (“EDV”) and energy storage system (“ESS”) markets. *Id.*

Following the execution of the MOU in 2011, the parties’ relationship began to sour over price and quantity disputes. According to Celgard, between 2009 and July 2013, LGC purchased substantially all of its base film requirements for the EV industry from Celgard. (Pulwer Decl., ¶ 19). In November of 2012, LGC demanded that Celgard significantly

reduce its prices and threatened to use other base film suppliers should Celgard refuse. *Id.* at ¶ 21. Believing that LGC's price demands were contrary to past negotiations and course of dealings, Celgard refused to lower its prices. *Id.* at ¶ 23. After that, the parties' relationship spiraled downward. In June 2013, LGC gave notice that Celgard was being phased out of the EV program beginning in September 2013, with Celgard being completely out by April 2014. *Id.* at ¶ 25. Celgard filled all outstanding orders but stopped taking additional purchase orders from LGC. *Id.* at ¶ 26. Its final shipment of base film material to LGC was in July 2013. (Document No. 80 ("Paulus Decl."), ¶ 7). Celgard filed this suit in January 2014, bringing the above-mentioned claims for patent infringement.

B. Procedural History

*3 Approximately one month after filing the original complaint in this matter, on March 5, 2014, Plaintiff filed a "Motion For Preliminary Injunction." (Document No. 15). On March 19, 2014, Defendants filed a "Motion To Dismiss Plaintiff's Complaint For Lack Of Personal Jurisdiction" (Document No. 30). On April 7, 2014, Plaintiff filed an "Alternative Motion For Jurisdictional Discovery." (Document No. 58). On April 23, 2014, Defendants filed an "Alternative Motion To Transfer Venue To The Eastern District Of Michigan." (Document No. 71). On May 14, 2014, the undersigned held a hearing on the aforementioned motions, during which the court primarily considered arguments on the issues of personal jurisdiction and a preliminary injunction.

The undersigned issued an "Order" (Document No. 128) on July 18, 2014, granting Plaintiff's "Motion For Preliminary Injunction" (Document No. 15) and Plaintiff's "Alternative Motion For Jurisdictional Discovery" (Document No. 58), and directing that "The LG Chem Defendants' Motion To Dismiss Plaintiff's Complaint For Lack Of Personal Jurisdiction" (Document No. 30) and "The LG Chem Defendants' Alternative Motion To Transfer Venue To The Eastern District Of Michigan" (Document No. 71) be referred to Magistrate Judge Keesler for consideration after jurisdictional discovery. The Order also discussed the factual setting, the history of the parties' business transactions, the relationship of the parties to North Carolina, and the appropriateness of

jurisdictional discovery. (Document No. 128, at p. 2–6). Judge Keesler issued an "Order" (Document No. 139) on July 21, 2014, setting limits and deadlines for jurisdictional discovery. Also on July 21, 2014, Defendants filed a "Notice of Appeal" as to the Order granting the Preliminary Injunction. (Document No. 150). On July 22, 2014, the undersigned issued an Order, (Document No. 160), granting Defendants' "Motion to Stay Preliminary Injunction Pending Appeal." On August 13, 2014, the undersigned entered an Order, (Document No. 188), denying Plaintiff's Motion for Reconsideration of the Order Granting LG Chem's Motion to Stay. (Document No. 165). On August 15, 2014, Plaintiff filed a "Notice of Appeal" (Document No. 191) as to the Order granting Defendants' Motion to Stay, and from the Order denying Plaintiff's Motion for Reconsideration. Both appeals are currently before the Court of Appeals for the Federal Circuit. *See Celgard, LLC v. LG Chem, Ltd.*, No. 14–01675, (Fed. Cir.2014).

On August 26, 2014, Judge Keesler issued an "Order And Memorandum And Recommendation" (Document No. 204) allowing Plaintiff to file an Amended Complaint incorporating the results of jurisdictional discovery, and recommending that the pending motions to dismiss and transfer (Document Nos. 30 and 71) be denied as moot.

Plaintiff filed its "First Amended Complaint" (Document No. 217) on September 5, 2014. The Amended Complaint re-asserts claims for direct infringement and induced infringement of the '586 Patent by both Defendants. Plaintiff alleges that after the parties' business relationship went sour, "Defendants walked away from their prior commitments and chose to purchase, coat and sell infringing ceramic coated separator with base film from other suppliers, despite their knowledge that these actions infringed on Celgard's exclusive patent rights." (Document No. 217, ¶ 1). The Amended Complaint also adds claims against LGC (only) for: unfair and deceptive trade practices; breach of contract; breach of the implied covenant of good faith and fair dealing; and, in the alternative, unjust enrichment. *Id.* at ¶¶ 115–143. The new claims against LGC relate to Plaintiff's role as a supplier of separator base film for lithium-ion batteries manufactured by LGC for EVs. *Id.* at ¶ 1. Plaintiff's additional counts contend that LGC is liable for its "repeated false promises to use Celgard as its exclusive and/or primary long-term supplier of base film for the

electric vehicle industry.” *Id.* ¶ 116.

*4 On September 29, 2014, Defendants filed: (1) “Motion To Dismiss Counts III, IV, V, VI, Celgard’s First Amended Complaint ...” (Document No. 222); (2) “Motion To Dismiss Plaintiff’s First Amended Complaint For Lack Of Personal Jurisdiction” (Document No. 226); and (3) “Alternative Motion To Transfer Venue To The Eastern District Of Michigan In Whole Or In Part.” (Document No. 230). On February 18, 2015, Judge Keesler issued an Order (Document No. 262) granting Defendants’ “Alternative Motion to Transfer.” In this Order, Judge Keesler declined to address the merits of, or make any recommendations regarding, the two Motions to Dismiss. In doing so, Judge Keesler cited, among other authority, *BSN Medical, Inc. v. American Medical Products, LLC*, 3:11cv092–GCM–DSC, 2012 WL 171269, at *2 (W.D.N.C. Jan.20, 2012), wherein another magistrate judge in this district granted an alternative motion to transfer without reaching the merits of the motion to dismiss. Plaintiff has timely objected to Judge Keesler’s Order pursuant to 28 U.S.C. § 636(b) and Fed.R.Civ.P. 72(a). Defendants have responded to such objections and the matter is now ripe for review.

II. ALTERNATIVE MOTION TO TRANSFER

A. Standard of Review

When a magistrate judge issues an order on a non-dispositive matter, “[t]he district judge in the case must consider timely objections and modify or set aside any part of the order that is clearly erroneous or is contrary to law.” Fed.R.Civ.P. 72(a). *See also* 28 U.S.C. § 636(B)(1)(A) (“A judge of the court may reconsider any pretrial matter under this subparagraph (A) where it has been shown that the magistrate judge’s order is clearly erroneous or contrary to law.”). In engaging in such review, a finding is “ ‘clearly erroneous’ when, although there is evidence to support it, the reviewing court ... is left with the definite and firm conviction that a mistake has been committed.”

¹ *High Voltage Beverages, L.L.C. v. Coca-Cola*

Co., No. 3:08–CV–367, 2010 WL 2342458, at *1 (W.D.N.C. June 8, 2010) (citing *Walton v. Johnson*, 440 F.3d 160, 173–74 (4th Cir.2006)). A magistrate judge’s order is “contrary to law” where he “failed to apply or misapplied statutes, case law, or procedural rules.” *Id.* (citing *Miceli v. KBRG of Statesville, L.L.C.*, No. 5:05–CV–265–V, 2008 WL 2945451, at *1 (W.D.N.C. July 24, 2008)).

B. Discussion of Plaintiff’s Objections

1. Standing Order Regarding Magistrate Judge Referrals

This court’s “Standing Order” regarding referrals to Magistrate Judges in this District, No. 3:11–mc–25–MOC (W.D.N.C., Mar. 16, 2011) provides, in relevant part:

pursuant to ¶ 28, United States Code, Section 636(b) and Local Civil Rule 72.1, in civil and miscellaneous cases, magistrate judges shall be specifically referred the following duties:

...

to dispose of non-dispositive civil motions, including but not limited to motions for ... transfer to another division or district ... Where a non-dispositive motion is pled in the alternative to a dispositive motion, a Memorandum and Recommendation will be entered as to both motions.

*5 *Id.* Plaintiff’s first objection centers on the argument that because Judge Keesler issued an order on a non-dispositive motion (to transfer) without addressing the merits of the two dispositive motions (to dismiss) through a Memorandum and Recommendation, Judge Keesler violated this Court’s Standing Order and thus is contrary to law. Plaintiff argues that the proper remedy for this error is to require Judge Keesler to issue a Memorandum and Recommendation for each of the dispositive motions, as well as the non-dispositive alternative motion.

As discussed at the hearing, the undersigned regards the Standing Order as an in-house policy for chambers to follow in an attempt to efficiently

resolve the merits of motions and move the docket along. While the court always finds it helpful to have recommendations on legal issues from the magistrate judges of this district, a magistrate judge's failure to comply with the procedures of the Standing Order does not constitute grounds for overturning his decision. The court will therefore overrule Plaintiff's objection as to Judge Keesler's non-compliance with the Standing Order.

The court finds in this situation, however, that the merits of the dispositive motions have a significant bearing on the resolution of the alternative motion to transfer. In light of the fact that the uncertainty of the jurisdictional issue was a significant reason for Judge Keesler's Order transferring venue, *see* (Document No. 262, pp. 7–9), the court finds that the proper course of action here would have been to address the issue of personal jurisdiction (raised in the dispositive Motion to Dismiss for Lack of Jurisdiction) simultaneously with the issue of transfer. The court will therefore address both of the dispositive motions along with the objections to the Order transferring venue.

2. Transfer of Venue

i. Legal Standards

28 U.S.C. § 1404(a) provides: "For the convenience of parties and witnesses, in the interest of justice, a district court may transfer any civil action to any other district or division where it might have been brought or to any district or division to which all parties have consented." *Id.* 28 U.S.C. § 1400(b), which specifically governs venue in patent actions, provides, "[a]ny civil action for patent infringement may be brought in the judicial district where the defendant resides, or where the defendant has committed acts of infringement and has a regular and established place of business." *Id.* A motion to transfer pursuant to § 1404(a) in a patent case requires application of the law of the regional circuit. *In re Link A Media Devices Corp.*, 662 F.3d 1221, 1222–23 (Fed.Cir.2011).

Upon a motion to transfer, the moving party carries a heavy burden. *Duke Energy Florida, Inc. v. Westinghouse Elec. Co.*, No.

3:14–CV–00141–MOC, 2014 WL 2572960, at *5 (W.D.N.C. June 9, 2014) (citing *Datasouth Computer Corp. v. Three Dimensional Technologies, Inc.*, 719 F.Supp. 446, 451 (W.D.N.C.1989)). A court's decision to grant a motion to transfer venue under 28 U.S.C. § 1404(a) is largely discretionary. *3A Composites USA, Inc. v. United Indus., Inc.*, No. 5:13CV83–RLV, 2014 WL 1471075, at *1 (W.D.N.C. Apr.15, 2014) (citing *Landers v. Dawson Const. Plant Ltd.*, 201 F.3d 436, 1999 WL 991419, *2 (4th Cir.1999)). In exercising such discretion, the court applies a balancing test and considers various factors in deciding whether transfer is appropriate. *Jim Crockett Promotions, Inc. v. Action Media Grp., Inc.*, 751 F.Supp. 93 (W.D.N.C.1990). The factors to be considered include:

- *6 1. The plaintiff's initial choice of forum;
2. The residence of the parties;
3. The relative ease of access of proof;
4. The availability of compulsory process for attendance of witnesses and the costs of obtaining attendance of willing witnesses;
5. The possibility of a view by the jury;
6. The enforceability of a judgment, if obtained;
7. The relative advantages and obstacles to a fair trial;
8. Other practical problems that make a trial easy, expeditious, and inexpensive;
9. The administrative difficulties of court congestion;
10. The interest in having localized controversies settled at home and the appropriateness in having the trial of a diversity case in a forum that is at home with state law that must govern the action; and
11. The avoidance of unnecessary problems with conflict of laws.

Id. "The above factors fall into three categories: (1) factors that favor neither party, (2) factors that favor Defendant, and (3) factors that favor Plaintiff." *Cohen v. ZL Technologies, Inc.*, No. 3:14–CV–00377–FDW, 2015 WL 93732, at *2 (W.D.N.C. Jan.7, 2015) (citing *Crockett*, 751

F.Supp. at 98). The court must analyze the eleven factors based on quality, not just quantity. *Id.* (citing *Crockett*, 751 F.Supp. at 96). In most cases, the plaintiff's choice of forum should be given significant weight, and should not be disturbed unless the balance is strongly in favor of transfer.

Collins v. Straight, Inc., 748 F.2d 916, 921 (4th Cir.1984) (citing *Gulf Oil Corp. v. Gilbert*, 330 U.S. 501, 508, 67 S.Ct. 839, 91 L.Ed. 1055 (1947)). A motion should not be granted if transfer "would merely shift the inconvenience from the defendant to the plaintiff, or if the equities lean but slightly in favor of the movant after all factors are considered." *Jim Crockett Promotions, Inc. v. Action Media Grp., Inc.*, 751 F.Supp. 93, 95 (W.D.N.C.1990).

On a motion to transfer, the facts as alleged in the complaint are accepted as true and all reasonable inferences are drawn in the plaintiff's favor. *Century Furniture, LLC v. C & C Imps., Inc.*, No. 1:07cv179, 2007 WL 2712955, at *2 (W.D.N.C. Sept.14, 2007).

As noted by Judge Keesler, "While a court typically decides the question of personal jurisdiction over a defendant before considering venue, the Supreme Court has held that 'when there is a sound prudential justification for doing so, ... a court may reverse the normal order of considering personal jurisdiction and venue.'" *BSN Medical, Inc. v. American Medical Products, LLC*, 3:11cv092-GCM-DSC, 2012 WL 171269, at *2 (W.D.N.C. Jan.20, 2012) (citing *Leroy v. Great W. United Corp.*, 443 U.S. 173, 180, 99 S.Ct. 2710, 61 L.Ed.2d 464 (1979)). "A court need not have personal jurisdiction over a defendant to transfer a case pursuant to 28 U.S.C. §§ 1404(a) or 1406(a)." *Id.*

ii. *The Magistrate Judge's Order*

Judge Keesler found good cause to allow Defendants' motion to transfer to the Eastern District of Michigan and, citing *BSN Medical*, declined to make any recommendation as to the pending dispositive motions, including the motion pertaining to personal jurisdiction. Judge Keesler found that the question of personal jurisdiction over Defendants in North Carolina presented a "close call upon which reasonable minds could

differ," and that the issue remained uncertain even after a round of briefing, oral arguments, and a jurisdictional discovery period prior to the filing of an Amended Complaint and renewed motions. (Document No. 262, p. 7). Judge Keesler also noted that this court recently rejected many of the same jurisdictional arguments that Plaintiff made in this case in a different patent infringement lawsuit filed by Plaintiff against a different defendant. *See* (Document No. 262, p. 7) (citing *Celgard, LLC v. SK Innovation, Co., Ltd.*, 3:13cv254-MOC-DSC, ¶ 2014 WL 5430993 (W.D.N.C. Aug.29, 2014)). He noted that he found it doubtful that this court has personal jurisdiction over both Defendants with regard to all the claims asserted against them, but that Defendants admit to jurisdiction in Michigan.² *Id.*

*7 In making the decision to grant transfer in light of what he found to be "doubtful" jurisdiction over both Defendants in North Carolina and Defendants' concessions that they are subject to jurisdiction in Michigan, Judge Keesler cited several decisions from district courts in this circuit doing the same. *See* (Document No. 262, pp. 8-9 (citing *La Casa Real Estate & Inv., LLC v. KB Home of S.C., Inc.*, No. 1:09CV895, 2010 WL 2649867, at *2 (M.D.N.C. June 30, 2010) ("in the interests of convenience, fairness and judicial economy, the Court elects to consider Defendant's Motion to Transfer pursuant to 28 U.S.C. § 1404(a) before reaching any issues related to the Court's jurisdiction."); *Nacco Materials Handling Grp., Inc. v. Lilly Co.*, 2011 WL 2119097, at *4 (E.D.N.C. May 25, 2011) (granting motion to transfer when personal jurisdiction over defendant remained "in serious doubt"); *Waldron v. Atradius Collections, Inc.*, 2010 WL 2367392, at *3 (D.Md. June 9, 2010) ("[T]he constitutional question of personal jurisdiction is a close one upon which reasonable minds could differ. There is no reason to inject such a question into the case unnecessarily."); *Jenkins v. Albuquerque Lonestar Freightliner, LLC*, 464 F.Supp.2d 491, 494 (E.D.N.C.2006) (granting motion to transfer in part because "the absence of personal jurisdiction over the defendant" in the original forum but not the transferee forum is an "impediment to a decision on the merits"); *Tyler v. Gaines Motor Lines, Inc.*, 245 F.Supp.2d 730, 734 (D.Md.2003) (transferring case in interest of justice because the question of personal jurisdiction was a "close one" and "would inject into the case an unnecessary legal issue that would render the entire litigation null and void, if,

on appeal, jurisdiction were found to be lacking”). While the court agrees that the issue of personal jurisdiction presents a “close call” in this case, it also believes that the parties deserve a thorough analysis of the dispositive question of personal jurisdiction before this matter is transferred to another district.

iii. *Review of Crockett Analysis*

Plaintiff argues that Judge Keesler’s Order should be set aside as clearly erroneous and contrary to law based on his analysis of the *Crockett* factors. Judge Keesler found that five factors—residence of the parties, access to proof, attendance of witnesses, fair trial, and practical problems affecting trial expediency and efficiency—weighed in favor of transfer, while the remaining factors were neutral. (Document No. 262, pp. 9–14). Plaintiff argues that each of these factors, as well as its choice of forum and local resolution factors, weigh against transfer or, at a minimum, are neutral, and that none of the *Crockett* factors weigh in favor of transfer. Judge Keesler found the following factors to be neutral: the possibility of a view by the jury; the enforceability of a judgment; the relative court congestion between the districts; and the avoidance of conflict of laws. Plaintiff does not challenge the venue order based on these factors and the court will therefore not disturb Judge Keesler’s determinations on those factors.

*8 The court is mindful of the discretion to the magistrate judge in analyzing a motion to transfer, *3A Composites USA, Inc. v. United Indus., Inc.*, No. 5:13CV83–RLV, 2014 WL 1471075, at *1 (W.D.N.C. Apr.15, 2014), and will only disturb his decision where clearly erroneous or contrary to law. Fed.R.Civ.P. 72(a); 28 U.S.C. § 636(B)(1)(A). The court will address the objections in turn.

a. *Plaintiff’s choice of forum*

Judge Keesler found this factor to be neutral; Plaintiff objects to such a finding, arguing that its choice of forum should have weighed more strongly in its favor. Judge Keesler properly noted that although the choice of forum by the Plaintiff is

ordinarily given considerable weight, “that weight is diminished when the conduct giving rise to the complaint did not occur in the forum.” See (Document No. 262, p. 9); *Hames v. Morton Salt, Inc.*, 3:11cv570–MOC–DSC, 2012 WL 1247201, at *2 (W.D.N.C. Apr.13, 2012) (citing *Parham v. Weave Corp.*, 323 F.Supp.2d 670, 674 (M.D.N.C.2004); *Telepharmacy Solutions, Inc. v. Pickpoint Corp.*, 238 F.Supp.2d 741, 743 (E.D.Va.2003); *Lynch v. Vanderhoef Builders*, 237 F.Supp.2d 615, 617 (D.Md.2002)). Plaintiff argues that the “diminished weight” rule only applies where none or essentially none of the conduct giving rise to the action occurred in the plaintiff’s chosen forum. See *Parham*, 323 F.Supp.2d at 674 (“While the plaintiff’s choice of forum is accorded substantial weight, the deference given to the plaintiff’s choice is proportionate to the relation between the forum and the cause of action.” (citations and internal quotations omitted)); *Speed Trac Technologies, Inc. v. Estes Express Lines, Inc.*, 567 F.Supp.2d 799, 803 (M.D.N.C.2008) (noting that choice of forum “receives less weight ... when (1) the plaintiff chooses a foreign forum, or (2) the cause of action bears little or no relation to the chosen forum.”).

Judge Keesler found that while Plaintiff had noted some contacts with North Carolina by Defendant LGC, most of the conduct giving rise to the crux of the amended complaint (the patent infringement claims) as to both Defendants occurred in Korea or Michigan. (Document No. 262, p. 10). Judge Keesler thus applied the “diminished weight” rule upon finding that most of the conduct giving rise to the complaint did not occur in North Carolina. However, as explained above, Plaintiff has alleged, and this court can reasonably infer, that much of the conduct giving rise to Defendants’ claims *did* occur in North Carolina. Plaintiff’s Amended Complaint alleges that at least some conduct giving rise to the alleged patent infringement occurred in North Carolina, (Document No. 217, ¶¶ 10–17), and that all of the conduct forming the basis of its state law claims occurred in North Carolina. See, e.g. *id.* at ¶¶ 17–32, 80–82, 101. As alleged in the Amended Complaint, Plaintiff argues that the alleged infringement in this case occurred as a result of the longstanding business relationship of the parties concerning sales of Celgard base film and the ultimate breakdown of such relationship. See (Document No. 217, ¶¶ 18; 26–28; 49–51). The crux of Plaintiff’s argument is that it provided base film to LGC specifically for its use and that


when the business relationship went sour, LGC sourced base film from third parties but continued to use Celgard's patented technology without Celgard's permission, which constitutes infringement of the [REDACTED]'s '586 patent. *Id.* See also Pl. Opp. Mot. Transfer (Document No. 243, p. 7) ("Celgard provided LG Chem separator material that Celgard permitted to be ceramic coated pursuant to the patent-in-suit, and the breakdown of this relationship—caused by LG Chem's misconduct—led LG Chem to manufacture and distribute products containing unauthorized separator material, thereby infringing the patent-in-suit.").

*9 Here, while not *all* of the conduct giving rise to the claims asserted against Defendants occurred in North Carolina, much of it did. See Section IV, C. Accordingly, the court finds that it was error for the magistrate judge to apply the "diminished weight" rule and that the general rule that the plaintiff's choice of forum should be accorded substantial weight is applicable. *Collins v. Straight, Inc.*, 748 F.2d 916, 921 (4th Cir.1984). As such, the court finds that the Plaintiff's choice of forum weighs in favor of keeping this action in this district.

b. Residence of the parties

Judge Keesler found that this factor slightly favors transfer; Plaintiff objects, arguing that because neither party is a resident of Michigan, this factor should have weighed against transfer or been neutral. Plaintiff is a resident of North Carolina. LGC is a corporation with its principal place of business in Seoul, Korea. LGCAI's principal place of business is in New Jersey. Judge Keesler found that because all LGC subsidiaries have outposts in the Eastern District of Michigan, and Defendants contend they are "at home" in Michigan, this factor weighs in favor of transfer.

For purposes of venue, "a corporate defendant resides in any judicial district in which it is subject to personal jurisdiction at the time the action commences." 28 U.S.C. § 1391(c). See also [REDACTED] *VE Holding Corp. v. Johnson Gas Appliance Co.*, 917 F.2d 1574, 1584 (Fed.Cir.1990) (holding that the language of § 1391(c) applies to § 1400(b));

¹  *Trintec Indus., Inc. v. Pedre Promotional*

Products, Inc., 395 F.3d 1275, 1280 (Fed.Cir.2005) ("Venue in a patent action against a corporate defendant exists wherever there is personal jurisdiction.").

Even assuming jurisdiction is proper over both Defendants in Michigan and that they are "residents" within the meaning of the applicable statutes, the disparity in the residencies between Plaintiff and Defendants would make this factor neutral. See *Simpson v. Snyder's of Hanover, Inc.*, No. 1:05-CV-354, 2006 WL 1642227, at *5 (W.D.N.C. June 12, 2006) (affirming magistrate judge's determination that the residence factor was neutral because one party was a resident of the forum and one party was a resident of the proposed venue); *Tracy v. Loram Maint. of Way, Inc.*, No. 5:10-CV-102-RLV, 2011 WL 2791257, at *6 (W.D.N.C. July 14, 2011) ("the Court finds that the residency of the parties is a neutral factor. Plaintiff resides in Catawba County, North Carolina, while Defendant's main place of business is in Minnesota. Regardless of the place of adjudication, one party will benefit to the other's detriment.").

The court finds it was error for the Magistrate Judge to find that residence of the parties favored transfer and finds this factor is, in fact, neutral.

c. Access to evidence

Judge Keesler found that this factor favors transfer; Plaintiff objects and argues that it should have been, at a minimum, neutral. "In patent infringement cases, the bulk of the relevant evidence usually comes from the accused infringer. Consequently, the place where the defendant's documents are kept weighs in favor of transfer to that location." *In re Genentech, Inc.*, 566 F.3d 1338, 1345 (Fed.Cir.2009) (citation omitted). Here, Plaintiffs allege that much of the proof in this case is in North Carolina, including "relevant documents, contracts, and e-mails." (Document No. 243, p. 5). Defendants allege that the bulk of the evidence is likely to come from LGC and its U.S. subsidiaries involved in the lithium battery business and located in Michigan. (Document No. 248, p. 2). Even accepting such argument as true for the patent infringement claims (despite the fact that neither Defendant is headquartered in Michigan), the same cannot be said for all of the

state law claims. As such, the court cannot find that the “bulk” of the evidence would be in Michigan, when the documents related to the conduct giving rise to Plaintiff’s claims are likely at each party’s headquarters—in Korea, New Jersey, and North Carolina. See *MGT Gaming, Inc. v. WMS Gaming, Inc.*, 978 F.Supp.2d 647, 669 (S.D.Miss.2013) (“Presumably, the bulk of the discovery material relating to a corporate party is located at the corporate headquarters.”)(citing ¹ *In re Acer Am. Corp.*, 626 F.3d 1252, 1256 (Fed.Cir.2010)). The court finds that the magistrate judge erred in finding that this factor favored transfer and finds that given the nature of the claims and the relevant evidence, this factor is neutral.

d. Availability of compulsory process for witnesses and the costs of transporting and obtaining those witnesses

*10 Judge Keesler found that this factor favors transfer; Plaintiff objects. As the parties note, “[t]he convenience of witnesses, particularly nonparty witnesses important to the resolution of the case, is often cited as the most significant factor in ruling on a motion to transfer ... One strong argument against transfer is that the original forum will be the most convenient for the witnesses. And when transfer will better serve the convenience of the witnesses, the motion under Section 1404(a) is more likely to be granted.” 15 Charles Alan Wright & Arthur R. Miller, *Federal Practice & Procedure* § 3851 (4th ed.) (collecting cases).

Here, Plaintiff has identified two witnesses in North Carolina (Document No. 243, pp. 5–6); Defendants have not identified any witnesses. See Def. Reply (Document No. 248, p. 3) (stating that “LG Chem’s potential witnesses are *likely* numerous ... and none of these potential witnesses are located in North Carolina. In part because of LGCAI’s presence in Michigan, witness attendance of both Defendants is far easier in Michigan.”) (emphasis added). Judge Keesler found that the facts on this factor are not as developed as he would have hoped, but that to the extent that non-party witnesses existed in this matter (i.e. customers or manufacturers of products that include the allegedly infringing separators), they were more likely to be made available in Michigan.

(Document No. 262, p. 11–12). While the court understands the magistrate judge’s logic, it simply cannot agree that this factor favors transfer where Defendant has not identified a single witness, let alone one in Michigan. See ¹ *Capital One Fin. Corp. v. Drive Fin. Servs., L.P.*, 434 F.Supp.2d 367, 375–76 (E.D.Va.2006) (“The party asserting witness inconvenience has the burden to proffer, by affidavit or otherwise, sufficient details respecting the witnesses and their potential testimony to enable the court to assess the materiality of evidence and the degree of inconvenience.”); 15 Fed. Prac. & Proc. Juris. § 3851 (“The party seeking the transfer must identify, typically by affidavit, the key witnesses to be called, state their residence, and provide at least a general summary of what their testimony will cover.”). The court therefore finds that Judge Keesler’s decision on this factor was in error. The court will therefore construe this factor as neutral.

e. Relative advantages and obstacles to a fair trial

Judge Keesler found that this factor slighted favored transfer; Plaintiff objects. In explaining his determination on this factor, Judge Keesler again discussed availability of witnesses as a consideration. (Document No. 262, pp. 12–13). Plaintiff argues that Judge Keesler erroneously “double counted” the witness availability and that he should have considered the “home field advantage” or bias of a trial in Michigan, where Defendants allegedly have the support of large auto-makers. While this court finds no basis for disturbing Judge Keesler’s on the issue of “double counting,” and agrees with his determination that there is no basis for any clear advantages or obstacles to fair trial in either district, it does find that his reliance on the presence and availability of unidentified witnesses in Michigan was in error. As explained above, the court finds that as Defendants have not identified any witnesses in the state of Michigan, there is no basis for assuming that the presence of such witnesses will offer any advantages to a fair trial. Regarding Plaintiff’s arguments as to Defendants’ “home field” advantage in Michigan, the argument as to such advantages goes both ways. See ¹ *Rice v. Bellsouth Adver. & Pub. Corp.*, 240 F.Supp.2d 526, 530 (W.D.N.C.2002). The court therefore

finds that this factor is neutral.

f. Practical issues affecting trial expediency and efficiency

*11 Judge Keesler found that this factor slightly favored transfer; Plaintiff objects. Judge Keesler noted that no trial is ever easy, expeditious or inexpensive, and that all trials involve air travel and inconvenience. (Document No. 262, p. 13) (citing *Century Furniture, LLC v. C & C Imps., Inc.*, No. 1:07cv179, 2007 WL 2712955, at *5 (W.D.N.C. Sept.14, 2007)). He further stated that after balancing all evidence to date, this factor slightly favored transfer. The court finds that without more evidence to the contrary, this factor clearly does not favor transfer. In *Century*, wherein the plaintiff brought suit in the Asheville division of this district, the court noted that, “the practical problem is access to the situs of the litigation via air transportation, and the mountains of North Carolina simply are not *easily* accessible when engaged in transcontinental litigation.” *Id.* Here, litigation in this district will occur in Charlotte, North Carolina, a city with an international airport that is easily accessible by all parties. Indeed, the court notes that three representatives from Defendants’ office in Korea were present in Charlotte for the hour-long oral arguments on the objections at issue, and presumably reached the city via airplane. *See* Hearing Transcript (Document No. 274) at 14:24–15:8. Judge Keesler noted in his order that “travel from Korea or New Jersey to North Carolina or Michigan are roughly equivalent.” (Document No. 262, p. 12). In light of the fact that motions to transfer are not to be granted merely to shift the inconvenience from one party to another, *Jim Crockett Promotions, Inc. v. Action Media Grp., Inc.*, 751 F.Supp. 93, 95 (W.D.N.C.1990), and that Judge Keesler appears to have based his determination solely on the inconvenience caused by air travel, the court finds that his determination that this factor weighed in favor of transfer was clearly erroneous. *See* ¹ *Rice v. Bellsouth Adver. & Pub. Corp.*, 240 F.Supp.2d 526, 530 (W.D.N.C.2002) (“In either forum, there will be practical problems such as travel and accommodations for the parties and their counsel. This factor is neutral.”). The court therefore finds this factor to be neutral.

g. Interest of resolving localized controversies at home and the appropriateness of having the trial of a diversity case in a forum that is at home with the state law that must govern the action

Judge Keesler found this factor to be neutral; Plaintiff objects. On this factor, Judge Keesler found that, particularly with the aid of very able counsel, any district court would be able to apply the laws of North Carolina to the extent necessary, in addition to patent laws. He noted that this case involves claims of national, if not international patent violations. The court finds no error in this determination and overrules Plaintiff’s objection that the focus should have been on the “strong interest in resolving issues locally.”

C. Conclusion

*12 In light of the above analysis, the court finds that Judge Keesler clearly erred in weighing several *Crockett* factors, and that the balance of the factors favors maintaining this action in this district. Put another way, the court finds that transfer of this matter “would merely shift the inconvenience from the defendant to the plaintiff,” *Jim Crockett Promotions, Inc. v. Action Media Grp., Inc.*, 751 F.Supp. 93, 95 (W.D.N.C.1990), which makes transfer inappropriate. Because the court finds that personal jurisdiction over both Defendants is appropriate in this district, *see* Section IV, and that the balance of factors does not favor transfer, the court will set aside those determinations of the magistrate judge discussed above, and deny Defendants’ Alternative Motion to Transfer.

III. DEFENDANTS’ MOTION TO DISMISS COUNTS III–VI OF AMENDED COMPLAINT

The court now addresses Defendants’ Motion to Dismiss Counts III, IV, V, and VI of Plaintiff’s Amended Complaint. (Document No. 222). Defendants claim that Plaintiff has failed to properly plead facts sufficient to claim (1) unfair

and deceptive trade practices; (2) breach of contract; (3) breach of the duty of good faith and fair dealing; and (4) unjust enrichment, as required by Fed.R.Civ.P. 12(b)(6).

A. Legal Standards

To survive a Rule 12(b)(6) motion to dismiss, a claimant must allege facts in his complaint that “raise a right to relief above the speculative level.”

¹ *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 555, 127 S.Ct. 1955, 167 L.Ed.2d 929 (2007). “[A] plaintiff’s obligation to provide the ‘grounds’ of his ‘entitle[ment] to relief’ requires more than labels and conclusions, and a formulaic recitation of the elements of a cause of action will not do ...” *Id.* (second alteration in original; citation omitted). A claimant must plead sufficient facts to state a claim for relief that is “plausible on its face.” *Id.* at 570.

As the Supreme Court elaborated in ¹ *Ashcroft v. Iqbal*, 556 U.S. 662, 129 S.Ct. 1937, 173 L.Ed.2d 868 (2009), “[a] claim has facial plausibility when the plaintiff pleads sufficient factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged.” *Id.* at 678. This “plausibility standard” requires “more than a sheer possibility that a defendant has acted unlawfully.” *Id.* Thus, a complaint falls short of the plausibility standard where a plaintiff pleads “facts that are ‘merely consistent with’ a defendant’s liability....” *Id.* While the court accepts *plausible* factual allegations made in a claim as true and considers those facts in the light most favorable to plaintiff in ruling on a motion to dismiss, a court “need not accept as true unwarranted inferences, unreasonable conclusions, or arguments.”

¹ *Eastern Shore Mkt.’s Inc. v. J.D. Assoc.’s, LLP*, 213 F.3d 175, 180 (4th Cir.2000).

B. Discussion

1. Unfair and Deceptive Trade Practices

Defendants argue that Plaintiff has failed to plead a proper claim for unfair and deceptive trade

practices under N.C. Gen.Stat. § 75–1.1 because the facts alleged do not amount to the aggravating circumstances required for such a claim. The elements of a claim for unfair and deceptive trade practices in violation of ¹ N.C. Gen.Stat. § 75–1.1 are: (1) an unfair or deceptive act or practice, or an unfair method of competition, (2) in or affecting commerce, (3) which proximately caused actual injury to the plaintiff or to his business. *Id.*; *Gray v. N. Carolina Ins. Underwriting Ass’n*, 352 N.C. 61, 529 S.E.2d 676, 681 (N.C.2000). Recovery under such a claim “is limited to those situations when a plaintiff can show that plaintiff detrimentally relied upon a statement or misrepresentation and he or she suffered actual injury as a proximate result of defendant’s deceptive statement or misrepresentation.” *McLamb v. T.P. Inc.*, 173 N.C.App. 586, 619 S.E.2d 577, 582–83 (N.C.App.2005) (internal quotation and citation omitted). A practice is unfair if it “is immoral, unethical, oppressive, unscrupulous, or substantially injurious to customers.” *Deerborne Cottages, LLC v. First Bank*, No. 1:11CV178, 2012 WL 1835240, at *5 (W.D.N.C. Apr.9, 2012) *report and recommendation adopted*, No. 1:11CV178, 2012 WL 1836093 (W.D.N.C. May 21, 2012) (citation and internal quotation omitted). A practice is deceptive where it “has the tendency or capacity to deceive.” *Id.* A claim for unfair and deceptive trade practices turns on the facts of each case and therefore involves a “highly fact-specific inquiry.” ¹ *S. Atl.Ltd. P’ship of Tennessee, L.P. v. Riese*, 284 F.3d 518, 535 (4th Cir.2002).

*13 Here, Plaintiff alleges that LGC: (1) repeatedly promised Celgard that it would make Celgard its exclusive base film supplier for EVs, (2) in order to induce Celgard to increase its production capacity to meet LGC’s requirements and provide it with favorable pricing, (3) while at the same time secretly making arrangements to replace Celgard. (Document No. 217 ¶¶ 68–69, 75, 77, 9092, 116.) The Amended Complaint further alleges that despite repeated promises to the contrary, LGC had no intention of entering into an LTA with Celgard, but strung Celgard along in order to ensure that LGC had sufficient supply of base film at discounted prices until LGC was ready to replace Celgard. *Id.* at ¶ 92. Then, LGC allegedly misrepresented to Celgard that the market price for comparable separator material had decreased by over 50% in an attempt to avoid its obligation in

the MOU to purchase the majority of separator material from Celgard. *Id.* at ¶¶ 9396, 116. The court finds that such allegations of misrepresentation and false promises fit squarely within the type of conduct that North Carolina courts have found to be in unfair and deceptive. *See, e.g. Deerborne Cottages*, 2012 WL 1835240, at *6. (“Put simply, Plaintiffs allege that Defendants ... made affirmative misrepresentations during Plaintiffs’ dealings with The Bank of Asheville, and that Plaintiffs relied upon these misrepresentations in going forward with the project. As various courts have held, affirmative misrepresentations such as these can form the basis of an unfair trade practices claim in certain circumstances.”). Although whether Plaintiff will prevail on its claim will ultimately depend on the specific facts in this case, the court finds that the allegations of deception and misrepresentation alleged in the Amended Complaint are sufficient to survive dismissal at this stage of the proceedings. The court will therefore deny Defendants’ motion as to the unfair and deceptive trade practices claim.

2. Breach of Contract

Defendants argue that Plaintiff’s breach of contract claim cannot succeed because Plaintiff has failed to show that the parties entered an enforceable contract. As Defendants correctly note, “[t]he elements of a claim for breach of contract are (1) existence of a valid contract and (2) breach of the terms of that contract.” *See Poor v. Hill*, 138 N.C.App. 19, 530 S.E.2d 838, 843 (N.C.App.2000). Defendants first argue that the MOU is not a contract because it explicitly states in the second paragraph, “LGC and CELGARD understand that this is a non-binding MOU.” *See* MOU (Document No. 18–1 at 1). Here, Plaintiff claims that LGC breached the “Supplier Selection Agreement” contained in the MOU when it failed to purchase separator material primarily from Celgard during the Collaboration period. (Document No. 217, ¶ 127). The MOU states, “[b]oth parties agree that except as is explicitly set forth in this MOU, neither party shall be bound by any discussions or written proposals, letters, memos or charts used or exchanged unless and until a definitive and binding agreement is signed.” (MOU at 1). Plaintiff argues that the non-binding language applies only to the parties’ intent to enter

into a long-term supply agreement, not to their interim obligations during the Collaboration Period. Specifically, Plaintiff notes that the MOU expressly provides that “[n]otwithstanding the foregoing”:

*14 • “LGC will purchase separator primarily from CELGARD during the Collaboration Period....”

• “Initial products to be supplied by Celgard and purchased by LGC are Celgard® trilayer products manufactured to specifications mutually agreeable to both parties;” and

• “LGC also agrees to give priority to qualifying CELGARD separator in any/all new cell applications for the EDV and ESS markets....”

(MOU at 1, ¶¶ 1–3 (emphasis added)). The court finds that Plaintiff has put forth sufficiently plausible allegations of the ambiguity of the document’s intentions as to the supply of goods during the collaboration period to render dismissal at the 12(b)(6) stage inappropriate. *See Quorum Health Res., LLC v. Hugh Chatham Mem’l Hosp., Inc.*, 552 F.Supp.2d 527, 530 (M.D.N.C.2007) (“If the agreement is ambiguous ... interpretation of the contract is a matter for the jury. Ambiguity exists where the contract’s language is reasonably susceptible to either of the interpretations asserted by the parties.”) (internal citations and quotations omitted).

Defendants also argue that Plaintiff has failed to show the existence of a valid contract because the language of the MOU does not present definite and certain terms. *See Miller v. Rose*, 138 N.C.App. 582, 532 S.E.2d 228, 232 (N.C.App.2000) (“To be enforceable, the terms of a contract must be sufficiently definite and certain, and a contract that leaves material portions open for future agreement is nugatory and void for indefiniteness.”) (internal citations and quotations omitted). The court finds that Defendants’ arguments do not merit dismissal of this claim at this stage in the proceedings. While there are certainly questions as to the validity of the parties’ agreement as a contract, the court finds that the language of the MOU states general terms for the parties’ agreement, including the applicable time period, a quantity of separator material, price, and quality of goods for sale, that could be interpreted as a valid contract. *See* N.C. Gen.Stat. § 25–2204 (providing: “1) A contract for sale of

goods may be made in any manner sufficient to show agreement, including conduct by both parties which recognizes the existence of such a contract ... [and] (3) Even though one or more terms are left open a contract for sale does not fail for indefiniteness if the parties have intended to make a contract and there is a reasonably certain basis for giving an appropriate remedy .”).

The court will therefore deny Defendants’ motion as to the breach of contract claim.

3. Breach of the Duty of Good Faith and Fair Dealing

Defendants’ sole challenge to Plaintiff’s claim for breach of the covenant of good faith and fair dealing is premised on a finding that the MOU is not a valid and enforceable contract. Because the court will not dismiss Plaintiff’s breach of contract claim at this time for the reasons explained above, it similarly declines to dismiss this claim. See *Recycling Equip., Inc. v. E Recycling Sys. , LLC*, No. 5:14–CV–00056, 2014 WL 6977766, at *5 (W.D.N.C. Dec.9, 2014) (“The implied covenant of good faith and fair dealing is a part of every contract and is breached where one party to a contract does something that injures the right of the other to receive the benefits of the agreement...Where the claim for breach of good faith is part and parcel of a similar claim for breach of an express term of the contract claim, that claim will rise and fall with the other breach of contract claim.”) (internal citations and quotations omitted).

4. Unjust Enrichment

*15 Finally, Defendants argue that Plaintiff’s alternative claim for unjust enrichment should be dismissed because the facts alleged are insufficient to state a plausible claim, the claim was not properly pleaded, and the claim is barred by the statute of limitations.

In order to establish a claim for unjust enrichment, a plaintiff must allege: (1) it conferred a measurable benefit on the other party; (2) that party consciously accepted the benefit, and (3) the benefit was not conferred officiously or

gratuitously. *Booe v. Shadrick*, 322 N.C. 567, 369 S.E.2d 554, 556 (N.C.1988); *Primerica Life Ins. Co. v. James Massengill & Sons Const. Co.*, 211 N.C.App. 252, 712 S.E.2d 670, 677 (N.C.App.2011). Both parties acknowledge that under North Carolina law, “a claim for unjust enrichment may not be brought in the face of an express contractual relationship between the parties.” *Madison River Mgmt. Co. v. Bus. Mgmt. Software Corp.*, 351 F.Supp.2d 436, 446 (M.D.N.C.2005) (citing *Se. Shelter Corp. v. BTU, Inc.*, 154 N.C.App. 321, 572 S.E.2d 200, 206 (N.C.App.2002)). However, in the absence of an express contractual agreement, “A claim of unjust enrichment is an alternative to a claim based on breach of contract ...” *Volumetrics Med. Imaging, Inc. v. ATL Ultrasound, Inc.*, 243 F.Supp.2d 386, 411 (M.D.N.C.2003).

The court first addresses the wording of Plaintiff’s alternative pleading. Defendants argue that Plaintiff’s alternative claim for unjust enrichment was pleaded improperly because it incorporated all previous allegations in the Amended Complaint by reference. See (Document No. 217, ¶ 137); *Howard v. Carroll Companies, Inc.*, No. 1:12CV146, 2013 WL 3791619, at *12 (M.D.N.C. July 19, 2013) (dismissing claim for unjust enrichment where Plaintiff’s claim did “not indicate that this claim was made in the alternative” and incorporated by reference all preceeding allegations, including those alleging the existence of the two contracts); *Deltacom, Inc. v. Budget Telecom, Inc.*, No. 5:10–cv–38, 2011 WL 2036676, at *5–6 (E.D.N.C. May 22, 2011) (declining to construe an unjust enrichment claim as an alterative claim when the complaint alleged the existence of a contractual relationship, defendant admitted to contractual relationship, plaintiff expressly incorporated by reference allegations of a contractual relationship in unjust enrichment claim, and failed to make the claim in the alternative). Here, the court finds no basis to dismiss the claim, phrased as “In the Alternative, Unjust Enrichment Against LG Chem,” on the basis of Plaintiff’s incorporation by reference of previous allegations because the claim was clearly made in the alternative. See (Document No. 217 at ¶¶ 137–38). Where, as here, Defendants deny the existence of a valid contract and Plaintiff has clearly stated that it makes its claim in the alternative to the contract claims, the court will allow the claim to proceed at this stage.

Defendant also argues that the facts Plaintiff

alleges simply show that it voluntarily took steps to improve production capabilities in the hopes of gaining additional LGC business. The court disagrees with such a characterization of the facts alleged. Here, Plaintiff has alleged that it increased its production capabilities and provided LGC with discounted pricing for base film based on promises by LGC that if Plaintiff did so, Plaintiff would become LGC's long-term, exclusive supplier of separator material for the EV industry. (Document No. 217 at ¶¶ 68, 69, 140). Plaintiff states, quite plausibly, that these benefits were not conferred gratuitously, but instead in direct response to, and in reliance on, LGC's promises. The court therefore finds no reason to dismiss Plaintiff's claim based on Defendants' argument that Plaintiff's actions were gratuitous.

*16 The court has also carefully considered the statute of limitations issue raised by Defendants. A claim for unjust enrichment is subject to a three year statute of limitations period that runs from the date the claim accrues. *Mountain Land Properties, Inc. v. Lovell*, No. 2:12-CV-84-MR-DLH, 2014 WL 4542413, at *13 (W.D.N.C. Sept.11, 2014) (citing *Stratton v. Royal Bank of Canada*, 211 N.C.App. 78, 712 S.E.2d 221, 229 (N.C.App.2011); *Housecalls Home Health Care, Inc. v. State, Dept. of Health & Human Servs.*, 200 N.C.App. 66, 682 S.E.2d 741, 744 (N.C.App.2009); *Miller v. Randolph*, 124 N.C.App. 779, 478 S.E.2d 668, 670 (N.C.App.1996)). Generally, a cause of action "accrues when the wrong is complete and, thus, a plaintiff is entitled to assert the claim in court." *Id.* Here, the Amended Complaint alleges that LGC strung Plaintiff along for years, but that the wrong to Plaintiff was not complete until June 20, 2013, when LGC refused to enter into the LTA and instead switched suppliers. (Document No. 217 at ¶¶ 100-01). The court there finds that Plaintiff's claim for unjust enrichment is not barred by the statute of limitations.

C. Conclusion

The court finds that Plaintiff has stated plausible claims for relief based on factual allegations sufficient "to raise a right to relief above the speculative level," *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 555, 127 S.Ct. 1955, 167

L.Ed.2d 929 (2007). It will therefore deny Defendants' 12(b)(6) motion.

IV. DEFENDANTS' MOTION TO DISMISS FOR LACK OF PERSONAL JURISDICTION

Finally, the court considers Defendants' Motion to Dismiss Plaintiff's Amended Complaint for Lack of Personal Jurisdiction pursuant to Rule 12(b)(2). (Document No. 226). Defendants argue that they are not subject to personal jurisdiction in the Western District of North Carolina under any legal theory and that they lack the requisite minimum contacts with this state to make an assertion of jurisdiction over them reasonable or fair. Plaintiff claims that both Defendants are subject to personal jurisdiction here under various theories. Specifically, Plaintiff contends that LGC is subject to specific jurisdiction through its prior business dealings here and that its placement of allegedly infringing products into the stream of commerce also satisfies personal jurisdiction. Plaintiff also argues that LGC is subject to general jurisdiction or, alternatively, nationwide jurisdiction. Plaintiff claims that LGCAI is subject to jurisdiction under the theories of general jurisdiction and its use of the stream of commerce.

A. Standard of Review

The plaintiff bears the burden of establishing personal jurisdiction over the defendant by a preponderance of the evidence. *IMO Indus., Inc. v. SEIM S.R.L.*, No. 305-CV-420-MU, 2007 WL 1651838, at *1 (W.D.N.C. June 4, 2007). When evaluating a motion to dismiss pursuant to Federal Rule 12(b)(2), if no evidentiary hearing is held and the court determines the question of personal jurisdiction based on affidavits and other written materials, the plaintiff need only establish a prima facie case of personal jurisdiction. *Electronics For Imaging, Inc. v. Coyle*, 340 F.3d 1344, 1349 (Fed.Cir.2003). *See also IMO Indus.*, 2007 WL 1651838, at *1. Here, while jurisdictional discovery has been permitted, no formal evidentiary hearing has been conducted to resolve disputed issues of jurisdictional fact. As such, Plaintiff must only make a prima facie case that the

court has personal jurisdiction over Defendants, which “is established if the plaintiff presents sufficient evidence to defeat a motion for directed verdict.” *ATI Indus. Automation, Inc. v. Applied Robotics, Inc.*, No. 1:09CV471, 2013 WL 1149174, at *2 (M.D.N.C. Mar.19, 2013) (quoting 2 James W. Moore, Moore’s Federal Practice § 12.31[5]). In determining whether Plaintiff has made the requisite showing upon a motion to dismiss, a district court must accept the uncontroverted allegations in the plaintiff’s complaint as true and resolve any factual conflicts in the affidavits in the plaintiff’s favor.

Electronics For Imaging, 340 F.3d at 1349.

B. Legal Standards

*17 Federal Circuit case law applies in determining whether this court has personal jurisdiction over an out-of-state accused infringer. *Beverly Hills Fan Co. v. Royal Sovereign Corp.*, 21 F.3d 1558, 1564–65 (Fed.Cir.1994).³ Federal courts apply the relevant state statute when determining personal jurisdiction over a defendant, even when the cause of action is purely federal. *Id.* at 1569. Because North Carolina’s long-arm statute is co-extensive with federal due process requirements, the jurisdictional inquiry here collapses into a single determination of whether this court’s exercise of jurisdiction over Defendants comports with due process. *Dillon v. Numismatic Funding Corp.*, 291 N.C. 674, 676, 231 S.E.2d 629 (1977). “The constitutional touchstone for determining whether an exercise of personal jurisdiction comports with due process ‘remains whether the defendant purposefully established minimum contacts in the forum State.’” *Nuance Commc’ns, Inc. v. Abby Software House*, 626 F.3d 1222, 1230–31 (Fed.Cir.2010) (quoting *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 474, 105 S.Ct. 2174, 85 L.Ed.2d 528, (1985)).

To be consistent with the limitations of due process, a defendant must have “minimum contacts” with the forum state “such that the maintenance of the suit does not offend traditional notions of fair play and substantial justice.”

¹ *International Shoe Co. v. Washington*, 326 U.S. 310, 316, 66 S.Ct. 154, 90 L.Ed. 95 (1945). Minimum contacts may be established by showing

“general” or “specific” jurisdiction. ² *Helicopteros Nacionales de Columbia, S.A. v. Hall*, 466 U.S. 408, 414, 104 S.Ct. 1868, 80 L.Ed.2d 404 (1984).

1. General Jurisdiction

A court may exercise general jurisdiction over a non-resident defendant if the defendant has contacts with the state that are so “continuous and systematic” as to render himself “essentially at home in the forum State.” ³ *Goodyear Dunlop Tires Operations, S.A. v. Brown*, — U.S. —, —, 131 S.Ct. 2846, 2851, 180 L.Ed.2d 796 (2011). When a defendant maintains such systematic and continuous contacts with the forum state, even when the cause of action has no relation to those contacts, assertion of general jurisdiction is proper. ⁴ *Grober v. Mako Products, Inc.*, 686 F.3d 1335, 1346 (Fed.Cir.2012) (citing *LSI Indus. Inc. v. Hubbell Lighting, Inc.*, 232 F.3d 1369, 1375 (Fed.Cir.2000); *Helicopteros*, 466 U.S. at 414–16)). Plaintiffs bear a “higher burden” when establishing general jurisdiction than they do when establishing specific jurisdiction. ⁵ *Avocent Huntsville Corp. v. Aten Int’l Co., Ltd.*, 552 F.3d 1324, 1330 (Fed.Cir.2008). “Sporadic and insubstantial contacts with the forum state ... are not sufficient to establish general jurisdiction.” ⁶ *Campbell Pet Co. v. Miale*, 542 F.3d 879, 884 (Fed.Cir.2008). Further, “continuous activity of some sorts within a state is not enough ... the continuous corporate operations within a state must be so substantial and of such a nature as to justify suit against it on causes of action arising from dealings entirely distinct from those activities.”

International Shoe, 326 U.S. at 318. A court must look at the facts of each case to determine whether a defendant’s activities within a state are “continuous and systematic.” *LSI Indus. Inc. v. Hubbell Lighting, Inc.*, 232 F.3d 1369, 1375 (Fed.Cir.2000).

2. Specific Jurisdiction

*18 A court has specific jurisdiction over a defendant in a cause of action that arises out of the

defendant's activities in the forum state, and "can exist even if the defendant's contacts are not continuous and systematic." *Grober v. Mako Products, Inc.*, 686 F.3d 1335, 1346 (Fed.Cir.2012) (citation omitted). When exercising specific jurisdiction, a court must have jurisdiction over each party as to each claim alleged. *Pan-Am. Products & Holdings, LLC v. R.T.G. Furniture Corp.*, 825 F.Supp.2d 664, 678 (M.D.N.C.2011) (citations omitted).

In analyzing specific jurisdiction over a defendant, the Federal Circuit considers whether: "(1) the defendant purposefully directed its activities at residents of the forum state, (2) the claim arises out of or relates to the defendant's activities with the forum state, and (3) assertion of personal jurisdiction is reasonable and fair." *Grober*, 686 F.3d at 1346 (citing *Elec. For Imaging, Inc. v. Coyle*, 340 F.3d 1344, 1349 (Fed.Cir.2003)). Plaintiff has the burden of making a prima facie showing of specific jurisdiction by satisfying the first two elements; the burden then shifts to defendant to show that such assertion of personal jurisdiction is not reasonable and fair. *Id.*

3. Stream of Commerce

Where a defendant's contacts with the forum state are indirect and only the result of an intermediary distributorship arrangement, the Federal Circuit has explained that a "stream of commerce" theory is to be applied in lieu of the typical concepts of specific and general jurisdiction. *Viam Corp. v. Iowa Exp.-Imp. Trading Co.*, 84 F.3d 424, 427 (Fed.Cir.1996); see also *Beverly Hills Fan Co. v. Royal Sovereign Corp.*, 21 F.3d 1558, 1566 (Fed.Cir.1994). The law governing this theory has been concisely summarized by the Federal Circuit:

In *World-Wide Volkswagen Corp. v. Woodson*, 444 U.S. 286, 298 (1980), the Supreme Court stated that a defendant could purposefully avail itself of a forum by "deliver[ing] its products into the stream of commerce with the expectation that they will be purchased by consumers in the forum [s]tate." In *Asahi Metal Industry Co. v. Superior Court of California*, 480 U.S. 102, 107 S.Ct.

1026, 94 L.Ed.2d 92 (1987), a plurality of four justices concluded that something more was required—"an action of the defendant purposefully directed toward the forum state." *Id.* at 112 (emphasis in original). The cited examples of purposeful direction included "marketing through a distributor ... in the forum [s]tate" and "providing regular advice to customers." *Id.* Four other justices considered the showing of additional conduct unnecessary. *Id.* at 117.

Nuance Commc'ns, Inc. v. Abhy Software House, 626 F.3d 1222, 1233 (Fed.Cir.2010). Like the Supreme Court, the Federal Circuit has not yet decided whether "something more than the mere act of placing a product in the stream of commerce with the expectation that it would be purchased in the forum state" is required to establish jurisdiction. *Id.* at 1234 (citing *Beverly Hills Fan*, 21 F.3d at 1566). See also *Avocent Huntsville Corp. v. Aten Int'l Co.*, 552 F.3d 1324, 1332 (Fed.Cir.2008) ("We have also applied the stream of commerce theory, although we have not resolved the split in authority reflected in the competing plurality opinions in *Asahi*"); *AFTG-TG, LLC v. Nuvoton Tech. Corp.*, 689 F.3d 1358, 1365 (Fed.Cir.2012). However, under either version of the stream of commerce theory, where an alien Defendant: 1) places the accused product into the stream of commerce, 2) knows or should know the likely destination of the product, and 3) its conduct and connections with the forum state are such that it may reasonably foresee being haled into court within that forum, exercise of jurisdiction under the stream of commerce theory is appropriate. *Beverly Hills Fan*, 21 F.3d at 1566. Thus, if the manufacturer purposefully ships the accused products into the forum state through an established distribution channel, with the expectation that those products will be sold in the forum, such action is sufficient to give rise to a proper assertion of jurisdiction. *Nuance Commc'ns*, 626 F.3d at 1233-34.

4. Nationwide Jurisdiction

*19 If neither specific nor general jurisdiction applies, a court may exercise nationwide jurisdiction under Fed.R.Civ.P. 4(k)(2). See *id.*

(providing that “For a claim that arises under federal law, serving a summons or filing a waiver of service establishes personal jurisdiction over a defendant if: (A) the defendant is not subject to jurisdiction in any state’s courts of general jurisdiction”). Nationwide jurisdiction is appropriate where “the defendant contends that he cannot be sued in the forum state and refuses to identify any other where suit is possible.”

¹ *Touchcom, Inc. v. Bereskin & Parr*, 574 F.3d 1403, 1415 (Fed.Cir.2009).

5. Reasonability of Jurisdiction

Even where a defendant’s contacts with the forum state are sufficient to satisfy personal jurisdiction, a defendant can still defeat jurisdiction “by marshaling a compelling case against jurisdiction on the grounds that its exercise would be unreasonable, [and] contrary to concepts of fair play and substantial justice.” ² *Viam Corp.*, 84 F.3d at 429. This “unreasonableness” test weighs the burden the litigation places on the defendant against the plaintiff’s interest in a convenient forum and the forum’s interest in resolving the controversy. *Id.*; see also *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 477, 105 S.Ct. 2174, 85 L.Ed.2d 528 (1985). It is a difficult test for a defendant to pass: “these cases are limited to the rare situation in which the plaintiff’s interest and the state’s interest in adjudicating the dispute in the forum are so attenuated that they are clearly outweighed by the burden of subjecting the defendant to litigation within the forum.”

³ *Beverly Hills Fan*, 21 F.3d at 1568. The inquiry under this test includes a balancing of (1) the burden on the defendant; (2) the interests of the forum state; (3) the plaintiff’s interest in obtaining relief; (4) the interstate judicial system’s interest in obtaining the most efficient resolution of controversies; and (5) the interest of the states in furthering their social policies. ⁴ *Viam Corp. v. Iowa Exp.-Imp. Trading Co.*, 84 F.3d 424, 429 (Fed.Cir.1996) (citing ⁵ *World Wide Volkswagen Corp. v. Woodson*, 444 U.S. 286, 100 S.Ct. 559, 62 L.Ed.2d 490 (1980)).

6. Supplemental Jurisdiction

⁶ 28 U.S.C. § 1367(a) provides that “in any civil action of which the district courts have original jurisdiction, the district courts shall have supplemental jurisdiction over all other claims that are so related to claims in the action within such original jurisdiction that they form part of the same case or controversy under Article III of the United States Constitution.” Such claims must arise out of “a common nucleus of operative fact.” ⁷ *United Mine Workers of Am. v. Gibbs*, 383 U.S. 715, 725, 86 S.Ct. 1130, 16 L.Ed.2d 218 (1966); accord ⁸ *Silent Drive, Inc. v. Strong Indus., Inc.*, 326 F.3d 1194, 1206 (Fed.Cir.2003).

C. Personal Jurisdiction over LGC

1. State Law Claims (Counts III–VI)

i. Specific Jurisdiction

As noted above, assertion of specific jurisdiction is proper when the plaintiff’s cause of action arises from a defendant’s contacts with the forum state. The court finds that assertion of specific jurisdiction is appropriate for all of Plaintiff’s claims arising under state law—unfair and deceptive trade practices, breach of contract, breach of the implied covenant of good faith and fair dealing, and alternatively, unjust enrichment—because LGC’s contacts with North Carolina throughout the course of its business relationship with Plaintiff gave rise to those claims.

*20 The court first finds that LGC purposefully directed its activities at the forum state. Here, LGC conducted business with Plaintiff, a North Carolina resident, for seven years. In that time, LGC purchased \$95 million worth of separator material made in, and shipped from, North Carolina. (Document Nos. 56 ¶ 23; 242–15). The parties entered into a written MOU and extensively negotiated a written LTA for LGC’s EV programs. (Document No. 18 ¶ 7, 13). Accepting Plaintiff’s allegations as true, Plaintiff spent over \$300,000,000 to expand its manufacturing capacity in order to meet LGC’s long-term supply requirements based on LGC’s representations that it would make Plaintiff its exclusive supplier of

separator material for EV batteries if Plaintiff increased production capacity. *Id.* ¶¶ 8–10, 20. Additionally, Plaintiff states that until the expanded capacity became operational, it stopped taking orders from certain CE customers to redirect resources to meet LGC’s volume requirements. *Id.* ¶ 18; (Document No. 172 ¶¶ 8, 11).

Throughout the course of these business dealings, LG Chem representatives extensively communicated by e-mail with Plaintiff. *See e.g.*, Documents No. 242–1–12. *See also* ¹ - *Electronics For Imaging, Inc. v. Coyle*, 340 F.3d 1344, 1351 (Fed.Cir.2003) (discussing Defendant’s contacts with Plaintiff in the forum state by phone and noting “[Defendant’s] communications are significant in the personal jurisdiction calculus even though [Defendant] was not physically present in [forum state] when he made these communications.”). More significantly, LGC representatives had numerous in-person meetings in North Carolina, occurring “on about at least a quarterly basis.” (Document Nos. 37 ¶ 4; 17 ¶ 11; 32 ¶ 9; 52 ¶ 8). Plaintiff has provided the following evidence that high-level LGC executives and other employees traveled to North Carolina for numerous meetings to inspect Celgard’s facilities, negotiate agreements, and discuss Celgard’s intellectual property rights:

- LGC officers and engineers visited and inspected Celgard facilities in Charlotte and Concord, North Carolina to certify that they met LGC specifications. (Document Nos. 18 ¶ 17; 242–18).
- In October and November 2010, LGC executives traveled to Charlotte to meet with Celgard. (Documents No. 242–7; 242–8).
- In July 2011, LGC personnel attended Celgard’s Grand Opening event for the Concord, North Carolina facility. (Document No. 242–11).
- In September 2011, LGC personnel traveled to North Carolina to tour the Concord and Charlotte facilities and to discuss the expansion plan. (Documents No. 242–9; 242–10).
- In November 2012, an LGC executive traveled to Charlotte to discuss LGC’s business forecast for 2013, Celgard’s pricing proposals, and collaborating to develop new

separator products. (Document Nos. 242–6; 56 ¶ 22).

- In February 2013, an LGC executive met in Charlotte to negotiate various options for parties’ ongoing relationship, including an LTA. (Document Nos. 242–4; 242–2).

*21 • In August 2013, representatives from LGC met with Celgard in Charlotte for a top management meeting. (Document Nos. 242–1; 242–39; 242–12; 242–29). Among other things, the parties discussed the LTA. (Document No. 242–33).

- In October 2013, LGC executive traveled to Charlotte to discuss the LTA and LGC’s “use of Celgard’s ceramic coating patents in LGC’s current and future CE and EV batteries.” (Document Nos. 242–35; 242–36; 242–20; 242–21).

- On December 9, 2013, LGC met with Celgard in North Carolina to discuss pricing and supply. (Document Nos. 37 ¶ 4; 52 ¶ 13).

The court finds that LGC’s contacts with the forum state that occurred because of the parties’ established commercial relationship were purposefully directed at North Carolina. *See* ¹ *Electronics For Imaging, Inc. v. Coyle*, 340 F.3d 1344, 1351 (Fed.Cir.2003) (finding purposeful availment where, *inter alia*, defendant repeatedly called plaintiff in forum state and sent representatives to form state for purpose of demonstrating patented technology); *Burger King Corp. v. Rudzewicz*, 471 U.S. 462, 479, 105 S.Ct. 2174, 85 L.Ed.2d 528 (1985) (finding purposeful contacts even despite lack of physical ties to forum state where party “reached out” to negotiate with resident of forum state for long-term franchise agreement).

Second, the court finds that Plaintiff’s state law claims arise out of LGC’s contacts directed at the forum state. Plaintiff’s deceptive trade practices claim is grounded in LGC’s alleged misconduct regarding a product made in North Carolina, including alleged misrepresentations during meetings in North Carolina and significant capital expenses incurred in North Carolina in reliance on such alleged misrepresentations. (Document No. 217, ¶¶ 116–119). Similarly, Celgard’s breach of contract, breach of implied covenant of good faith

and fair dealing, and unjust enrichment claims are based on the MOU, which governed the North Carolina manufacture and supply of separator material. *Id.* ¶¶ 120–136.

Third, the court has considered whether asserting personal jurisdiction over LGC is reasonable and fair. Here, the court has considered (1) the burden on the defendant, (2) the interests of the forum state, (3) the plaintiff’s interest in obtaining relief, (4) the interstate judicial system’s interest in obtaining the most efficient resolution of controversies, and (5) the shared interest of the several states in furthering fundamental substantive social policies.¹ *Electronics For Imaging, Inc. v. Coyle*, 340 F.3d 1344, 1352 (Fed.Cir.2003), and finds that LGC is unable to demonstrate that it would be unreasonable for this court to exercise jurisdiction over it.

First, litigating in North Carolina will not unreasonably inconvenience LGC. Although LGC is based in South Korea, “progress in communications and transportation has made the defense of a lawsuit in foreign tribunal less burdensome.” *Synthes (U.S.A.) v. G.M. Dos Reis Jr. Ind. Com. De Equip. Medico*, 563 F.3d 1285, 1299 (Fed.Cir.2009). Indeed, LGC employees traveled to North Carolina numerous times between 2008 and 2013. Additionally, LGC is apparently willing to litigate this dispute in the Eastern District of Michigan, which is not substantially closer to Korea than North Carolina, which indicates that LGC is prepared to accept the burden of travel. (Document No. 231). Second, North Carolina has an interest in adjudicating claims arising out of North Carolina law and relating to wrongs against a North Carolina citizen, as well as claims relating to infringement of a citizen’s patent. *See Beverly Hills Fan*, 21 F.3d at 1568 (“Virginia has an interest in discouraging injuries that occur within the statethat interest extends to design patent infringement actions such as the one here.”) (internal citation omitted). Third, Plaintiff has a significant interest in maintaining this action in North Carolina, as much of its evidence and witnesses knowledgeable about the patented invention are located here. As to the fourth and fifth factors, the court does not find that Defendant has offered any compelling reason why the interstate judicial system’s interest in obtaining efficient resolution of controversies or the states’ interest in furthering substantive social policies necessitates a finding that exercising jurisdiction

over LGC is unreasonable or unfair. Accordingly, the court concludes that this case is not one of the “rare situation[s] in which the plaintiff’s interest and the state’s interest in adjudicating the dispute in the forum are so attenuated that they are clearly outweighed by the burden of subjecting the defendant to litigation within the forum.” *Id.* In light of the above analysis, the court finds that specific jurisdiction over LGC is appropriate for each of Plaintiff’s state law claims.

2. Patent Claims (Counts I And II)

i. Supplemental Jurisdiction

*22 The court next considers whether it is appropriate to exercise supplemental jurisdiction over Plaintiff’s patent infringement claims given its finding that it has specific jurisdiction over Plaintiff’s state law claims. Plaintiff argues that a common nucleus of operative facts exists here because the facts giving rise to its state law claims are substantially the same as those giving rise to its patent infringement claims. Specifically, Plaintiff contends that Celgard and LGC’s seven-year relationship and LGC’s decision to terminate the relationship with Celgard and source base film from an alternative source, while continuing to use or cause others to use Celgard’s patented technology without permission, form a common nucleus of operative fact. Defendants argue that the facts related to the patent claims (the distribution, importation, and/or sale of the allegedly infringing product) are distinct from the facts related to the state law claims (LGC’s activities in North Carolina related to its alleged obligations under the MOU), and that they are not sufficiently common to render supplemental jurisdiction appropriate. LGC points out that Plaintiff’s state law claims concern the now-severed business relationship that centered on sale and purchase of Plaintiff’s *uncoated polymeric base film*, whereas its patent infringement claims concern LGC’s manufacture of *ceramic coated separator product*. LGC thus argues that the facts giving rise to the alleged injuries are wholly distinct and that supplemental jurisdiction is inappropriate.⁴

As LGC correctly notes, the base film made by Plaintiff, itself, is not the accused infringing

product. However, as explained by one of LGC's own employees, base film is a component of the allegedly infringing ceramic-coated separators. Jina Lee, Manager in a Cell Procurement Team at LGC, stated in her affidavit that a separator is a component of a lithium-ion battery that is placed between the anode and the cathode to prevent electrical shorting (i.e. fire). *See* (Document No. 52, ¶ 4, Declaration of Jina Lee "Lee Decl. "). Additionally, Ms. Lee explained:

There are two types of separators: "wet-type" and "dry-type". *A separator consists of a "base film" and a coating on top of the base film.* "Dry-type" separators are more susceptible to heat than "wet-type." The base film by itself (i.e., without coating)—especially the base film for "dry-type" separators—cannot be used as a separator and cannot even be considered a finished component for use in a battery because of heat safety issues. LGC does not manufacture uncoated base films for "dry-type" separators. Instead, *LGC purchases base films and then performs additional manufacturing, using its own coating technology, in order to arrive at the final, finished separator ... Celgard provided to LGC uncoated base films for "dry-type" separators.*

Document No. 52, ¶ 5 (emphasis added). Accordingly, while the two products are distinct, they are very closely related. Indeed, by Defendants' own description, base film is an essential component of a separator.

*23 LGC also argues that the facts relevant to the state law claims are "[LGC's] termination of Celgard as a supplier of uncoated base film for lithium-ion batteries" and the facts related to the

patent claims are "[LGC's] manufacture, distribution, importation, and sale of lithium-ion batteries with SRS-coated separators." (Document No. 275-1, p. 2). While the court agrees, it also believes that LGC's termination of Celgard as a supplier of uncoated base film is factually intertwined with, if not the exact cause of, LGC's manufacture, distribution, importation, and sale of lithium-ion batteries with SRS-coated separators.

As noted above, the '586 patent claims ceramic-coated separators and batteries or systems including such separators. (Document Nos. 17 ¶ 8; 16, p. 4). Here, Plaintiff initially provided base film to LGC for use in manufacturing lithium-ion batteries for CE devices. (Document Nos. 18 ¶ 4-5; 217 ¶ 67). In 2008, Plaintiff and LGC began discussions regarding Plaintiff becoming LGC's exclusive supplier of base film for lithium-ion batteries used in EVs. (Document No. 18 ¶ 6; 217 ¶ 68). Pursuant to LGC specifications, Plaintiff designed separator material to which LGC could apply a ceramic coating. (Document Nos. 17 ¶¶ 13, 15; 80 ¶ 3; 19). Plaintiff states that once ceramic coated, this separator embodied the '586 patent, but that because LGC's use of the patent was authorized by Plaintiff at that time, the separator did not constitute infringement. *See* 35 U.S.C. § 271 (infringement requires use "without authority"); Pl. Resp. Def. Mot. Dismiss (Document No. 241, p. 2). Upon the beginnings of the breakdown of the LTA negotiations, Plaintiff discussed its patented technology with LGC, informing LGC that if it was going to cease purchasing its base film, it needed a license to ceramic-coat any non-Celgard separator. *See* (Document Nos. 242-34; 24218; 242-19; 242-21; 242-32; 242-38). The parties also discussed these patent issues during at least one of LGC's visits to Plaintiff in North Carolina. (Document No. 242-30). Plaintiff claims that infringement is occurring because LGC is purchasing base film from third parties and applying a ceramic coating layer to such base film in order to create coated battery separators, which fall within the scope of the patent. (Document No. 217, ¶ 51). The infringement that Plaintiff claims thus arises from LGC's choice to stop using Plaintiff's base film in its separators and to source it from a third party without a license. (Document No. 17, ¶¶ 49-52; 278, p. 4).

In light of the fact that Plaintiff's claims of patent infringement arise from LGC's choice to stop using Celgard base film in its separators, which is very

closely related to, if not essentially the same as, the conduct that gave rise to Plaintiff's state law claims, the court finds that a common nucleus of operative facts exists to warrant the exercise of supplemental jurisdiction. In sum, Plaintiff provided base film to Defendants for use in their separators. When the business relationship went sour, LGC sourced base film from a third party. Plaintiff alleges that the use of this third-party base film, in combination with LGC's application of ceramic coating, constitutes a battery separator that infringes upon the '586 patent. The nature of the parties' business dealings and LGC's decision to stop purchasing base film from Plaintiff after their significant history form a "common nucleus" that renders the patent claims part of the same "case or controversy" as the state law claims.

ii. *Other Jurisdictional Theories*

*24 The court has also considered whether it may exercise personal jurisdiction over LGC on independent grounds under the stream of commerce theory, particularly in light of the extensive briefing on the question and this court's recent decision in *Celgard, LLC v. SK Innovation, Co., Ltd.*, 3:13cv254-MOC-DSC, 2014 WL 5430993 (W.D.N.C. Aug.29, 2014), which found no personal jurisdiction over a foreign defendant under the stream of commerce theory. The question for the court is whether LGC has purposefully shipped its allegedly infringing products through an established distribution channel with the expectation that those products would be sold in the forum. ¹ *Nuance Commc'ns, Inc. v. Abby Software House*, 626 F.3d 1222, 1234 (Fed.Cir.2010); ¹ *Beverly Hills Fan Co. v. Royal Sovereign Corp.*, 21 F.3d 1558, 1566 (Fed.Cir.1994).

Here, Plaintiff has offered the following evidence in support of its argument that LGC meets this requirement:

- LGC supplies batteries containing separators for EVs sold at North Carolina dealerships, including the Cadillac ELR, Hyundai Sonata Hybrid, Kia Optima Hybrid, and Chevrolet Volt (for which LG Chem is the exclusive supplier). (Document Nos. 17 ¶¶ 16–17; 37 ¶ 5; 242–25; 242–26; 56 ¶¶ 14–18; 56–5; 80 ¶

12; 80–2).

- Between 2011 and 2013, over 1,000 new Chevrolet Volts—each with an LGC battery—were registered in North Carolina; as were over 500 new Kia Optima Hybrids. (Document Nos. 57–4–57–6).

- In 2013, LGC supplied lithium-ion batteries for almost 26% of all plug-in EVs sold in the U.S., 56% of which contained ceramic-coated separators. (Document No. 17 ¶¶ 18–19, 23).

- LGC also sells batteries with separators for use in popular CE devices manufactured by Apple, Hewlett Packard, Nokia, Dell, and LG Electronics, among others. (Document Nos. 17–5, p. 3; 17–10, p. 5; 136, p. 6). These CE devices are widely sold and distributed in North Carolina, including by retailers like Best Buy, Target, and Walmart.⁵ (Document Nos. 56 ¶ 25; 136, p. 6).

- LGCAI markets and distributes LGC's products in the U.S. (Document No. 33 ¶ 2).

The court also notes that in defending its motion to stay the preliminary injunction against it in this case, LGC went to great lengths to describe the expanse of its participation in the U.S. economic markets:

Defendants sell in the order of \$ 0.76 million every day attributable to the accused batteries sold or imported into the United States.... Worldwide, that number jumps to \$6 million in daily sales. Defendants have yearly revenue of \$278 million attributable to the accused batteries sold or imported into the United States (and \$2.4 billion worldwide).... Beyond that, Defendants do business *every day* with companies at the center of the U.S. economy.

(Document No. 136, p. 4) (emphasis in original).

Defendants further described the alleged consequences of such injunction and its use of nationwide distribution channels to distribute infringing goods:

*25 In light of the broad scope of the Order, Defendants will be barred from making sales in the United States to downstream customers in consumer electronics (e.g., Apple, Hewlett-Packard, and Dell) and the automotive industry (e.g., General Motors and Ford Motor Company), and the impact of the Order will clearly be detrimental to these customers. Taken to its logical conclusion, not only will the Order take Defendants' batteries "off the shelves" but it also strips Best Buy and Wal-Mart (with respect to consumer electronics products) and car dealerships and distributors of their ability to provide products containing these batteries to consumers. Ultimately, the effect of this Order to a John Doe member of the public is not that he may have to buy a higher priced good, but that there will be no goods for him to buy.

Id. at 6 (footnote omitted).

The court has very carefully considered the evidence put forth by Plaintiff and agrees that LGC has knowingly and intentionally used nationwide distribution channels for its products, with the expectation that its products will be sold throughout the country, including in the state of North Carolina. However, the court finds that Plaintiff has not made the requisite showing that LGC ever placed *the allegedly infringing product* into the stream of commerce or that such product was offered for sale here. *See Nuance Commc'ns,*

626 F.3d at 1234; — *Beverly Hills Fan*, 21 F.3d at 1566 (both requiring that for exercise of jurisdiction under the stream of commerce theory to be proper, Defendants must have placed the "accused product" in the stream of commerce). *See also Celgard, LLC v. SK Innovation Co.*, No. 3:13-CV-00254-MOC, 2014 WL 5430993, at *4 (W.D.N.C. Aug.29, 2014) (finding that stream of commerce theory did not succeed where "plaintiff has provided this court with no indication that [defendant] has ever made a sale or even an offer of sale in North Carolina and none of SKI's products have been found in this forum."). Plaintiff's patent infringement claims are premised upon LGC using non-Celgard base film in its separators. Plaintiff admits that when LGC used Celgard base film in its separators, the manufacture of such separators did not constitute infringement because LGC's use of the patent was authorized by Plaintiff at that time. Pl. Resp. Def. Mot. Dismiss (Document No. 241, p. 2). It is difficult for this court to find that the allegedly infringing product has been placed in the stream of commerce when Plaintiff has failed to submit any evidence that LGC has placed a separator *with non-Celgard base film* in the stream of commerce, let alone shown that one was offered for sale in this state. As Defendants note,

By Celgard's own timeline, it takes four to six months to incorporate a base film into an LGC lithium-ion battery. (Paulus Decl. ¶ 8, Dkt. 80.) Celgard also maintains that LGC "consumed or otherwise used" Celgard base film at least until January 2014. (*Id.* at ¶ 7.) Celgard, however, does not estimate how long it takes for an LGC lithium-ion battery to be incorporated into an EV or CE downstream product, nor does Celgard estimate how long it takes before an assembled EV will ship out to a dealer in North Carolina or a CE downstream product will reach big box stores, like Wal-Mart or Best Buy.

*26 (Def. Reply, Document No. 247, n. 3). Plaintiff has simply offered no evidence that an LGC product with an allegedly infringing separator has been found in this forum. The court will not assume that the LGC separators found in this state within the EV and CE devices sold here are those accused of infringement, particularly when Plaintiff admits that until fairly recently, LGC separators shipped from South Korea to the U.S. were not infringing. Plaintiff's evidence that LGC sells products with separators in this state, alone, is not sufficient to support a finding of jurisdiction under a stream of commerce theory.

Because the court has found that LGC is subject to jurisdiction here through supplemental jurisdiction, it will not address Plaintiff's alternative argument that LGC is subject to nationwide jurisdiction under Rule 4(k)(2). Similarly, because the court believes that the exercise of jurisdiction over LGC under the theory of supplemental jurisdiction is appropriate, it will not undergo further analysis of whether LGC's contacts with North Carolina are so systematic and continuous as to render it subject to general personal jurisdiction here.

D. Personal Jurisdiction over LGCAI


The court next considers whether Plaintiff has established a prima facie case of personal jurisdiction over LGCAI. As noted above, LGCAI, a wholly-owned subsidiary of LGC, is a Delaware company headquartered in Englewood Cliffs, New Jersey. See Declaration of Juan (S.H.) Oh ("Juan Decl."), (Document No. 33), ¶ 2; Def. Mem. Mot. Dismiss (Document No. 227), p. 4). LGCAI is responsible for marketing LGC petrochemicals, information and electronic materials, and batteries to customers in the United States. (Juan Decl, ¶ 2). LGCAI also acts as a product distributor for LGC's customers in the U.S. and is responsible for sales and program management to U.S. customers, but has no direct involvement with the manufacture of LGC products and does not share any officers with LGC. *Id.*

Relevant to LGCAI's contacts with the state of North Carolina, LGCAI has no offices, employees, telephone listing, post office box, mailing address, bank account, or advertising in North Carolina. *Id.* at ¶ 3. LGCAI does not own or rent any real property in North Carolina. *Id.* However, LGCAI is


registered with the Secretary of State of North Carolina to do business here and has a registered agent for service of process here. *Id.* In the past, LGCAI stored inventory in one of its customer's consignment warehouses here, though it has not stored any inventory there since 2013. *Id.* LGCAI also paid taxes to the state of North Carolina in 2012 related to storing such inventory. (Document No. 217 at ¶ 43; Def.'s Mem. Sup. Mot. Dismiss (Document No. 227, p. 16)). Additionally, between 2009 and 2013, LGCAI had seven customers in North Carolina (unrelated to the products accused of infringement). (Juan Decl. at ¶ 4). LGCAI sold over \$14 million worth of products to these customers during that time, which Defendant states accounted for, on average, approximately 0.9% of LGCAI's total revenues in the United States during that period. *Id.* at ¶ 4. LGCAI admits that it "conducts business from time to time in North Carolina for the purpose of selling products for its petrochemical and toner businesses." *Id.*

*27 Plaintiff argues that LGCAI is subject to general jurisdiction because even though LGCAI is a non-resident and its contacts are unrelated to Plaintiff's causes of action for patent infringement, its contacts with North Carolina are "continuous and systematic." As noted above, sporadic, insubstantial contacts with the forum state are insufficient to establish general jurisdiction. While there is no precise test for determining general jurisdiction, *LSI Indus.Inc. v. Hubbell Lighting, Inc.*, 232 F.3d 1369, 1375 (Fed.Cir.2000), courts have generally focused on two areas of inquiry. *Ashbury Int'l Grp., Inc. v. Cadex Defence, Inc.*, No. 3:11CV00079, 2012 WL 4325183, at *4 (W.D.Va. Sept.20, 2012). First, they look for physical presence in the forum state, such as corporate facilities, bank accounts, agents, registration, or incorporation. *Id.* (citing *Perkins v. Benguet Consol. Mining Co.*, 342 U.S. 437, 72 S.Ct. 413, 96 L.Ed. 485 (1952)). Second, "courts have also considered whether the defendant has actively solicited business in the forum state and the extent to which the defendant has participated in the state's economic markets....In other words, courts have examined the "economic reality" of the defendant's activities in the forum state." *Id.*

(internal citation omitted). See also *Trierweiler v. Croxton & Trench Holding Corp.*, 90 F.3d 1523, 1533 (10th Cir.1996) (noting that courts consider "(1) whether the corporation solicits business in the state through a local office or agents; (2) whether the corporation sends agents into the state on a

regular basis to solicit business; (3) the extent to which the corporation holds itself out as doing business in the forum state through advertisements, listings or bank accounts; and (4) the volume of business conducted in the state by the corporation.”) (cited with approval as a non-exhaustive set of appropriate factors in  *Delta Sys., Inc. v. Indak Mfg. Corp.*, 4 F. App'x 857 (Fed.Cir.2001) (unpublished)).

Here, LGCAI has physical presence in the state of North Carolina in the form of being registered to do business here, having a registered process agent here, using property in this state for storage, and paying state taxes at least once. Additionally, LGCAI has participated in the economic markets of this state through its sales to North Carolina customers. As noted above, Plaintiffs have submitted evidence that LGCAI sold over \$14 million worth of products to seven customers in the state between 2009 and 2013. (Juan Decl., ¶ 4; Lee Decl. (Document No. 242), ¶ 47–53). These sales accounted for, on average, approximately 0.9% of LGCAI's total revenues in the United States during that time (0.9 % in 2010, 1% in 2011%, 1% in 2012, and 0.8% in 2013). *Id.* Though the parties dispute the significance of these sales and revenue percentages, the court notes that “just as it would be inappropriate to permit an exercise of personal jurisdiction solely on the presence of sales into the forum ... it would likewise be inappropriate to entirely disregard a defendant's sales into the forum simply because they only generated a small percentage of the defendant's total revenue.”

 *ATI Indus. Automation, Inc. v. Applied Robotics, Inc.*, No. 1:09CV471, 2013 WL 1149174, at *4 (M.D.N.C. Mar.19, 2013) (internal citation and quotation omitted). Here, though LGCAI earned only a small percentage of its revenue from customers in North Carolina, the dollar figure is by no means insignificant. Additionally, LGCAI earned revenue from such sales for each of the four years before the complaint was filed in this action. The court therefore finds such sales an appropriate factor for consideration. *See id.* at *5 (finding that defendant's sales to North Carolina were appropriate for consideration where they constituted 1.2% of annual sales, and distinguishing *Campbell Pet Co. v. Miale*, 542 F.3d 879, 884 (Fed.Cir.2008), wherein Federal Circuit affirmed district court's finding of no general jurisdiction over defendants who made only 12 sales to Washington residents in eight

years, for a total of less than \$14,000 in gross revenue (approximately 2% of total sales), and in four of those years made no sales in Washington at all).

*28 While this case presents a close call, the court finds that the evidence of LGCAI's physical presence in North Carolina, as well as its participation in the state's economic markets through its sales to companies here, is sufficient to support a prima facie case of general jurisdiction.

See ¹ *LSI Indus.Inc. v. Hubbell Lighting, Inc.* , 232 F.3d 1369, 1375 (Fed.Cir.2000) (finding that non-resident defendant had continuous and systematic contacts with forum state partially based on millions of dollars of sales in the state, despite lack of sale of the allegedly infringing product in forum state); *Ashbury Int'l Grp., Inc. v. Cadex Defence, Inc.*, No. 3:11CV00079, 2012 U.S. Dist. LEXIS 134878, at *6, 2012 WL 4325183 (W.D.Va. Sept. 20, 2012) (finding sales of millions of dollars of products to repeat customers sufficient for general jurisdiction, even absent traditional factors indicating physical presence in forum state).

The court also finds that the exercise of general jurisdiction over LGCAI at this point is reasonable and that LGCAI has failed to meet its burden of showing otherwise. First, litigating in North Carolina will not unreasonably inconvenience LGCAI. LGCAI has its principal place of business in New Jersey and its marketing and sales office for the accused lithium-ion batteries is in California. As noted above, “progress in communications and transportation has made the defense of a lawsuit in foreign tribunal less burdensome.” ¹ *Synthes (U.S.A.) v. G.M Dos Reis Jr. Ind. Com. De Equip. Medico*, 563 F.3d 1285, 1299 (Fed.Cir.2009). The court, having already found that LGC, a company headquartered in Korea, will not be unreasonably inconvenienced by litigating here, declines to find that a company headquartered in this country would be so inconvenienced. Additionally, LGCAI is apparently willing to litigate this dispute in the Eastern District of Michigan, which is not substantially closer to California or New Jersey than North Carolina, which indicates that LGCAI is prepared to accept the burden of travel. The court finds that the same analysis applies to LGCAI as to LGC for the remaining four factors for consideration. As noted above, North Carolina has an interest in adjudicating claims relating to infringement of a citizen's patent. Plaintiff has a

significant interest in maintaining this action in North Carolina, as much of its evidence and witnesses knowledgeable about the patented invention are located here. Defendant has not offered any compelling reason why the interstate judicial system's interest in obtaining efficient resolution of controversies or the states' interest in furthering substantive social policies necessitates a finding that exercising jurisdiction over LGCAI is unreasonable or unfair. As with LGC, the court finds that LGCAI has not met its burden of showing that being subject to personal jurisdiction here would be unreasonable. In light of the above analysis, the court finds that the exercise of general jurisdiction over LGCAI is appropriate for Plaintiff's patent law claims.

*29 Plaintiff also argues that LGCAI is subject to personal jurisdiction under the stream of commerce theory because it participates in the same distribution chain for LGC's batteries as LGC. The court finds such argument futile in light of the above finding that Plaintiff has failed to show LGC is subject to jurisdiction under such theory, let alone offered any argument as to how any action of LGC can be imputed to LGCAI.

V. CONCLUSION

For the reasons stated herein, the court finds that this maintenance of this action is appropriate in this district at this time.

Footnotes

- 1 The MOU refers to LGC's purchase of "separators" from Celgard, but affidavits filed by both parties makes clear that the "separators" referred to in the MOU are equivalent to "base film," as the term is used in this Order. See *generally* Pulwer Decl.; Declaration of Jina Lee (Document No. 52).
- 2 More specifically, LG Chem states that it is subject to specific jurisdiction in the Eastern District of Michigan because it sells the accused lithium-ion batteries to electric vehicle manufacturers residing in the district, including General Motors, Ford Motor Company, and Chrysler. (Def. Mem. Sup. Mot. Transfer (Document No. 231, p. 5); ("Declaration of Jun Hong Min ..." ("Min Decl.") ¶ 3, Dkt. 73.) Additionally, all three of LG Chem's U.S. subsidiaries, including LGCAI, have outposts and/or offices in Michigan. (Min Decl. ¶ 2, Dkt. 73).
- 3 The court has considered whether the law of the Federal Circuit applies to both the state law claims and the claims for patent infringement in this case and notes that both parties have argued their positions on personal jurisdiction solely under the law of the Federal Circuit. See Def. Mem. Mot. Dismiss (Doc. No. 227, p. 5, n. 24); Pl. Mem. Opp. (Document No. 241, p. 14–15). The court finds that application of Federal Circuit law is appropriate here as to all of Plaintiff's claims. In *3D Systems, Inc. v. Aarotech Lab., Inc.*, 160 F.3d 1373, 1377–78, 48 USPQ2d 1773, 1776 (Fed.Cir.1998), the Federal Circuit held that the law of

ORDER

IT IS, THEREFORE, ORDERED that:

1) Defendants' "Objections to Magistrate Judge's Order Granting Defendants' Alternative Motion to Transfer Venue" (Document No. 266) are **SUSTAINED in part and OVERRULED in part**, as described herein;

2) The Order of the Magistrate Judge transferring venue (Document No. 262) is **REVERSED** and Defendants' Alternative Motion to Transfer Venue to the Eastern District of Michigan (Document No. 230) is **DENIED**;

3) Defendants' Motion to Dismiss Counts III–VI of Plaintiff's First Amended Complaint for Failure to State a Claim (Document No. 222) is **DENIED**; and

4) Defendants' Motion to Dismiss Plaintiff's First Amended Complaint for Lack of Personal Jurisdiction (Document No. 226) is **DENIED**.

All Citations

Not Reported in F.Supp.3d, 2015 WL 2412467

that circuit, as opposed to the regional circuit, applied in determining that the district court had personal jurisdiction over an out-of-state corporation defending claims for patent infringement and state law claims of trade libel and unfair competition where the exercise of supplemental jurisdiction was proper. See

id. at 1377–78 (“Because of supplemental jurisdiction under 28 U.S.C. § 1367 ... the propriety of jurisdiction in light of federal due process for both the state law claims and the federal patent law claims is to be analyzed using Federal Circuit law.”). The Federal Circuit found that because the patentee’s trade libel and unfair competition claims went “hand-in-hand with its patent infringement claims,” and because the claims arose out of the same facts, application of Federal Circuit law was appropriate in resolving the personal jurisdiction issue, even though state law claims were involved. *Id.* at 1377.

- 4 The court has also carefully considered Plaintiff’s statements at the hearing in response to questioning by the court as to why its patent law and state law claims are related. See Hearing Transcript (Document No. 274) at 25:1026:25; 13:1–25. To the extent Defendants construe Plaintiff’s statements as allegations of theft of intellectual property in their supplemental brief (# 275–1), the court is not persuaded that Plaintiff was attempting to assert a new claim against Defendants at the hearing. See *id.* at 26:23–5 (“They completely said, Sorry, you know, Go pound sand. We’re going to go run off with your technology and work with someone else.”); *id.* at 13:19–23 (“[LG Chem] went and learned about our technology and then they went and took it to someone else and are now infringing our patents with technology that we provided to them and that we taught them.”). The court finds that Plaintiff’s arguments about the relationship between its patent claims and state law claims at the hearing are consistent with the allegations and arguments it made in its Amended Complaint (Document No. 217) and its Response in Opposition to Defendants’ Motion to Dismiss (Document No. 241).
- 5 Simple internet searches indicate that in the Charlotte, North Carolina area alone, Best Buy has at least nine retail stores, see http://www.bestbuy.com/site/olspage.jsp?id+cat12092&type+page&_requestid+100835, Wal-Mart has at least nine retail stores, see <http://www.walmart.com/store/finder?location+charlotte,north+carolina&distance+10>, and Target has four retail stores, see <http://www.target.com/store-locator/search-results?address=charlotte+north+carolina&fromPage=findStore>. Apple has two retail stores in Charlotte and five retail stores in the state of North Carolina, see <https://www.apple.com/retail/storelist/>.

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LG Chem Batteries Power Large Storage System In Ohio

Posted by **Joseph Bebon** - June 10, 2016



LG Chem has announced that it supplied its lithium-ion batteries for a recently completed 7 MW/3 MW battery energy storage system (BESS) in the Village of Minster, Ohio.

S&C Electric Co., a provider of equipment and services for electric power systems, originally announced commissioning of the project in May. S&C built the project in conjunction with renewable energy company Half Moon Ventures (HMV) and the local municipal utility. The BESS is tied to HMV's adjacent 4.2 MW solar PV plant.

LG Chem says it delivered an integrated battery solution, battery installation supervision, and commissioning to S&C, which integrated the overall system with the electric grid and provided the power conversion system.

According to LG Chem, the BESS provides four distinct revenue streams for HMV and the Village: frequency regulation; transmission and distribution cost deferral; power quality improvements; and peak demand shaving.

"Collaboration on this project with S&C has provided not only key learnings, but also a system that provides the community with critical grid services, as well as commercially viable revenue streams for the system owner and local utility," says Sunghoon Jang, senior vice president of energy solutions at LG Chem. "This project shows how the energy storage industry has entered another phase with viable projects for customers and end users."

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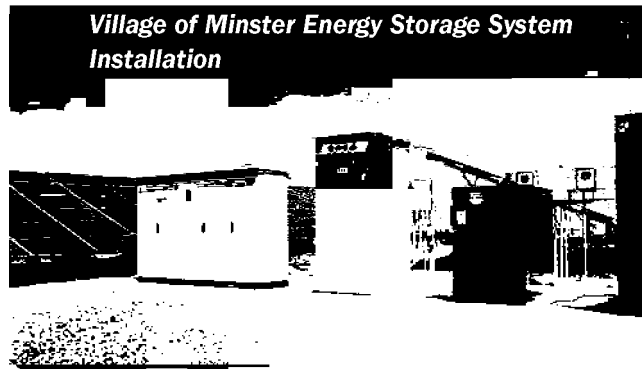
Capturing the Multi-Faceted Value of Energy Storage

S&C Featured Solution: Engineering Services

Location: Minster, Ohio

Customer Challenge

The village of Minster, located in western Ohio, owns its own electrical distribution system. It serves approximately 2,800 residents and a number of high-profile industrial customers, including the largest



U.S. yogurt factory. In late 2014, Minster executed a power purchase agreement with Half Moon Ventures for the supply of power from a new 4.2-MW photovoltaic solar facility. The project goal was to expand the city's electrical department footprint in renewable energy and provide cost-effective power. During design of the photovoltaic plant, Half Moon Ventures recommended expanding the project scope to include energy storage. For the inclusion of energy storage to make financial sense, the system had to capture multiple revenue streams.

S&C Solution

Requiring an experienced energy storage integrator, Half Moon Ventures turned to S&C Electric Company, which supplied complete engineering, procurement, and construction (EPC) services for the project.

Half Moon Ventures chose S&C because, instead of using a piecemeal approach that involved packaging batteries, inverters, and the balance of plant equipment together, S&C could deliver one cohesive solution. Half Moon Ventures preferred this approach because it would help eliminate scope gaps, reduce project expenses, and ensure the Minster Electrical Department received the best long-term value. As an EPC provider, an experienced integrator, and a medium-voltage switching and protection expert, S&C was well positioned to tackle the sophisticated system.

S&C, with input from project stakeholders, selected a 7-MW/3-MWh energy storage system for the project. The system included an energy storage management system and an LG Chem lithium-ion (nickel manganese cobalt chemistry) battery system. S&C engineers designed an interconnect system that includes medium-voltage transformers and S&C switchgear to complement the energy storage system.

During the initial design phase, S&C engineers collaborated with project partners to integrate three customized services into the system design. As the primary service, S&C designed the system to provide frequency regulation in the PJM Frequency RegD Market. To accomplish this, the battery system was sized for frequent charging and discharging cycles.

"S&C helped us prove that multiple revenue streams in energy storage deployments can help solve our customer's financial and operational needs."

-Michael Hastings, CEO, Half Moon Ventures

Half Moon Ventures and Minster will benefit from three revenue streams that will offset the cost of grid improvements and increase their rate of return.



S&C configured the energy storage system control platform to interface with PJM market interfacing software to enable the system to follow a signal from PJM, which is a regional transmission operator that coordinates the movement of wholesale electricity in 13 states and the District of Columbia. Based on grid conditions and market pricing, the system will generate revenue from either absorbing or dispatching energy.

As a secondary but congruent service to frequency regulation, S&C designed the system to provide var support to combat an occasional low power factor on the system. Initially, the Minster Electrical Department contemplated installing capacitor banks to rectify the issue. However, the energy storage system was instead used to provide power-factor correction concurrent with frequency regulation services. Simultaneously with a full charge or discharge, the system will provide 5.25 Mvar of power factor, both capacitive and inductive. This eliminated the need to install approximately \$350,000 of var-compensation equipment.

The third service S&C built into the design was demand response for peak-load contribution charge reduction. At the end of each year, PJM looks at the five highest two-hour peak load periods across its entire territory. PJM then assesses a peak-load contribution charge to connected utility entities for the load drawn during this time. To reduce this charge, the energy storage system software was designed to predict when these peaks would occur. During these periods, approximately 10 times per year, the system will switch from providing frequency-regulation services to demand response services to consequently help reduce the charge.

After S&C fully designed and integrated the system, S&C performed comprehensive Factory Acceptance Testing at its facility in Franklin, Wisconsin. S&C engineers performed tests and simulated real-world scenarios to ensure critical system-control components integrated together correctly. This proactive testing helped to reduce commissioning time in the field and, more importantly, ensured the seamless integration of complex system components.

The modular, containerized system design allowed for an easy installation. The power conversion system and battery system arrived preassembled with the necessary control and support systems installed. S&C used medium-voltage transformers, three 12.47 kV

S&C PMH Pad-Mounted Switchgear units, and an S&C IntelliRupter® PulseCloser® Fault Interrupter to connect the energy storage system to the grid. This cohesive solution drastically simplified the project for partners Half Moon Ventures and the Minster Electrical Department.

“The energy storage system implemented in Minster exemplifies the future of the energy industry. From the start of the project to the commissioning, S&C partnered with the village and the investor to make this project a reality. S&C exceeded our expectations and we believe that working with an experienced partner like S&C made a difference.”

–Donald Harrod, Minster Village Administrator

Results

S&C was able to deliver an energy storage system capable of stacking revenues to ensure a strong return on investment. S&C accomplished this by designing and fully integrating a system capable of three revenue streams: frequency-regulation services, transmission and distribution deferral, and demand-response services. Although inherently complex, S&C’s strategic positioning and skills as an experienced energy storage integrator helped to deliver a cohesive solution.

At the time of commissioning, the system was one of the largest energy storage installations in Ohio. The Minster Electrical Department and Half Moon Ventures have aspirations to eventually perform islanding with the system to provide greater reliability to nearby industrial customers.

Since the commissioning, the project has won several notable industry awards including the SEPA Project of the Year Award, Renewable Energy World’s Renewable Energy Project of the Year, the Energy Storage North America Centralized Storage Project Innovation Award, and the American Innovation Project of the Year.

Electronically Filed 12/09/2019 12:00 BRIEF / CV 19 917268 / Confirmation Nbr. 1888732 / BATCH



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 info@importgenius.com
 Toll Free: 855-573-9976
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PRODUCT DESCRIPTION	CONSIGNEE	SHIPPER	ARRIVAL DATE	FOREIGN PORT	US PORT	SHIPPER ADDRESS	BILL OF LADING	MASTER BL	NOTIFY PARTY	NOTIFY ADDRESS	PLACE OF
SHIPPER'S LOAD AND COUNT SAID TO CONTAIN A. FINAL DESTINATION: MINSTER SUBSTATION 285 NORTH OHIO STREET, MINSTER, OHIO, 45865, B. FTA APPLIES C. COUNTRY OF ORIGIN: SOUTH KOREA. SHIPPER'S LOAD AND COUNT SAID TO CONTAIN FINAL DESTINATION: MINSTER SUBSTATION 285 NORTH OHIO STREET, MINSTER, OHIO, 45865, B. FTA APPLIES C. COUNTRY OF ORIGIN: SOUTH KOREA. D. NET WEIGHT: 14400KG (1EA X 40RF CONTAINER) 28 800KG (TOTAL) E. GROSS WEIGHT: 15840KG (1EA X 40RF CONTAIN), 31690KG (TOTAL) F. PALLET: 72 PALLETS PER 40RF CONTAINER , TOL 1 44 PALLETS G. HS CODE: H.S. 8507 80 3000 M4850P1B2 720 PC 1 NATHANIEL BOWKER P 877-842- 5099 E. NATE BOWKER SANDC.COM A. FINAL DESTINATION: MINSTER SUBSTATION 285 NORTH OHIO STREET, MINSTER, OHIO, 45865, US 1 NATHANIEL BOWKER P 877-842-5099 E. NATE BOWKER SA Y D. NET WEIGHT: 14400KG (1EA X 40RF CONTAINER) 28 800KG (TOTAL) E. GROSS WEIGHT: 15840KG (1EA X 40RF CONTAIN), 31690KG (TOTAL) F. PALLET: 72 PALLETS PER 40RF CONTAINER , TOL 1 44 PALLETS G. HS CODE: H.S. 8507 80 3000 M4850P1B2 720 PC 1 NATHANIEL BOWKER P 877-842- 5099 E. NATE BOWKER SANDC.COM A. FINAL DESTINATION: MINSTER SUBSTATION 285 NORTH OHIO STREET, MINSTER, OHIO, 45865, US 1 NATHANIEL BOWKER P 877-842-5099 E. NATE BOWKER SA Y	S&C ELECTRIC COMPANY	LG CHEM, LTD	11/27/2015	Pusan	Los Angeles, California	LG TWIN TOWERS, 20, YEOUIDO-DONG, YEOUNGDEUNPO-GU, SEOUL, 150-721, KOREA	HDMUBUCI9193624A	HDMUBUCI9193624	S&C ELECTRIC COMPANY	5251 W. FRANKLIN DRIVE FRANKLIN, WI CONTACT:	BUSAN, KOREA



BRIEF

Duke Energy restyles retired Ohio coal plant into battery storage facility

By Peter Maloney

Published Nov. 20, 2015

Dive Brief:

- Duke Energy has begun selling frequency regulations services to the PJM Interconnection from a new 2-MW battery system at its retired W.C. Beckjord coal-fired plant in New Richmond, Ohio, Bloomberg reports.
- The lithium-ion batteries were delivered by LG Chem and are controlled by software designed and provided by Greensmith.
- The 2-MW battery system doubles Duke's storage capacity at Beckjord to 4 MW.

Dive Insight:

Duke Energy's move to recycle a retired coal plant into a site for energy storage could open a new avenue for other utilities plotting ideas for similarly-fated facilities.

Duke, working with LG Chem and Greensmith, has begun selling frequency regulation services to the PJM Interconnection from its retired W.C. Beckjord coal plant in New Richmond, Ohio.

"Locating the storage system at our retired coal plant allowed us to take advantage of the grid infrastructure already in place and repurpose the site for use with new, relevant technology," Phil

Grigsby, Duke Energy's senior vice president of commercial transmission, said.

LG Chem provided the project's 2 MW energy storage operating system, comprised of advanced lithium-ion batteries. The batteries use Greensmith's GEMS energy storage software platform to manage the system's performance, providing synchronized response to signals dispatched every two seconds. Parker Hannifin provided a 2 MW power conversion inverter.

Work on installing the system began in August 2015. The system entered service on Nov. 18.

With the installation of the new batteries at Beckjord, Duke now operates 4 MW of energy storage at the Beckjord site. A first 2 MW battery system at Beckjord entered commercial operation in January 2015. During any given 24 hour period, the system responds more or less continuously either charging or discharging energy, depending on whether the system is above or below the target frequency.

Duke has no "imminent plans" to add more storage capacity at Beckjord, but it is "not out of the realm of the possible," spokeswoman Tammie McGee said.

Duke also owns and operates a 36 MW energy storage system at its Notrees Windpower Project in Texas. The final two coal-fired units at Beckjord, totaling about 700 MW, plant were closed in September 2014.

Recommended Reading:

B BLOOMBERG

Retired 1950s-Era Coal Plant in Ohio Gets New Life as Storage [🔗](#)

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PRODUCT DESCRIPTION	CONSIGNEE	SHIPPER	ARRIVAL DATE	GROSS WT	GROSS WEIGHT (KG)	FOREIGN PORT	US PORT	CONSIGNEE/SHIPPER ADDRESS	ZIP CODE	BILL OF LADING	MASTER BL	NOTIFY ADDRESS	PLACE OF RECEIPT
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POLYOLEFIN ELASTOMER LC670 195,000.000 KG FREIGHT COLLECT POLYOLEFIN ELASTOMER LC670 115,000.000 KG FREIGHT COLLECT	TRIBUTE ENERGY INC	LD CHEM LTD	04/26/2019	Pusan	New York/Newark Area	HJL00SEL030954	Columbus, Ohio	TRIBUTE ENERGY INC, 2100 WEST LOOP SOUTH SUITE 1500 HOUSTON TX 77027 TEL (281)768-5300	
PIC 450188969 CUSTOMER P/O 084 SYNTHETIC RUBBER NBR 7150 35% SR GREEN BOX 10,000.000 KG HS CODE 400259000 FRAMEROS INTERNATIONAL INC		LD CHEM LTD	10/24/2017	Pusan	Los Angeles, California	MSCLOA0301066	Cleveland, Ohio	FNS INC	1550 FRANCISCO ST TORRANCE CA 90501 UNITED STATES
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BAGS OF 55.50 MT (BOX 650 KG BAGS) POLYOLEFIN ELASTOMER LC670 PACKED IN 650 KG BGR OSS (50.026 40 KGS) NET 55.500 KGS TRIBUTE ENERGY INC		LD CHEM LTD	03/02/2018	Pusan	Long Beach, California	ICMDUSEL0232478	Columbus, Ohio	TRIBUTE ENERGY INC	2100 WEST LOOP SOUTH SUITE 1500 HOUSTON, TX 77027 ATTN:ADRIANA MARTINEZ
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Home > News > Lab Won LG Chem Global Innovation Contest

Lab Won LG Chem Global Innovation Contest

Posted: December 6, 2018

Dr. Jung-Hyun Kim, together with Drs. Hanna Cho (MAE), Marcello Canova (MAE), and Vicky Doan-Nguyen (MSE), wrote a proposal and won the **LG Chem Global Innovation Contest (GIC)**. The title of proposal is "*Characterizing and Optimizing Electrode Surfaces for High-Energy Li-ion Batteries*" for the amount of \$450k during three years (2019 - 2021).

LG Chem, Ltd. is the largest Korean chemical company, headquartered in Seoul, and a global leader in the battery industry for EVs and Energy Storage Systems (ESS). The company has actively developed new products based on its proprietary technologies and has secured the battery production capacity as a global player to raise the dominance in the next-generation energy market. They supply EV batteries and packs to major automakers such as Ford, GM, Chrysler, Volkswagen.

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LG Fuel Cell Systems

Overview Presentation

Hydrogen and Fuel Cell Technical Advisory Committee

April 23-24, 2013

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Agenda

- **Introduction to LG Fuel Cell Systems (LGFCS)**
- **Introduction to LGFCS' Shareholders**
- **LGFCS Product & Technology**
- **Market Rationale and Opportunity**
- **Summary & Acknowledgements**

Agenda

- **Introduction to LG Fuel Cell Systems (LGFCS)**
- **Introduction to LGFCS' Shareholders**
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LG Fuel Cell Systems Inc.

The Vision...

***“LG Fuel Cell Systems operating
in every city in the world”***

The Mission...

***“To produce a commercially viable, 1MW
distributed power solution, that sets the global
benchmark for efficient clean power.”***

LG Fuel Cell Systems Inc.

Backgrounder

- A group of LG companies (Corp, Electronics, & Chemical) acquired 51% ownership of Rolls-Royce Fuel Cell Systems Inc. (June 2012)
- As part of the acquisition, LG immediately added value with people, capability, and funding in to the business.
- The business focus remains on the commercialization of a “megawatt-scale” natural gas fueled fuel cell power system for stationary power generation
- The business has its primary activities in Canton, Ohio, with continued support from the team in Derby, England, and a new team of resources based in Seoul, Korea.
- The business is leveraging and benefiting from expertise and capabilities from both LG Group and RR Group

LG Fuel Cell Systems Inc.

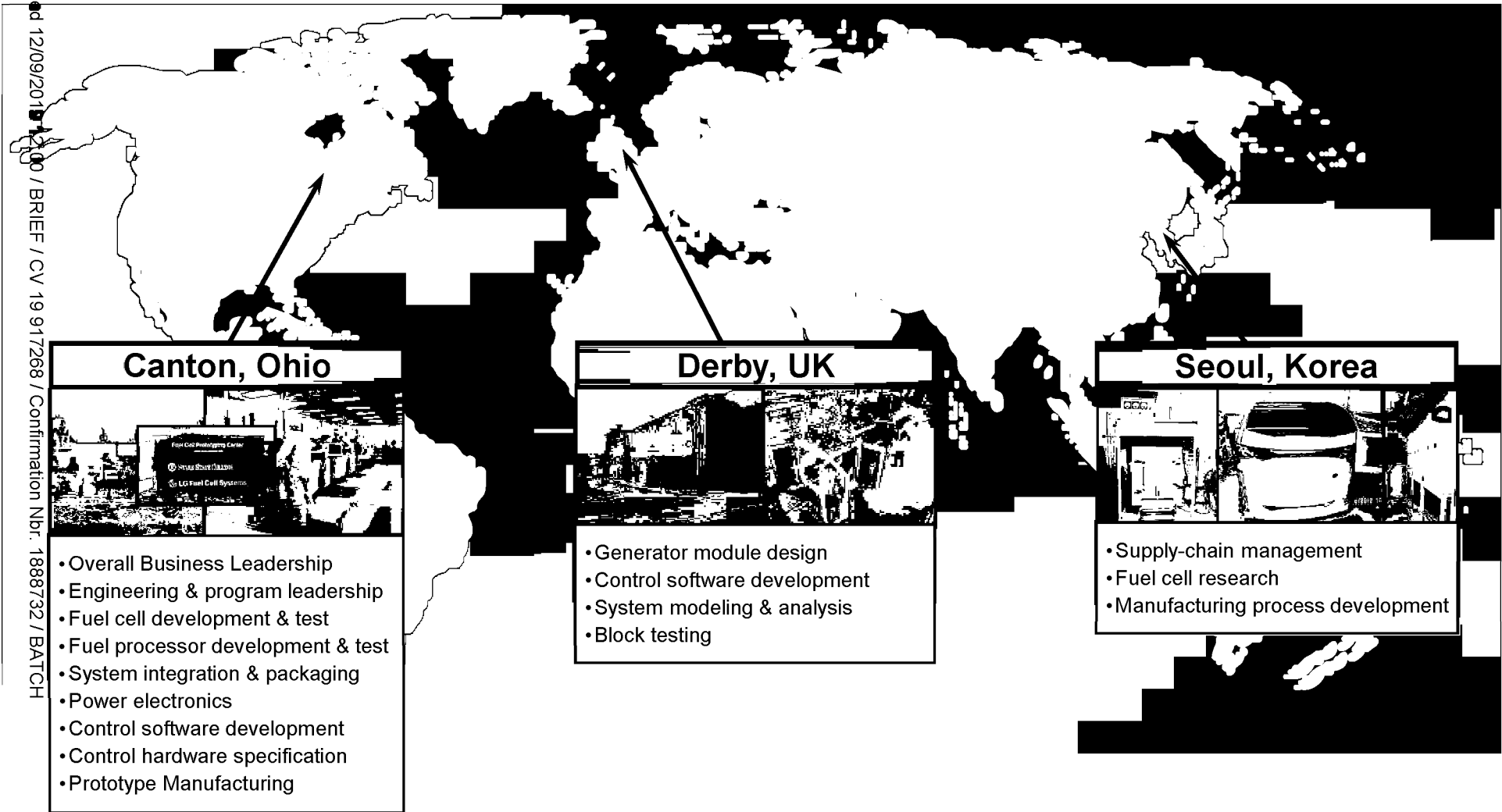
Backgrounder Cont.

- The business has transitioned from “research and development” to “development and demonstration” → heading toward commercialization
- The shareholders are investing to develop and test an integrated-system demonstrator, then transitioning to a commercial business
- A program of work is being executed to design, develop, and test a prototype system in a “string-test”
- The “string-test” fuel cell power system will...
 - be at a smaller scale than 1MW, but include a product architecture capable of ‘scaling’ to ~1MW
- This phase of the business will be a success based upon...
 - furthering technology development and completing a ‘string-test’ demonstrating fuel-in to power-out; and
 - completing a business case, cost model, and commercialization plan demonstrating a viable business for the shareholders

LG Fuel Cell Systems

Business Locations / Areas of Expertise

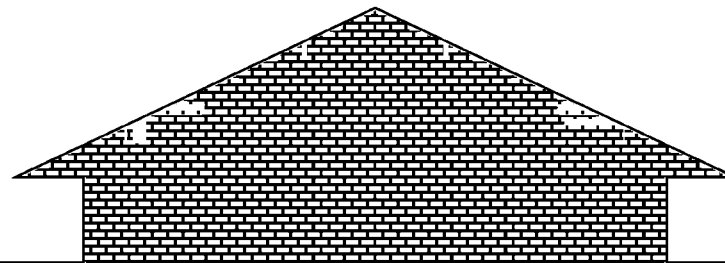
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Foundational Value in to LG Fuel Cell Systems



Fuel Cell Systems Inc.



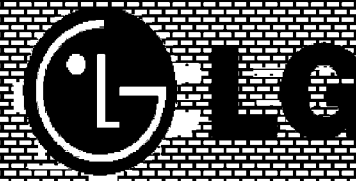
Rolls-Royce Group

- Turbine & compressor
- Aero-thermal expertise
- High-temp Materials
- Power Electronics
- System Integration



Rolls-Royce Fuel Cells

- FC Technology
- Fuel Processing
- System Engineering
- Design & Modeling
- Scaled Testing
- Years of know-how

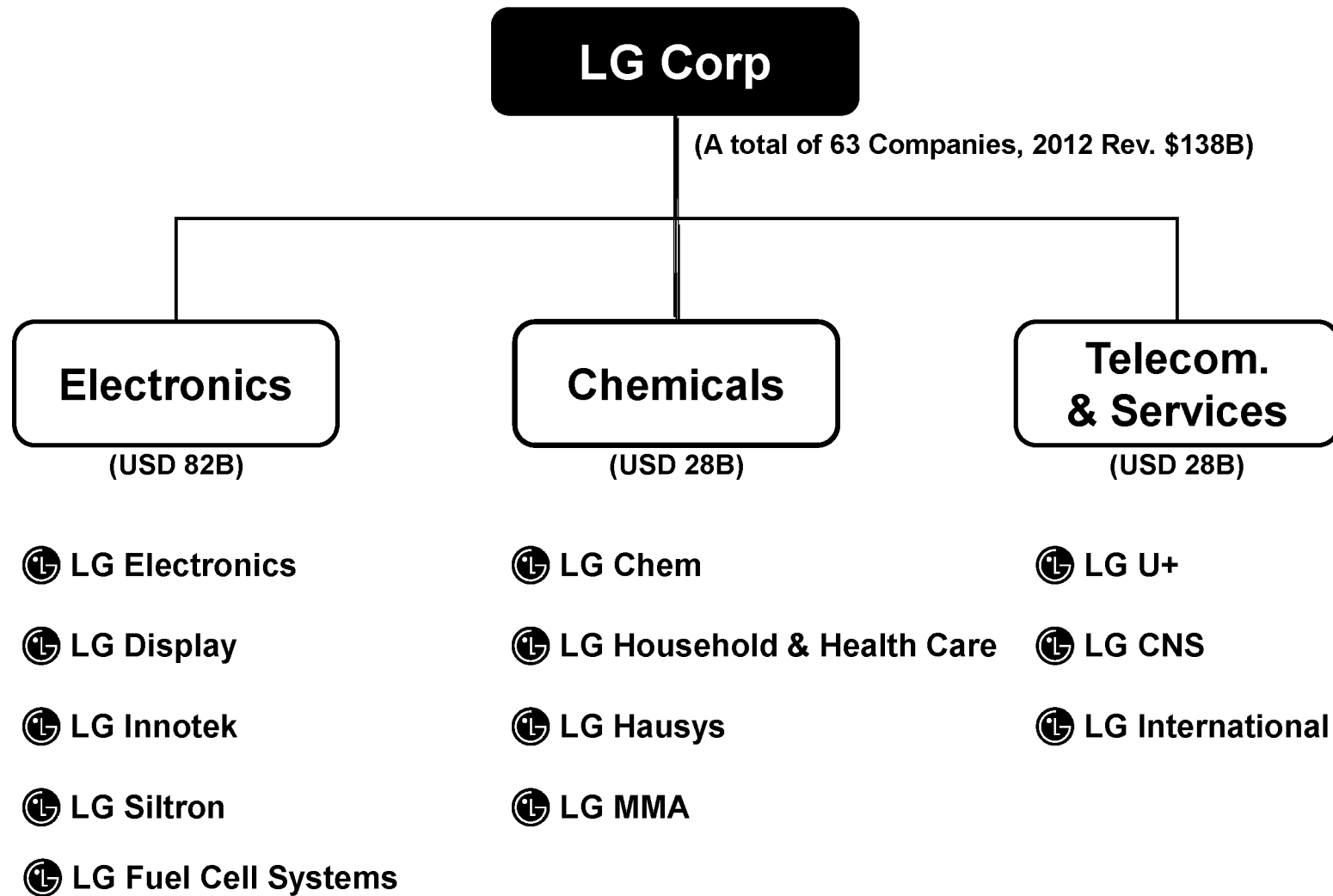


LG Group

- Process Development
- Volume Manufacturing
- Design for Manufacturing
- Supply Chain Development
- Electronics and Controls

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Next Growth Engines



Automobile Solutions



- o Battery
- o Electric Components
- o EV Module

Living Eco Solutions



- o Commercial Air Conditioner
- o Water Treatment
- o Lighting

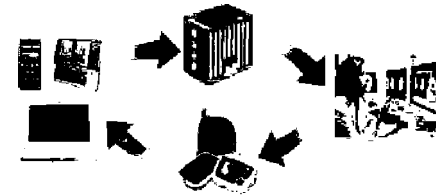


Energy Solutions



- o Solar Cell
- o Fuel Cell
- o Smart Consumer Solution

Healthcare Solutions



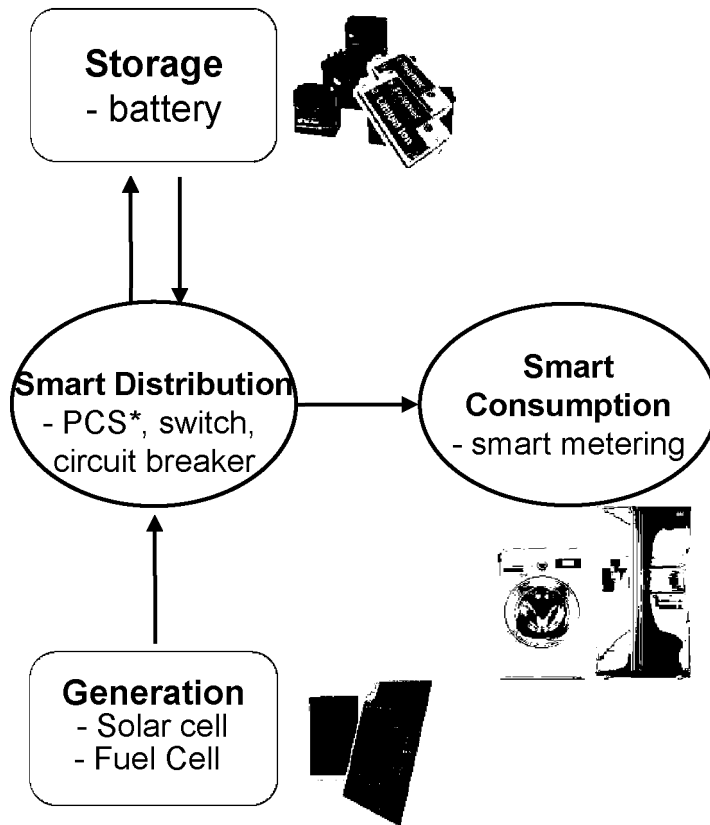
- o Medical & Silvercare Device
- o U-Healthcare Solution

Energy Solutions Detail



Business scope

(Microgrid solution, Smart consumption solution)



* Power Conditioning System

Status and future plan

- **Developing microgrid and smart consumption solution**
 - Megawatt-level lithium-ion battery
 - AC-DC inverter, power transformer
- **Entering smart home business**
 - Server and electronics for smart home
 - Home battery system
- **Ramping up generation capabilities**
 - 330MW scale solar cell factory (Gumi, Korea)
 - SOFC for stationary power




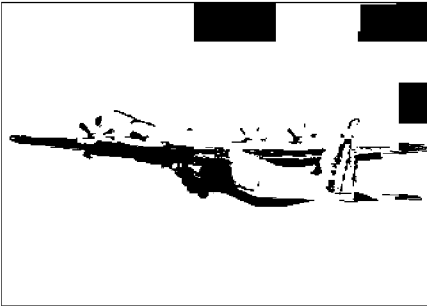
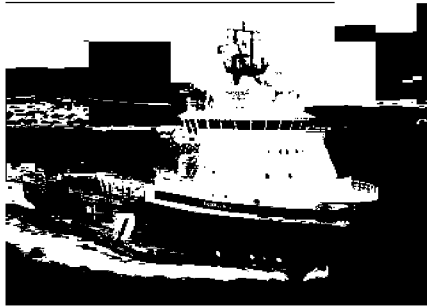
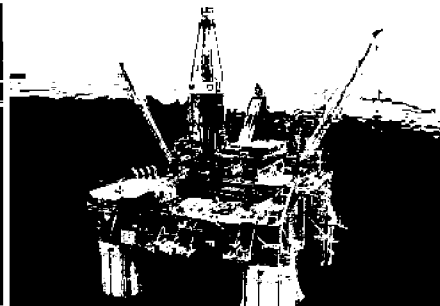


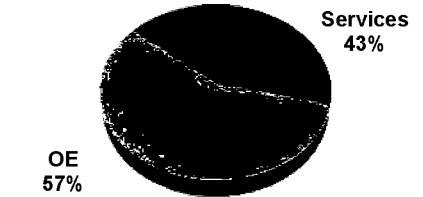

Rolls-Royce Group

Trusted to deliver excellence



Rolls-Royce

Four global markets

Civil Aerospace	Defence Aerospace	Marine	Energy
			
<ul style="list-style-type: none"> • 12,500 engines • Powers 30 types of aircraft • 300 airline & leasing customers • 20 million flying hours in 2012 • 73% of service revenue covered by LTSAs – TotalCare 	<ul style="list-style-type: none"> • 18,000 engines • 24 engine programmes • 103 countries • 160 armed forces • 25% of service revenue covered by LTSAs - MissionCare 	<ul style="list-style-type: none"> • 25,000 propulsion units • 4,000 customers • 70 navies • Products on 30,000 vessels • 5% of service revenue covered by LTSAs – mainly Naval 	<ul style="list-style-type: none"> • 4,000 power systems • 1,600 customers • 120 countries • 25% of service revenue covered by LTSAs
FY 2012 revenue £6,437m	FY 2012 revenue £2,417m	FY 2012 revenue £2,249m	FY 2012 revenue £962m
			
FY 2012 ROS 11.3%	FY 2012 ROS 16.7%	FY 2012 ROS 13.1%	FY 2012 ROS 2.2%

Trusted to deliver excellence



Rolls-Royce

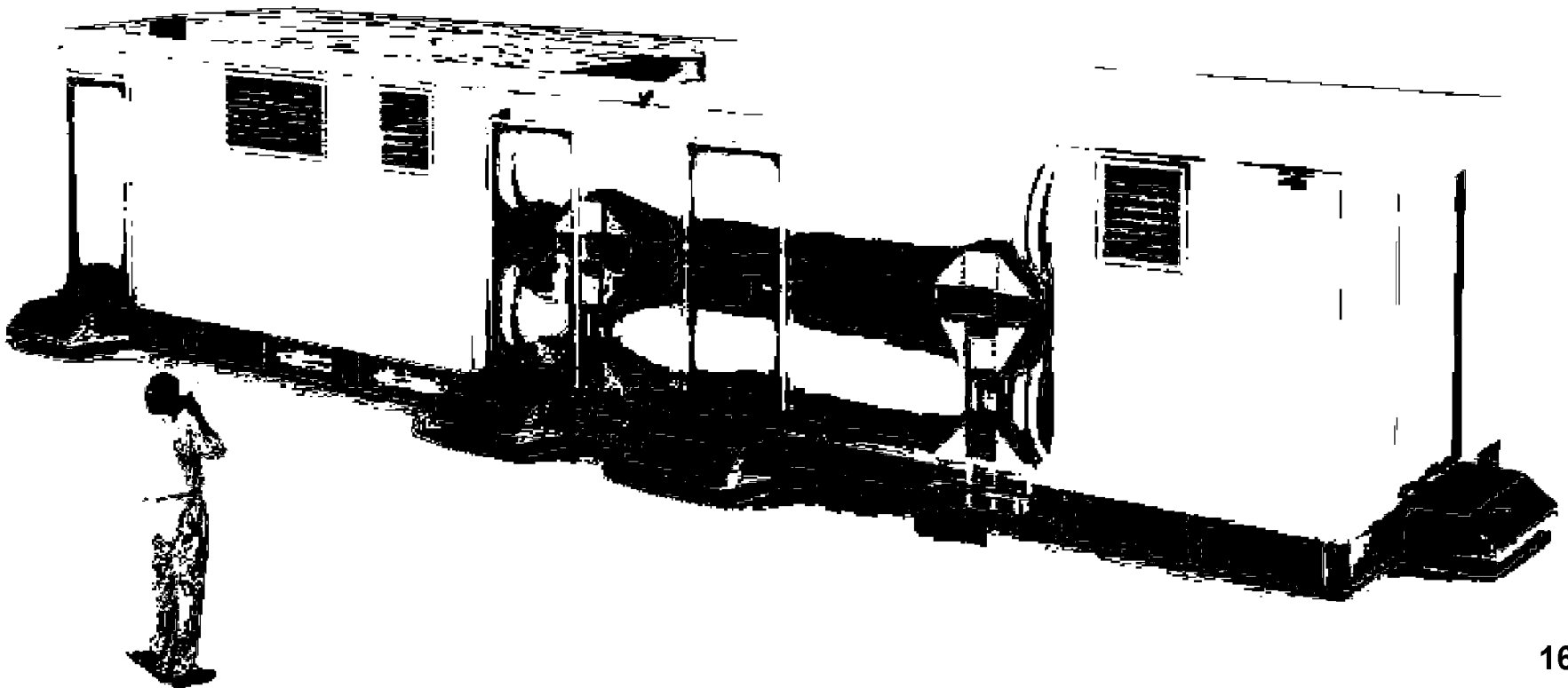
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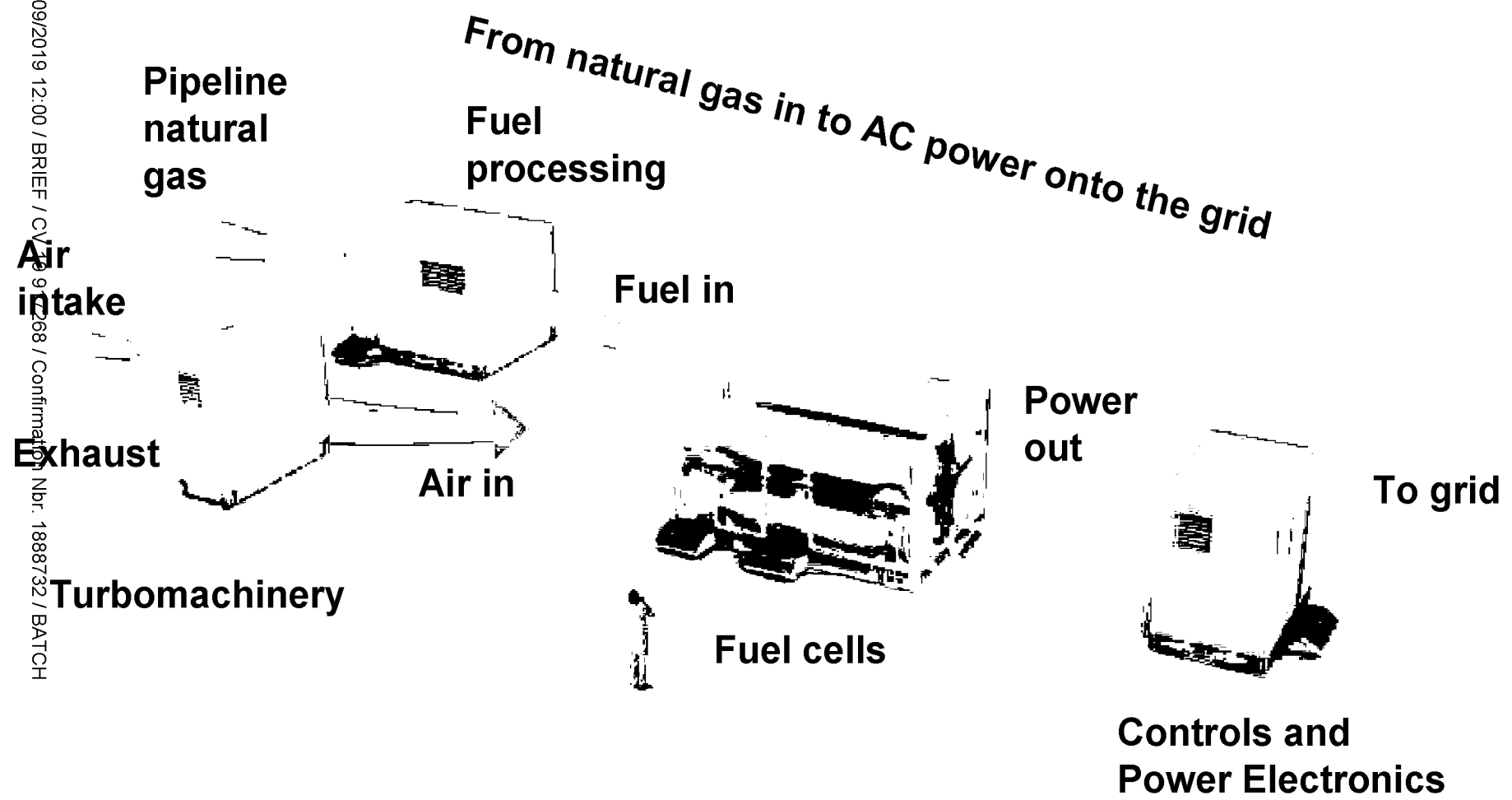
The Product – 1 MW SOFC System

● LGFCS is developing:

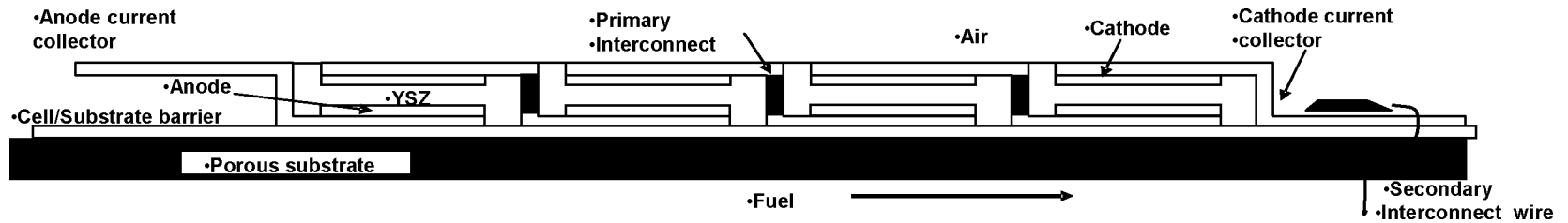
- Cost competitive distributed energy solution
- Potential net-AC electrical efficiencies in the 55%+ range
- Very low environmental impact, quick wins on air quality
- Reliability, Performance, Durability, Cost, & Functionality



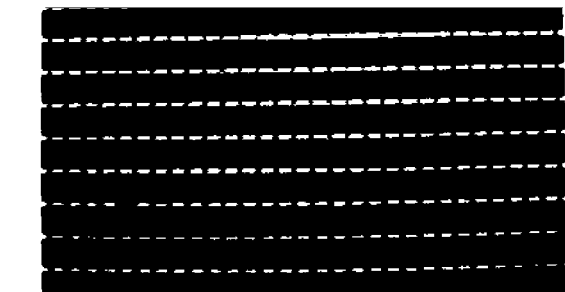
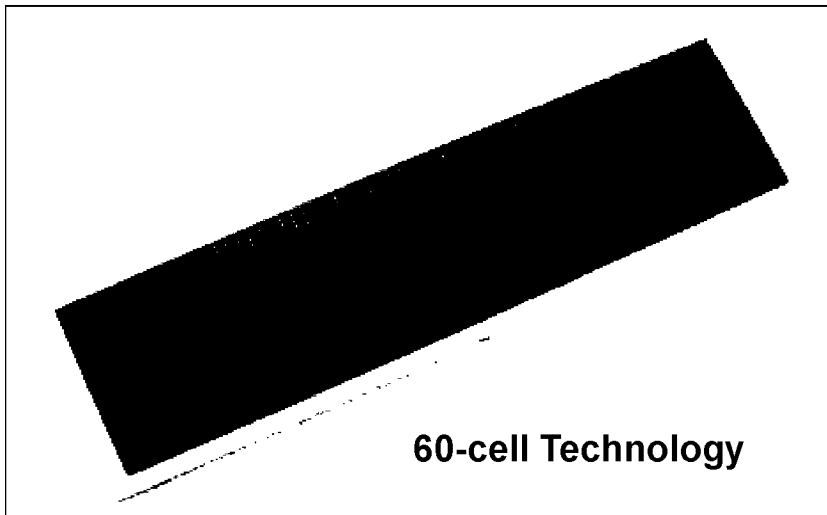
Vision of fuel-in to power out



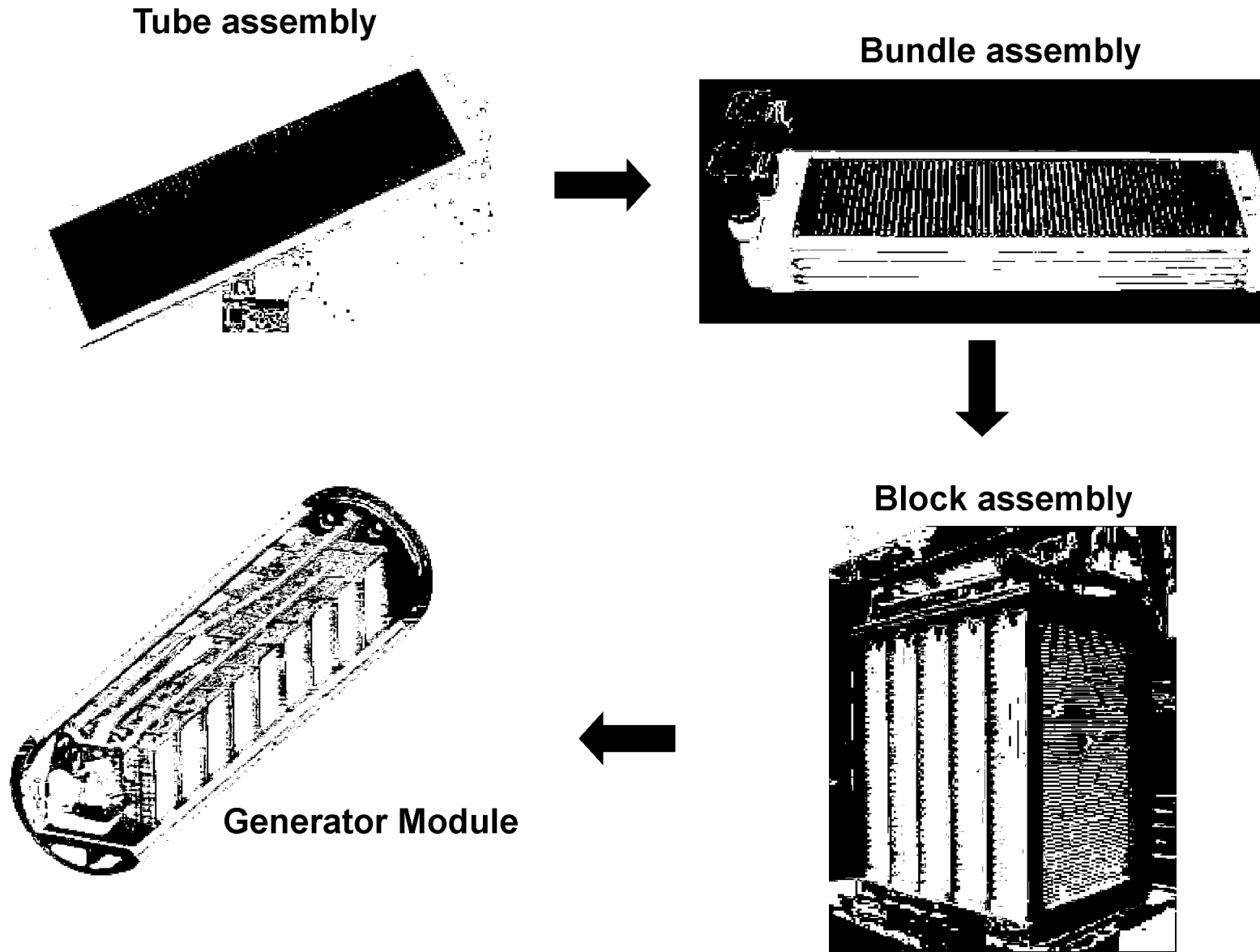
Integrated Planar (IP) SOFC



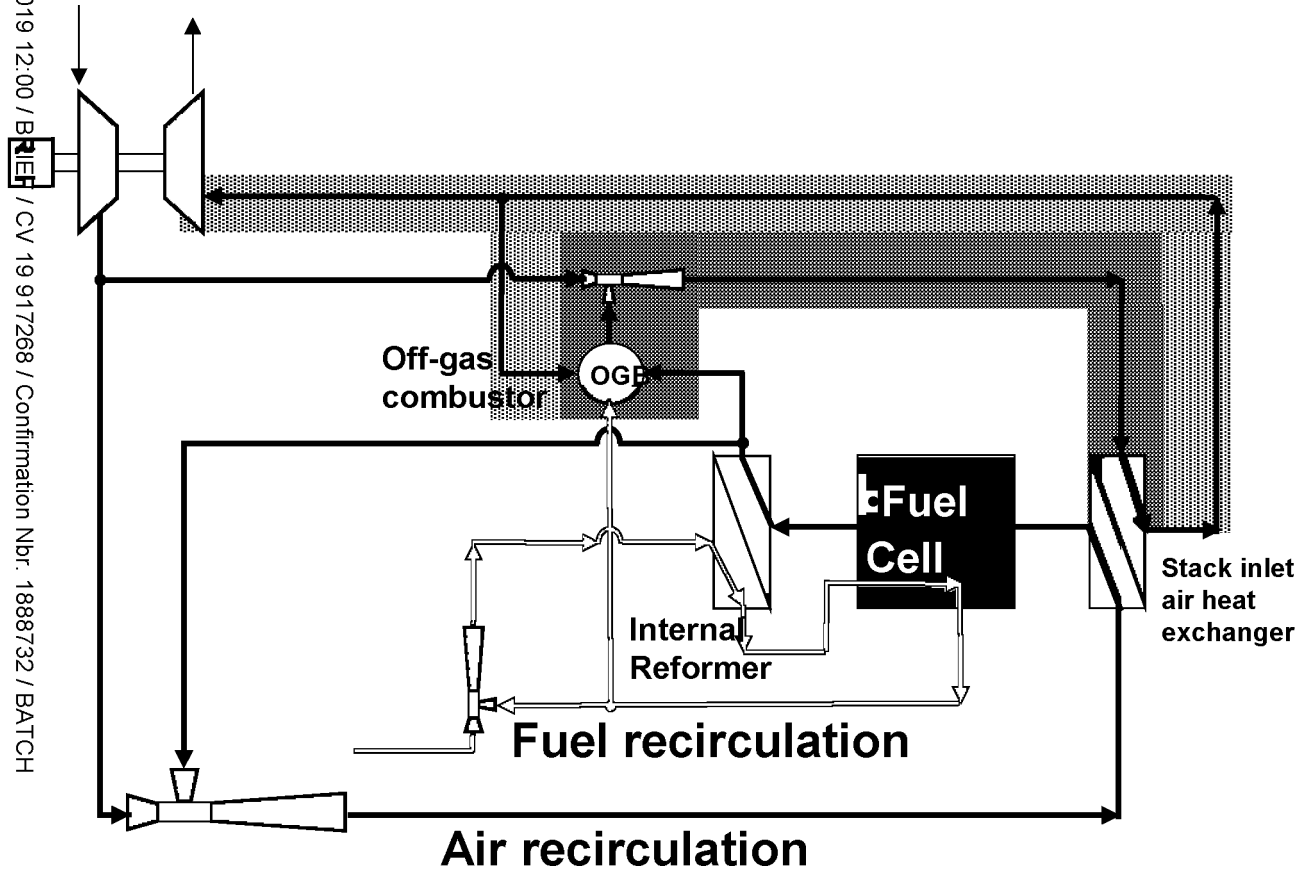
- IP-SOFC operates at high voltage, low current
- Narrow cell pitch reduces Ohmic losses
- Extruded substrate with screen printed layers



LGFCs Technology - recap

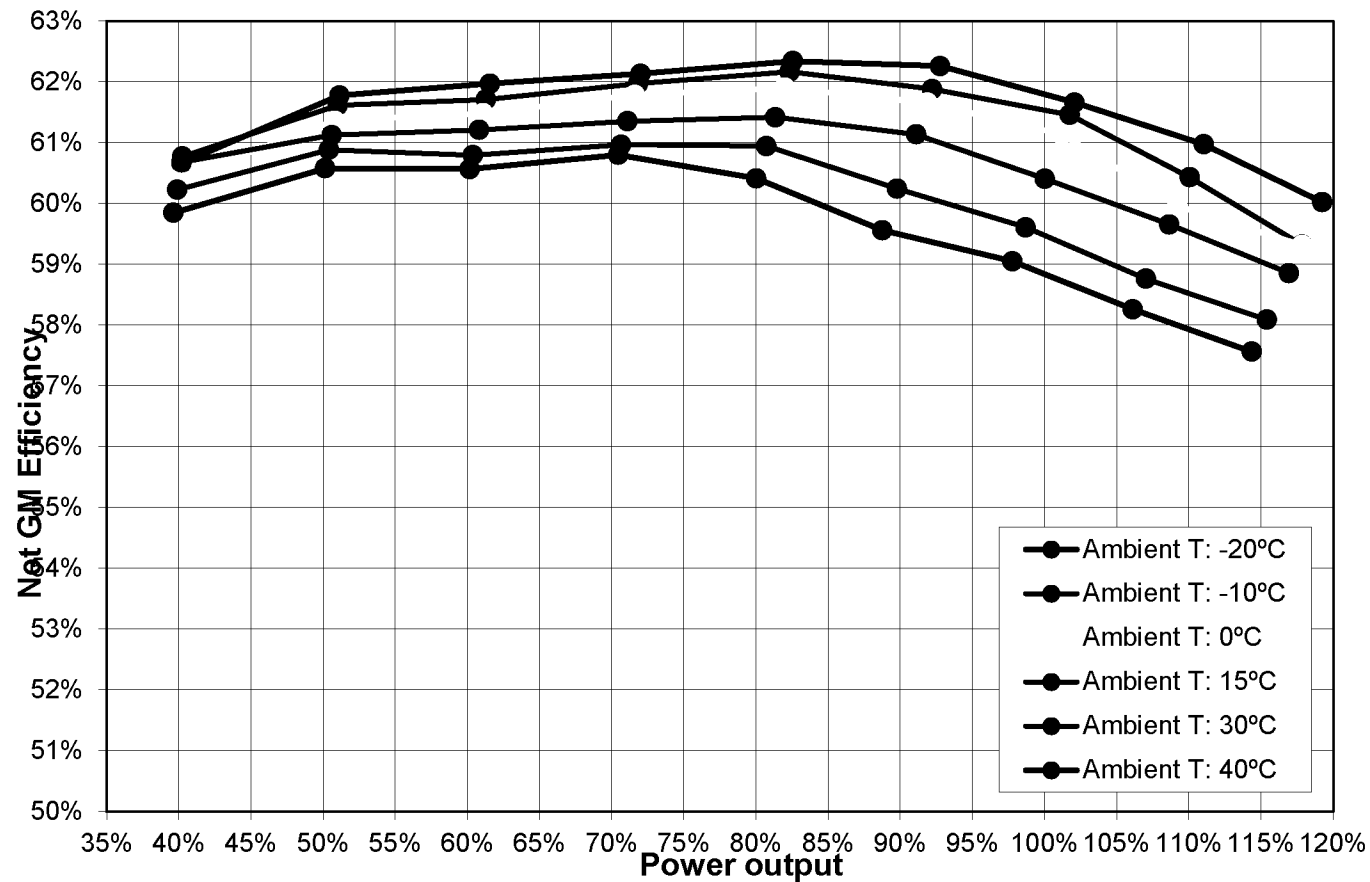


Key Features of the System-Cycle



- Pressurisation to improve power density and performance
- Anode recycle to allow for internal natural gas reforming
- Cathode recycle to minimise components' size and cost
- Ejectors to drive recycle loops
- Combustion products confined in small volumes
- Improved durability of system components

Chemistry dominates cycle so part load and ambient have little effect on efficiency



Indicative of the underlying capabilities of current technology. At EIS we may optimise the product differently or limit part load

Challenges to overcome

- **High availability >85%**
- **High reliability >95%**
- **Materials with life and performance which achieve reliability**
 - Ceramic materials, joints, insulation
 - High temperature metals
- **Chrome contamination from steels**
 - Can have detrimental impact on fuel cell itself
 - Long life enclosures avoiding this detrimental effect are required
- **Deliver: Cost, Durability, Performance, Reliability, Functionality**

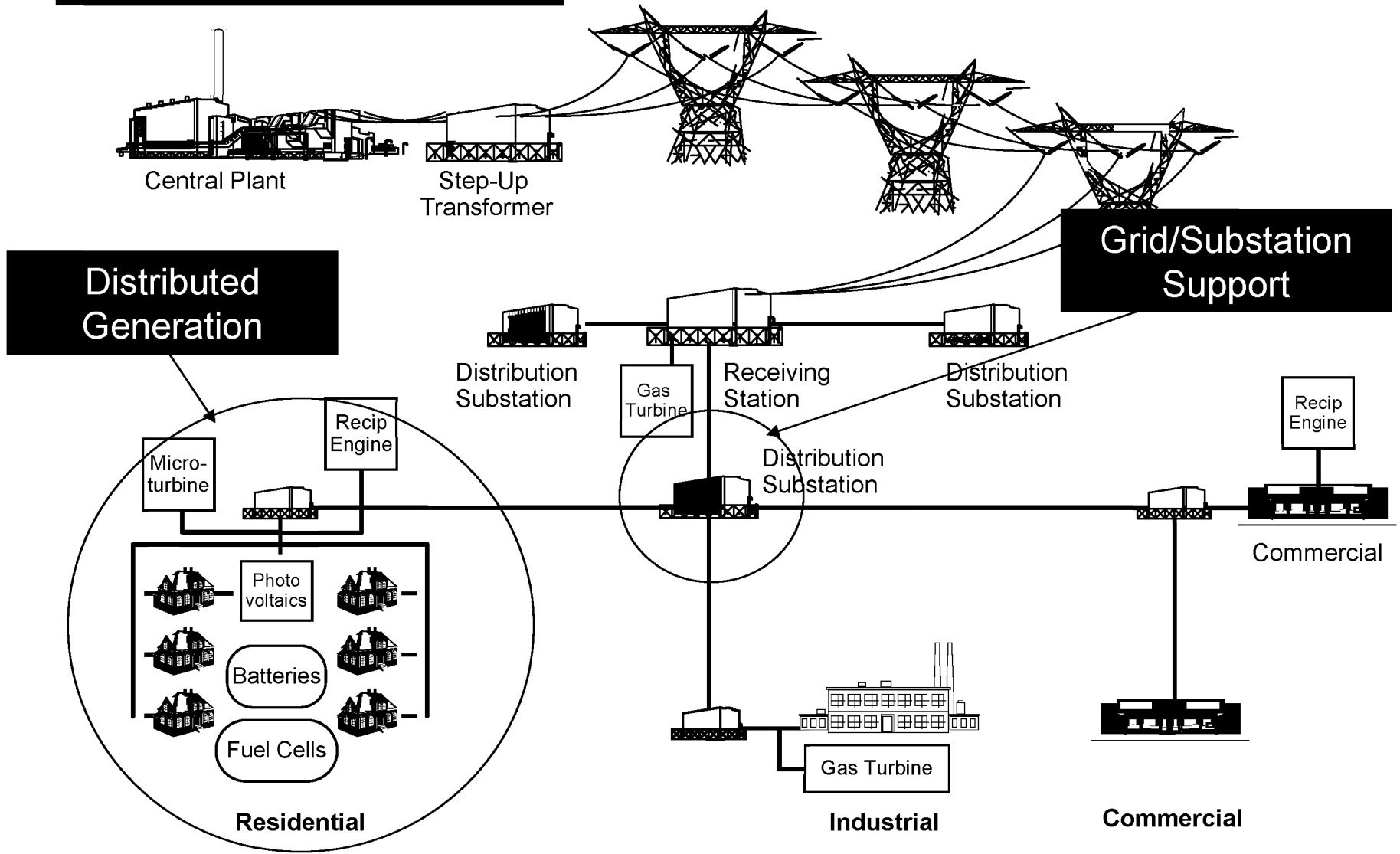
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Market Rationale

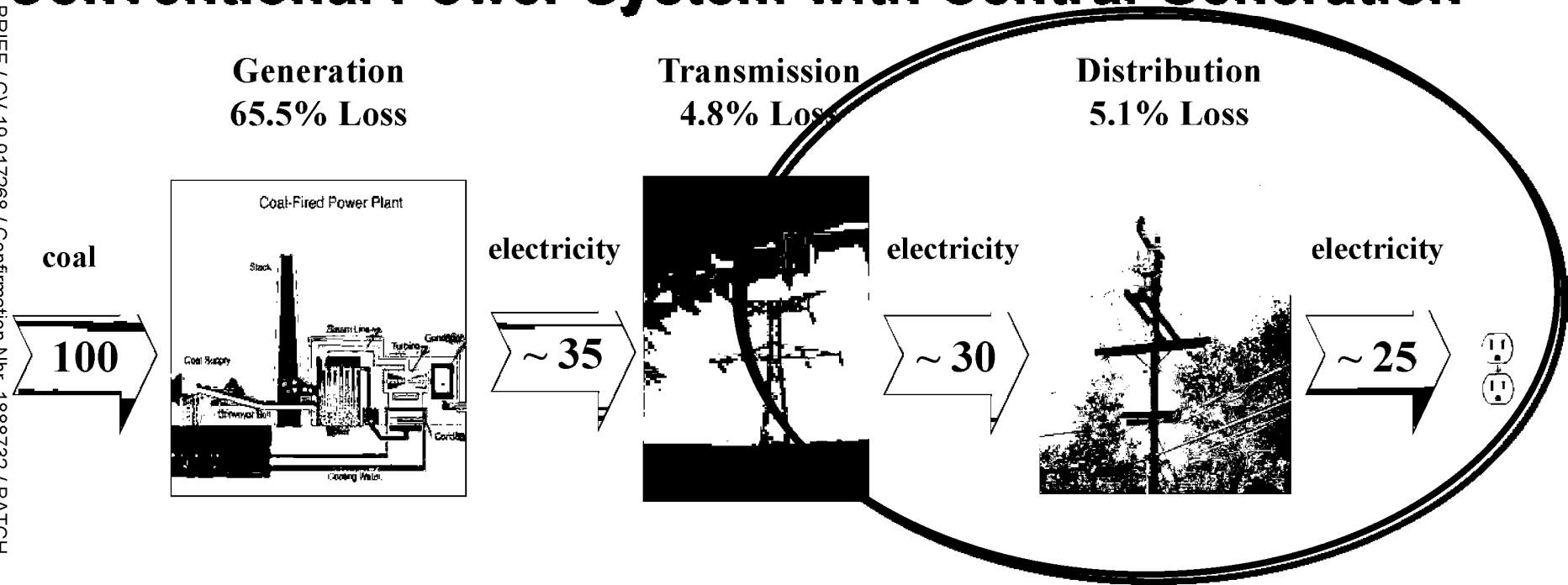
- **Electricity demand is increasing, creating a robust market for new power generation technologies**
 - Forecast 2-3% annual growth over next 25 years
 - c.300GW's for N.America alone...retirements & new build
- **Increasingly more difficult for central power to cope with a dynamic regulatory environment**
 - Air emissions and electricity transmission constraints
 - >\$2M/mile for new transmission facilities
 - Permitting challenge for new central power stations
 - Impacts the investment decision process...managing financial risk per project
 - \$2-3B for central generation vs. \$2-3M for distributed MW fuel cell system
- **Utility market pull and demand is present...**
 - Interest and dialogue with >40 large energy companies globally

Initial Applications



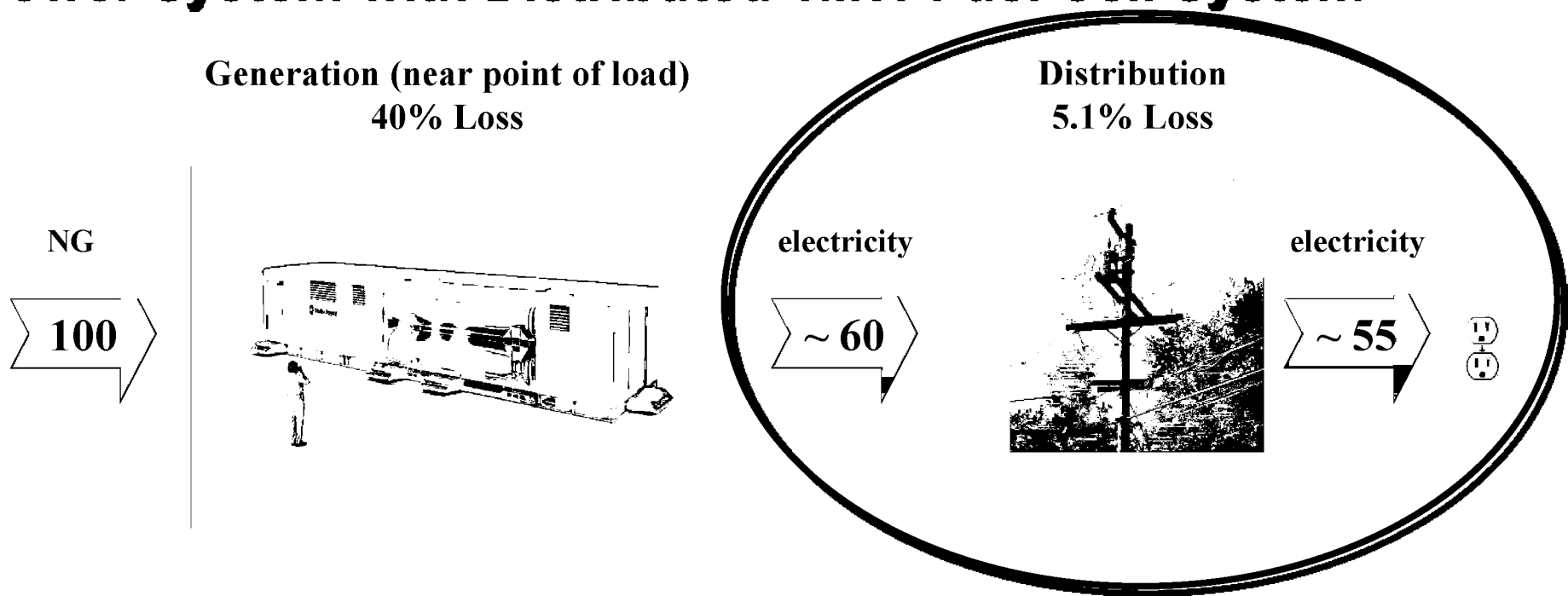
Why Electric Utilities are Interested...

Conventional Power System with Central Generation



Why Electric Utilities are Interested...

Power System with Distributed 1MW Fuel Cell System



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Acknowledgements

- **My colleagues at LGFCS (US), LGFCS (Korea) and RRFCS.**
- **This material is based, in part, upon work supported by the Department of Energy National Energy Technology Laboratory under Award Numbers DE-FE0000303 and DE-FE0000773.**



LG Fuel Cell Systems

Thank you!

Hydrogen and Fuel Cell Technical Advisory Committee

April 23-24, 2013

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ORIGINAL

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LUCAS COUNTY

2018 JAN -5 AM 11: 37

COMMON PLEAS COURT
BERNIE QUILTER
IN THE COURT OF COMMON PLEAS OF LUCAS COUNTY, OHIO
CIVIL DIVISION

G-4801-CI-0201801056-000
Judge
MICHAEL R GOULDING

JEREMY M. DARROW
3607 Devon Hill Road
Toledo, Ohio 43606,

) Case No.
) Judge

and

DALE J. MOCEK
5237 Fern Drive
Toledo, Ohio 43613,

) **COMPLAINT, WITH JURY**
) **DEMAND ENDORSED HEREON**

Plaintiffs,

vs.

LG CHEM LTD.,
a Korean Corporation,
LG Twin Towers
128 Yeoui-daero
Yeongdeungpo-gu
Seoul, Republic of Korea,

) Joseph F. Albrechta (0008478)
John A. Coble (0016445)
) Lisa M. Rothenbuhler (0095847)
ALBRECHTA & COBLE, Ltd.
) 4334 W. Central Avenue, Suite 226
Toledo, Ohio 43615
) (419) 841-8584 – telephone
(419) 333-8147 – facsimile
) kwitte@lawyer-ac.com
) S. Scott Schwab (0038392)
316 North Michigan Street, Suite 600
) Toledo, Ohio 43604
(419) 241-9999 – telephone
) ssschwabl@law.com

and

) Counsel for Plaintiffs

IBRAHIM MOUSA individually and dba
TOBACCO HAVEN and
“VAPE SUPER CENTER”,
821 West Alexis Road
Toledo, Ohio 43612 and,

)
)
)

and

MICHAEL S. WEGRZYN individually and
dba VAPORS ELECTRONIC SMOKE SHOP,
LLC, An Ohio Limited Liability Company, and
dba VAPE SUPER CENTER
3308 Navarre Avenue, Suite E
Oregon, Ohio 43616,

)
)
)
)

and)
Unknown Defendants)
Names and Addresses Currently Unknown,)
Defendants.)



Now come the plaintiffs, by and through counsel, and for their Complaint against the defendants they state as follows:

PARTIES

1. Plaintiff Jeremy M. Darrow is an individual, who at all times relevant to this action is and has been a resident of Toledo, Lucas County, Ohio.
2. Plaintiff Dale J. Mocek is an individual, who at all times relevant to this action is and has been a resident of Toledo, Lucas County, Ohio.
3. Defendant LG Chem Ltd. (hereinafter referred to as “LG”), a Korean corporation, is a manufacturer as defined by Ohio Revised Code §2307.71 located in Seoul, Republic of Korea, and is engaged in the business of designing, manufacturing, testing, selling, distributing, applying warnings, and placing into the stream of commerce vapor smoking equipment including batteries.
4. Defendant Ibrahim Mousa individually and operating businesses selling vape products and conducting business under the names of Tobacco Haven and Vape Super Center commonly known as “Vape Defendants” is a supplier as defined in Ohio Revised Code §2307.71 and is engaged in the business of selling vape products and their component parts including batteries, in Ohio; Vape Defendants conduct Ohio retail operations at 4956 Monroe Street, Toledo, Lucas County, Ohio; 1616 East Wooster Street, Bowling

Green, Wood County, Ohio; 1209 Tiffin Avenue, Findlay, Hancock County, Ohio; and 821 West Alexis Road, Suite E-29, Toledo, Lucas County, Ohio.

5. Defendant Michael S. Wegrzyn individually and operating businesses selling vape products and conducting business under the name of Vapors Electric Smoke Shop, LLC (hereinafter referred to as "Vapors") is a supplier as defined in Ohio Revised Code §2307.71 and is engaged in the business of selling vape products and their component parts including batteries, in Ohio; defendant Vapors conducts Ohio retail operations at 4020 East Harbor Road, Port Clinton, Ottawa County, Ohio; 5226 Monroe Street, Toledo, Lucas County, Ohio; 513 East Perkins Avenue, Sandusky, Ohio, Erie County, Ohio; and 3308 Navarre Avenue, Toledo, Lucas County, Ohio.
6. Unknown Defendants, whose identity could not be determined upon the exercise of due diligence and upon information and belief of the plaintiffs, acted alone or in concert with any of the named defendants in designing, manufacturing, testing, selling, distributing, applying warnings, or placing into the stream of commerce the LG Lithium ion 18650 battery.

JURISDICTION AND VENUE

7. Plaintiffs hereby incorporate paragraphs one (1) through six (6) of this Complaint as if fully rewritten herein.
8. This action arises from injuries sustained by plaintiffs Jeremy M. Darrow and Dale J. Mocek when an LG Lithium ion battery 18650 that was designed, manufactured, assembled, distributed, placed into the stream of commerce, and sold by defendants LG, Vape Defendants, Vapors, and Unknown Defendants in Toledo, Lucas County,

- Ohio, exploded in each plaintiffs' pants-pockets on or about March 22, 2016 and March 20, 2016 respectively.
9. This Court has jurisdiction over all defendants pursuant to Ohio Revised Code §2307.382(A).
 10. Venue is proper in this Court pursuant to Civ. R. 3 as all defendants conducted activity that gave rise to the claim for relief in Toledo, Lucas County, Ohio.
 11. Upon further information and belief, at all relevant times to this action, all defendants were present or transacted, solicited, and engaged in business in Lucas County, Ohio through their employees, agents, or sales representatives, and derived substantial revenue from such business conducted in Lucas County, Ohio.
 12. Defendant LG is conclusively presumed to have been doing business in Lucas County, Ohio and is therefore subject to Ohio's long arm jurisdiction pursuant to Civ. R. 4.3.
 13. At all times relevant to this action, each defendant expected or should have expected, that its acts and omissions would have consequences within the State of Ohio, including within Toledo, Lucas County, Ohio.

FACTUAL BACKGROUND

14. Plaintiffs hereby incorporate paragraphs one (1) through fourteen (14) of this Complaint as if fully rewritten herein.
15. Plaintiff Jeremy M. Darrow purchased two (2) LG Lithium ion 18650 batteries on August 19, 2015 at Vape Super Center, an unregistered (and improper) business trade name of defendants Tobacco Haven and Ibrahim Mousa, located at 4956 Monroe Street, Toledo Lucas County, Ohio.

16. The batteries purchased by Jeremy M. Darrow were manufactured, designed, assembled, distributed, placed into the stream of commerce, and sold by defendant LG.
17. On or about November or December of 2015, Kaylee Mocek, wife of plaintiff Dale J. Mocek purchased two (2) LG Lithium ion 18650 batteries for her husband Dale J. Mocek's use, from defendant Vapors in Toledo, Lucas County, Ohio.
18. The batteries purchased for the use of plaintiffs Jeremy M. Darrow and Dale J. Mocek were manufactured, designed, assembled, distributed, placed into the stream of commerce, and sold by defendant LG.
19. At the time of purchase, and at all times relevant to this Complaint, both plaintiffs were foreseeable users of the LG Lithium ion 18650 batteries.
20. At all times relevant to this action, defendants Vapors, Vape Defendants, LG, and Unknown Defendants designed, manufactured, developed, tested, packaged, labeled, prepared, marketed, sold, supplied, and introduced the LG Lithium ion 18650 batteries for use in battery operated devices, such as electronic nicotine vaporizers (also known as electronic cigarettes), and knew that such batteries were sold or marketed in Ohio for such purpose.
21. Both plaintiffs intended the LG batteries to be used with electronic nicotine vaporizing equipment that each plaintiff already owned.
22. Defendants knew or reasonably should have known that the LG Lithium ion 18650 batteries were dangerous when used in a reasonably foreseeable manner.
23. Defendants knew or should have known that the LG Lithium ion 18650 batteries were dangerous, had a risk of explosion or fire, and had previously caused serious injuries to other consumers during foreseeable use.

24. Defendants failed to affix a warning label to the LG Lithium ion 18650 batteries before placing them into the stream of commerce.
25. Defendants failed to provide a protective covering for the LG Lithium ion 18650 batteries before selling them to plaintiffs and others.
26. On or about March 17, 2016 plaintiff Jeremy M. Darrow was carrying one (1) LG Lithium ion 18650 battery in the front right pocket of his pants when said battery suddenly exploded and created a fire causing him serious injury.
27. Following the explosion, St. Luke's Hospital of Maumee, Ohio responded to the scene by ambulance and treated plaintiff Jeremy M. Darrow; plaintiff Jeremy M. Darrow was later admitted into the burn unit at St. Vincent's Hospital in Toledo, Lucas County, Ohio.
28. On or about March 22, 2016 plaintiff Dale J. Mocek was carrying one (1) LG Lithium ion 18650 battery in the front right pocket of his pants when said battery suddenly exploded and created a fire causing him serious injury.
29. Following the explosion, plaintiff Dale J. Mocek was transported to Mercy Urgent Care in Perrysburg, Ohio where he was treated and referred to the burn unit at St. Vincent's Hospital in Toledo, Ohio and admitted the same day.
30. As a result of the explosions, plaintiffs Jeremy M. Darrow and Dale J. Mocek suffered extensive personal injuries, incurred medical expenses and other financial obligations, suffered from emotional distress, loss of wages, and other injuries which will continue into the future.

COUNT I
[LIABILITY OF MANUFACTURER FOR DEFECTIVE DESIGN]

31. Plaintiffs hereby incorporate paragraphs one (1) through thirty (30) of this Complaint as if fully rewritten herein.
32. Defendant LG manufactured the LG Lithium ion 18650 battery, as defined by Ohio Revised Code § 2307.71(A)(9); LG is engaged in the design, formulation, production, construction, and assembly of the LG Lithium ion 18650 batteries at issue.
33. The batteries at issue were defective in design or formulation as described in Ohio Revised Code § 2307.75.
34. The defectiveness of the LG Lithium ion 18650 batteries was a direct and proximate cause for which plaintiffs suffered and seek to recover damages.
35. The batteries at issue were unreasonably dangerous and defective when the products left control of defendant LG because they lacked adequate design and construction to prevent the batteries from short circuiting and causing an explosion.
36. The batteries at issue were defective at the time they left control of defendant LG because the foreseeable risks associated with the intended use of the product exceeded the benefits of said product.
37. The batteries were defective in design, construction, and manufacturing because the product was capable of causing, without notice or warning, severe and permanent injuries to its consumers.
38. As a direct and proximate cause of defendant LG's defective design, construction, and manufacturing of the LG Lithium ion 18650 batteries, plaintiffs Jeremy M. Darrow and Dale J. Mocek were caused past, present, and future personal injury, pain, suffering,

temporary and permanent disability, interference with usual daily activities, out of pocket costs, medical treatment, medical expenses, and loss of income.

39. As a direct and proximate result of said defective design formulation, production, construction, and assembly of the LG Lithium ion 18650 batteries at issue, plaintiffs are entitled to recover compensatory damages from defendant LG pursuant to Ohio Revised Code § 2307.79.

COUNT II
[LIABILITY OF MANUFACTURER FOR INADEQUATE WARNING]

40. Plaintiffs hereby incorporate paragraphs one (1) through thirty-nine (39) of this Complaint as if fully rewritten herein.

41. Defendant LG manufactured, designed, and placed into the stream of commerce the batteries at issue without adequate warning or instruction pursuant to Ohio Revised Code § 2307.73(A)(1) and Ohio Revised Code §2307.76.

42. Defendant LG was aware that it was reasonably foreseeable that their product, the batteries at issue, could explode and cause harm to consumers.

43. Defendant LG, knowing that there was a risk associated with the use of their product, failed to include any warning or instruction that it was reasonably foreseeable their product would explode without any notice.

44. There was no open and obvious risk associated with the use of the LG Lithium ion 18650 battery.

45. The lack of adequate warnings or instructions was a proximate cause of injury to plaintiffs Jeremy M. Darrow and Dale J. Mocek and caused past, present, and future personal injury, pain, suffering, temporary and permanent disability, interference with

usual daily activities, out of pocket costs, medical treatment, medical expenses, and loss of income.

46. As a direct and proximate result of lack of adequate warnings or instruction regarding the LG Lithium ion 18650 batteries at issue, plaintiffs are entitled to recover compensatory damages from defendant LG pursuant to Ohio Revised Code §2307.79.

COUNT III
[LIABILITY OF SUPPLIER]

47. Plaintiffs hereby incorporate paragraphs one (1) through forty-six (46) of this Complaint as if fully rewritten herein.

48. On or about August 29, 2015, defendant Vapors sold plaintiff Jeremy M. Darrow two (2) LG Lithium ion 18650 batteries at Vape Defendant's store, "Vape Super Center", located in Toledo, Lucas County, Toledo, Ohio.

49. Plaintiff Jeremy M. Darrow was a foreseeable user of the LG Lithium ion 18650 batteries.

50. On or about November or December of 2015, Vape Defendants sold plaintiff Dale J. Mocek's wife two (2) LG Lithium ion 18650 batteries at defendant Vapors' store, "Vapors", in Toledo, Lucas County, Ohio.

51. Plaintiff Dale J. Mocek was a foreseeable user of the LG Lithium ion 18650 batteries, as his wife purchased them specifically for his use.

52. Vape Defendants and Vapors supplied plaintiffs Jeremy M. Darrow and Dale J. Mocek with the batteries at issue and are suppliers as defined by Ohio Revised Code §2307.71 because they are engaged in the business of selling and placing into the stream of

commerce vape products, and their component parts, including batteries, in Toledo, Lucas County, Ohio.

53. Vape Defendants and Vapors did not properly inspect or provide plaintiffs with adequate warnings and instructions in the handling of the product and the risk and dangers associated with the product.
54. Vape Defendants and Vapors owed a duty to plaintiffs, as foreseeable users, to properly inspect for defects and provide plaintiffs with adequate warnings and instructions on the handling of the product and the risk and dangers associated with the product.
55. Vape Defendants and Vapors breached the duty owed to plaintiffs as foreseeable users when it failed to properly inspect for defects and provide plaintiffs with adequate warnings and instructions in the handling of the product and the risk and dangers associated with the product.
56. As a result of said breach, Vape Defendants and Vapors were negligent pursuant to Ohio Revised Code §2307.78(A)(1).
57. As a direct and proximate cause of Vape Defendants' and Vapors' breaches, the LG Lithium ion 18650 batteries exploded during plaintiffs' foreseeable use of them and caused plaintiffs Jeremy M. Darrow and Dale J. Mocek past, present, and future personal injury, pain, suffering, temporary and permanent disability, interference with usual daily activities, out of pocket costs, medical treatment, medical expenses, and loss of income.
58. As a direct and proximate result of Vape Defendants' and Vapors' breaches, plaintiffs are entitled to recover compensatory damages from the Defendant, LG, pursuant to Ohio Revised Code §2307.79.

COUNT IV
[LIABILITY OF DISTRIBUTER]

59. Plaintiffs hereby incorporate paragraphs one (1) through fifty-eight (58) of this Complaint as if fully rewritten herein.
60. Unknown Defendants supplied Vape Defendants and Vapors with the LG Lithium ion 18650 batteries at issue as defined by Ohio Revised Code §2307.71 (A)(1)(i-ii), because they are engaged in the business of selling, distributing, and otherwise participating in the placing of LG Lithium ion 18650 batteries in the stream of commerce.
61. The batteries at issue were defective when they left the control of Unknown Defendants because they lacked adequate warning and instructions regarding the handling of the product and lacked notice that it was reasonably foreseeable that the risks associated with the batteries at issue exceeded any benefits of said design and construction.
62. The batteries at issue were defective because the LG Lithium ion 18650 batteries were capable of causing, without any notice, severe and permanent injuries to its users or consumers.
63. The LG Lithium ion 18650 batteries were defective because the product was more dangerous than an ordinary consumer or user would expect during their reasonably foreseeable use.
64. Unknown Defendants owed a duty to foreseeable consumers and users of the batteries at issue to properly inspect for defects and provide consumers and users with adequate warnings and instructions in the handling of the product and the risk and dangers associated with the product.

65. Unknown Defendants breached this duty owed to plaintiffs, as foreseeable consumers and users, when they failed to properly inspect for defects and provide consumers and users with adequate warnings and instructions in the handling of the product and the risk and dangers associated with the product.
66. As a result of said breach, Unknown Defendants were negligent pursuant to Ohio Revised Code §2307.78(A)(1).
67. As a direct and proximate cause of Unknown Defendants selling, distributing, and otherwise participating in the placing of the LG Lithium ion 18650 batteries into the stream of commerce, plaintiffs suffered personal injury, pain, suffering, temporary and permanent disability, interference with usual daily activities, out of pocket costs, medical treatment, medical expenses, and lost income.
68. As a direct and proximate result of Unknown Defendants' breach, plaintiffs are entitled to recover compensatory damages from Unknown Defendants pursuant to Ohio Revised Code §2307.79.

COUNT V
[BREACH OF DUTY TO WARN]

69. Plaintiffs hereby incorporate paragraphs one (1) through sixty-eight (68) of this Complaint as if fully rewritten herein.
70. Defendants LG, Vape Defendants, Vapors, and Unknown Defendants had a duty to warn their consumers and users of the risks associated with the reasonably foreseeable use of the LG Lithium ion 18650 batteries and their propensity to explode without any notice.
71. Defendants LG, Vape Defendants, Vapors, and Unknown Defendants breached their duty to warn their consumers and users of the potential dangers associated with the

reasonably foreseeable use of the batteries at issue, when they failed to warn their consumers and users that the product, without any notice, could explode and cause serious injury.

72. Defendants LG, Vape Defendants, Vapors, and Unknown Defendants breached their duty to warn their consumers and users of the potential dangers associated with the reasonably foreseeable use of the batteries at issue, when they failed to provide their consumers/users with a protective casing to hold the batteries at issue in order to prevent an explosion from occurring.

73. Defendants LG, Vape Defendants, Vapors, and Unknown Defendants breached their duty to warn their consumers and users of the potential dangers associated with the reasonably foreseeable use of the batteries at issue when they failed to warn their consumers and users that the product, without any notice, could explode and cause serious injury.

COUNT VI
[BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY]

74. Plaintiffs hereby incorporate paragraphs one (1) through seventy-three (73) of this Complaint as if fully rewritten herein.

75. Vape Defendants' and Vapors' sale of the LG Lithium ion 18650 batteries represents a sale of goods under the UCC as codified by Ohio Revised Code §1302.01(A)(8).

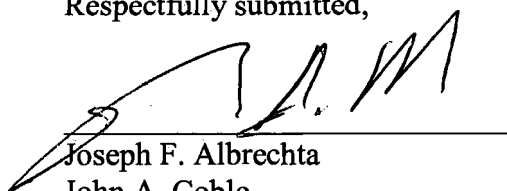
76. Being entities that deal with goods, Vape Defendants and Vapors each constitute a "merchant" in regard to the purchases made by plaintiffs from them pursuant to § 1302.01(A)(5).

77. Vape Defendants and Vapors were aware that plaintiff Jeremy M. Darrow and plaintiff Dale J. Mocek's wife were purchasing the batteries at issue for purposes of providing energy to their electronic cigarettes.
78. Vape Defendants and Vapors warranted that the batteries at issue were fit for that purpose and free of any defects.
79. Vape Defendants and Vapors impliedly warranted the merchantability, fitness, kind, and quality of the LG Lithium ion 18650 batteries for use in electronic cigarettes.
80. Based on the implied warranties and the other related affirmations, promises, or descriptions Vape Defendants and Vapors made to plaintiffs, plaintiff Jeremy M. Darrow and plaintiff Dale J. Mocek's wife purchased the LG Lithium ion 18650 batteries for use in electronic cigarettes.
81. Vape Defendants and Vapors breached the implied warranty of merchantability by selling plaintiffs batteries that were defective, unfit, not adequately contained or packaged, and that lacked adequate warning or notice that the product was unreasonably dangerous as defined by Ohio Revised Code §1302.27.
82. As a direct and proximate cause of Vape Defendants' and Vapors' breaches of implied warranty, plaintiffs suffered personal injury, pain, suffering, temporary and permanent disability, interference with usual daily activities, out of pocket costs, medical treatment, medical expenses, and loss of income.

PRAYER FOR RELIEF

WHEREFORE, plaintiffs pray for judgment against defendants, jointly and severally, for compensatory damages in an amount in excess of Twenty-Five Thousand Dollars (\$25,000.00) as well as punitive damages as will fully, fairly, and adequately punish the culpable defendants, together with interest, costs, reasonable attorney fees, and any further relief the Court deems just or equitable.

Respectfully submitted,

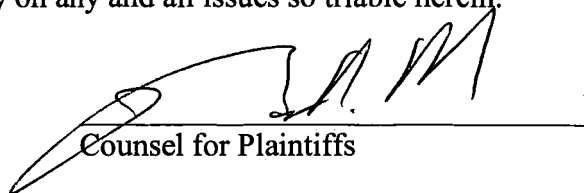


Joseph F. Albrechta
John A. Coble
Lisa M. Rothenbuhler
S. Scott Schwab

Counsel for Plaintiffs

JURY DEMAND

Plaintiffs hereby demand a trial by jury on any and all issues so triable herein.



Counsel for Plaintiffs

PRAECIPE FOR SERVICE

To the Clerk:

Please be so kind as to serve the following defendants with Summons in English and a copy of the Complaint herein in English at the following addresses by Certified U.S. Mail, return receipt requested, or by other means in accord with the Ohio Rules of Civil Procedure:

- Defendant **Ibrahim Mousa**, individually and doing business as Tobacco Haven and doing business as Vape Super Center, at 821 West Alexis Road, Toledo, Ohio 43612;
- Defendant **Ibrahim Mousa**, individually and doing business as Tobacco Haven and doing business as Vape Super Center, at 4053 Ariel Avenue, Toledo, Ohio 43623;
- Defendant **Michael S. Wegrzyn**, individually and doing business as Vapors Electronic Smoke Shop, LLC an Ohio Limited Liability Company, and doing business as Vape Super Center at 3308 Navarre Avenue, Suite E, Oregon, Ohio 43616; and
- Defendant **Michael S. Wegrzyn**, individually and doing business as Vapors Electronic Smoke Shop, LLC an Ohio Limited Liability Company, and doing business as Vape Super Center at 1111 Heritage Lane, Oregon, Ohio 43616.

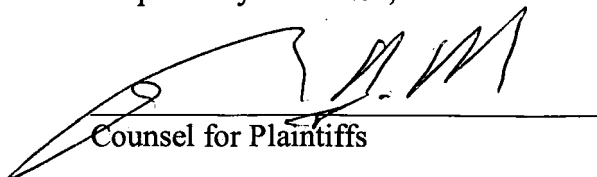
Additionally, pursuant to Ohio R. Civ. P. 4.5(A), please prepare the following documents for delivery by Certified Mail to the Albrechta & Coble, Ltd. for service upon Defendant **LG CHEM LTD.**, a Korean Corporation, for service via the Director of International Affairs, National Court Administration of the Republic of Korea, pursuant to Article f of the Hague Service Convention:

- The original Summons in English; and
- A Certified copy of the Complaint in English.

These documents shall be delivered to Joseph F. Albrechta, Albrechta & Coble, Ltd, 2228 Hayes Avenue, Suite A, Fremont, Ohio, 43420

Thank you very much.

Respectfully submitted,


Counsel for Plaintiffs

ORIGINAL

FILED
LUCAS COUNTY
IN THE COURT OF COMMON PLEAS OF LUCAS COUNTY, OHIO
2018 SEP 28 AM 11:59 CIVL DIVISION

LN

JEREMY M. DARROW, et al.
COMMON PLEAS COURT
BERNIE QUILTER
CLERK OF COURTS

CASE NO. G-4801-CI-0201801056-000

JUDGE MICHAEL R. GOULDING

v.

**DEFENDANT LG CHEM, LTD.'S
ANSWER TO PLAINTIFFS
COMPLAINT INSTANTER**

LG CHEM, LTD., et al.

Defendants.

Now comes Defendant, LG Chem Limited ("Answering Defendant"), by and through undersigned counsel of record, and for its Answer to Plaintiffs' Complaint, states as follows:

PARTIES

1. Based on information and belief, this Answering Defendant admits the allegations contained in Paragraph 1 and 2 of Plaintiffs' Complaint.
2. This Answering Defendant admits that it is a foreign corporation, but denies the remaining allegations contained in Paragraph 3 of Plaintiffs' Complaint.
3. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth of the allegations contained in Paragraphs 4, 5 and 6 of Plaintiffs' Complaint.

JURISDICTION AND VENUE

4. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 6 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 7 of Plaintiffs' Complaint.
5. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth of the allegations contained in Paragraph 8 of Plaintiffs' Complaint.

6. This Answering Defendant denies as to itself and further states that the allegations seek a legal conclusion, as its response to Paragraphs 9, 10, 11, 12, and 13 of Plaintiffs' Complaint.

FACTUAL BACKGROUND

7. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 13 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 14 of Plaintiffs' Complaint.

8. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth and allegations contained in Paragraphs 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30 of Plaintiffs' Complaint.

ANSWER TO COUNT I
[LIABILITY OF MANUFACTURER FOR DEFECTIVE DESIGN]

9. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 30 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 31 of Plaintiffs' Complaint.

10. This Answering Defendant admits that it manufactured certain lithium batteries, including but not limited to LG Lithium 18650, but denies the remaining allegations contained in Paragraph 32 of Plaintiffs' Complaint.

11. This Answering Defendant denies the allegations contained in Paragraphs 33, 34, 35, 36, 37, 38, and 39 of Plaintiffs' Complaint.

ANSWER TO COUNT II
LIABILITY OF MANUFACTURER FOR INADEQUATE WARNING

12. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 39 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 40 of Plaintiffs' Complaint.

13. This Answering Defendant denies the allegations contained in Paragraphs 41, 42, 43, 44, 45 and 46 of Plaintiffs' Complaint.

COUNT III
LIABILITY OF SUPPLIER

14. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 46 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 47 of Plaintiffs' Complaint.

15. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth and allegations contained in Paragraphs 48, 49, 50, 51, 52, 53, 54, 55, 56, 57 and 58 of Plaintiffs' Complaint.

COUNT IV
LIABILITY OF DISTRIBUTOR

16. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 58 of Plaintiffs' Complaint as if fully rewritten herein, as its response to Paragraph 59 of Plaintiffs' Complaint.

17. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth and allegations contained in Paragraphs 60, 61, 62, 63, 64, 65, 66, 67 and 68 of Plaintiffs' Complaint.

COUNT V
[BREACH OF DUTY TO WARN]

18. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 68 of Plaintiffs 'Complaint as if fully rewritten herein, as its response to Paragraph 69 of Plaintiffs' Complaint.

19. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth of the remaining allegations as to the remaining Co-Defendants, as its response to Paragraphs 70, 71, 72 and 73 of Plaintiffs' Complaint.

COUNT VI
[BREACH OF IMPLIED WARRANTY OF MERCHANTABILITY]

20. This Answering Defendant incorporates by reference herein its responses to Paragraphs 1 through 73 of Plaintiffs 'Complaint as if fully rewritten herein, as its response to Paragraph 74 of Plaintiffs' Complaint.

21. This Answering Defendant lacks knowledge or information sufficient to form a belief as to the truth and allegations contained in Paragraphs 75, 76, 77, 78, 79, 80, 81, and 82 of Plaintiffs' Complaint.

22. This Answering Defendant denies any remaining allegations not otherwise responded to herein.

AFFIRMATIVE DEFENSES

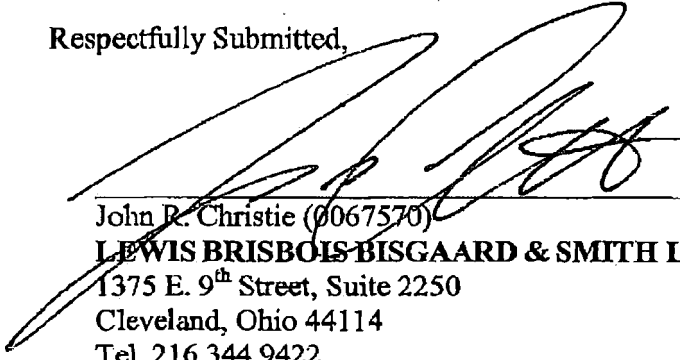
1. Plaintiffs' conduct caused or contributed to cause the injuries as alleged in Plaintiff Complaint.

2. The actions of others, outside of the control of LG caused or contributed to cause Plaintiffs' injuries.

3. Plaintiffs failed to utilize the products manufactured, produced, designed or sold by LG as intended, designed or required, thus barring or limiting recovery.
4. Plaintiffs failed to state a claim against LG upon which relief can be granted.
5. LG incorporates herein by reference herein each and every Affirmative Defense asserted by any other party to this action.
6. One or more of Plaintiffs' claims for damages are subject to the limits on certain types of damages, and this Court is without jurisdiction to enter judgment for Plaintiffs beyond the limitations set forth in O.R.C. §2323.43, *et seq.*
7. This Court lacks jurisdiction of the within action by virtue of the Plaintiffs' failure to comply with the pleading requirements as required by the Ohio Revised Code.
8. LG reserves the right to raise additional Affirmative Defenses as it may become aware of the same during the pendency of this matter.
9. Lack of personal jurisdiction over this Answering Defendant.

WHEREFORE, LG prays that the Plaintiffs' Complaint be dismissed with prejudice and that Plaintiffs be ordered to pay all costs and reasonable attorney's fees sustained by Defendant LG Chem, Ltd..

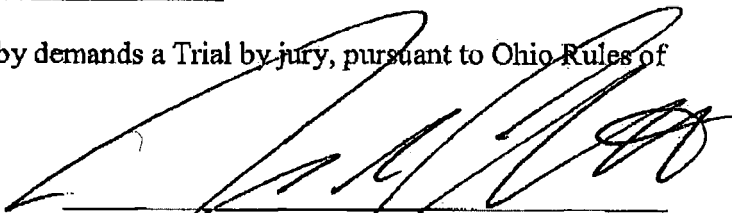
Respectfully Submitted,



John R. Christie (0067570)
LEWIS BRISBOIS BISGAARD & SMITH LLP
1375 E. 9th Street, Suite 2250
Cleveland, Ohio 44114
Tel. 216.344.9422
Fax 216.344.9421
John.Christie@lewisbrisbois.com
Attorneys for Defendant LG Chem, Ltd.

JURY DEMAND

This Answering Defendant hereby demands a Trial by jury, pursuant to Ohio Rules of Civil Procedure.



John R. Christie (0067570)

LEWIS BRISBOIS BISGAARD & SMITH LLP

Attorneys for Defendant LG Chem, Ltd.

CERTIFICATE OF SERVICE

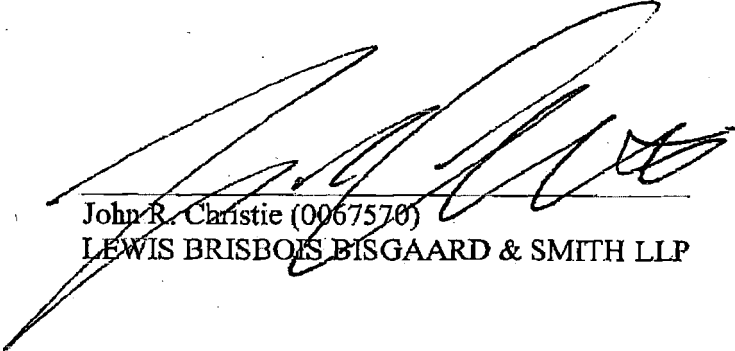
I hereby certify that on this 28th day of September, 2018, a true and correct copy of *Answer of Defendant LG Chem, Ltd. to Plaintiffs' Complaint Instanter* has been be sent to all of the following parties via regular U.S. mail and electronic mail to the following:

Joseph F. Albrechta, Esq. *Attorney for Plaintiffs*
John A. Coble, Esq.
Lisa M. Rothenbuhler, Esq.
ALBRECHTA & COBLE
4334 W. Central Avenue, Suite 226
Toledo, OH 43615-1681
kwitte@lawyer-ac.com

S. Scott Schwab, Esq.
316 North Michigan Street, Suite 600
Toledo, OH 43604
Ssschwablaw@gmail.com

Ibrahim Mousa, individually and dba *Co-Defendant*
Tobacco Haven and Vape Super Center,
821 West Alexis Road
Toledo, OH 43612

Michael S. Wegrzyn, individually and dba *Co-Defendant*
Vapors Electronic Smoke Shop, LLC, An
Ohio Limited Liability Company and dba
Vape Super Center
3308 Navarre Avenue, Suite E
Oregon, OH 43616


John R. Christie (0067570)
LEWIS BRISBOIS BISGAARD & SMITH LLP



John R. Christie
1375 E. 9th Street, Suite 2250
Cleveland, Ohio 44114
John.Christie@lewisbrisbois.com
Direct: 216.298.1259

September 28, 2018

File No. 29133.355

		Phone Number	Fax Number
To:	Lucas County Clerk of Courts		1-419-213-4291

From: John R. Christie, Esq.
Pages: 8 (including cover page)
Re: *Jeremy M. Darrow, et al. v. LG Chem, Ltd., et al.*
Case No. G-4801-CI-0201801056-000

Message: Please file with the Court. Thank you.

PLEASE CALL 216.344.9422, EXT. 8814 IMMEDIATELY IF THERE ARE ANY PROBLEMS WITH THIS TRANSMISSION.

The information contained in this facsimile message is intended only for the personal and confidential use of the designated recipients named above. This message may be an attorney-client communication, and as such, is privileged and confidential. If the reader of this message is not the intended recipient or an agent responsible for delivering it to the intended recipient, you are hereby notified that you have received this document in error, and that any review, dissemination, distribution, or copying of this message is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us by mail. Thank you.

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LOUISIANA • MARYLAND • MASSACHUSETTS • MISSOURI • NEVADA • NEW JERSEY • NEW MEXICO • NEW YORK
NORTH CAROLINA • OHIO • OREGON • PENNSYLVANIA • RHODE ISLAND • TEXAS • UTAH • VERMONT • VIRGINIA
WASHINGTON • WEST VIRGINIA

4840-4950-3349.1

IN THE COURT OF COMMON PLEAS
CUYAHOGA COUNTY, OHIO

NADER M. HARB,

Plaintiff,

v.

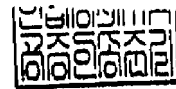
LG CHEM, LTD., et al.

Defendants.

CASE NO. CV-19-917268

JUDGE EMILY HAGAN

**AFFIDAVIT OF JOON YOUNG SHIN
IN SUPPORT OF SPECIALLY-
APPEARING DEFENDANT LG CHEM
LTD.'S MOTION TO DISMISS FOR
LACK OF PERSONAL JURISDICTION**



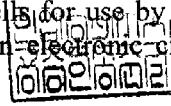
AFFIDAVIT OF JOON YOUNG SHIN

Before me the undersigned notary, on this day personally appeared Joon Young Shin, the affiant, whose identity is known to me. After I administered an oath, affiant testified as follows:

1. I am Team Leader of the Customer Service Team and authorized representative for Defendant LG Chem Ltd. ("LGC"). I have personal knowledge of the facts described in this affidavit and have been authorized by LGC to make this affidavit. If called upon as a witness, I could and would testify competently under oath as to all such facts based upon my personal knowledge and the business records of LGC.
2. This affidavit is submitted in support of Specially-Appearing Defendant LGC's Motion to Dismiss for Lack of Personal Jurisdiction in the above-captioned matter.
3. LGC is a South Korean company with its headquarters and principal place of business in Seoul, South Korea.
4. LGC has never had an office in Ohio.
5. LGC has never been registered to do business in Ohio or had a registered agent for service of process in Ohio.
6. LGC has never owned or leased any real property in Ohio.
7. LGC does not have any employees that reside or work in Ohio.
8. LGC has never had a telephone number, telefax number, post office box, mailing address, or bank account in Ohio.
9. LGC has never distributed or sold any LG HG2 18650 lithium-ion cells or any other 18650 lithium-ion cells in Ohio.

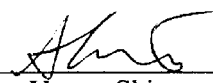


10. LGC manufactures lithium-ion cells for use in specific applications by sophisticated companies.
11. LGC does not design or manufacture lithium-ion cells for sale to individual consumers as standalone batteries. LGC does not distribute, advertise, or sell 18650 cells directly to consumers, and has never authorized any manufacturer, wholesaler, distributor, retailer, or re-seller to distribute, advertise, or sell LGC's lithium-ion cells directly to consumers as standalone batteries.
12. LGC does not design, manufacture, distribute, advertise, or sell 18650 lithium-ion cells, including HG2 cells, for use by individual consumers as standalone, replaceable, rechargeable batteries in electronic cigarette or vaping devices.
13. LGC has never conducted any business with Cleveland Vape Distribution, LLC and does not direct or control the actions of Cleveland Vape Distribution, LLC.
14. LGC has never authorized Cleveland Vape Distribution, LLC to sell or distribute LG-brand lithium-ion cells for any purpose, and did not authorize Cleveland Vape Distribution, LLC to sell or distribute LG-brand lithium-ion cells for use by individual consumers as standalone, replaceable, rechargeable batteries in electronic cigarette or vaping devices.
15. LGC has never authorized any distributor, retailer, or re-seller to sell or distribute any lithium-ion cells for use by individual consumers as standalone, replaceable, rechargeable batteries in electronic cigarette or vaping devices.



OATH

I, Joon Young Shin, swear or affirm that I have read this document and, to the best of my knowledge and belief, the facts and information stated in this document are true, accurate and complete. I understand that if I do not tell the truth, I may be subjected to penalties for perjury.



 Joon Young Shin

Sworn before me and signed in my presence this 14th day of September, 2019.

SEOUL JOONGANG
NOTARY PUBLIC OFFICE

 Notary Public *J. K. Song*
 My Commission Expires: *2020.4.16*

등부 2019 년 제 2113호

Registered No. 2019-2113

인 증

NOTARIAL CERTIFICATE

JOON YOUNG SHIN -----

위 선서진술서-----

에 기재된 신준영-----

은 본 공증인의 면전에서 위 사서증서에
자기가 서명 - 한 것임을 자인하였다.

personally appeared before me and
admitted his(her) subscription to the
attached AFFIDAVIT OF JOON YOUNG
SHIN.-----

2019년 09월 17일
이 사무소에서 위 인증한다.

This is hereby attested on this
17th day of Sep. 2019 at this office.

서울중앙 공증인 합동사무소

NOTARY PUBLIC OFFICE
SEOUL-JOONGANG

서울남부지방검찰청 소 속

Seoul Southern
District Prosecutor's Office

서울 영등포구 여의나루로 67
(여의도동, 신송빌딩) 1401호

floor 14 Sinsong Bldg
67, yeouinaru-ro, yeongdeungpo-gu, Seoul, Korea

송준길



공증인

송준길

Song Jun kil

Signature of the Notary Public

Song Jun kil

본 사무소는 인가번호 제158호에 의거하여
2014년 01월 20일 법무부 장관으로부터
공증인 업무를 행할 것을 인가 받았다.

This office has been authorized by the
Minister of Justice, the Republic of
Korea, to act as Notary Public Since
20, Jan. 2014 Under Law No.158.

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
BROWNSVILLE DIVISION

JUAN MANUEL FLORES	'	
	'	
VS.	'	C.A. No.: 1:16-cv-297
	'	
LG CHEM, LTD. AND LG	'	JURY DEMANDED
CHEM AMERICA, INC.	'	

ORAL AND VIDEOTAPED DEPOSITION OF JOON YOUNG SHIN
NOVEMBER 29, 2017

ORAL AND VIDEOTAPED DEPOSITION OF JOON YOUNG SHIN,
produced as a witness at the instance of the Plaintiff
and duly sworn, was taken in the above styled and
numbered cause on Wednesday, November 29, 2017, from
3:29 p.m. to 7:38 p.m., before LOREN GONZALES, CSR in
and for the State of Texas, reported by computerized
stenotype machine, at the offices of Lewis, Brisbois,
Bisgaard & Smith, Welayan Tower, Suite 1400, 24 Greenway
Plaza, Houston, Texas, pursuant to the Federal Rules of
Civil Procedure and the provisions stated on the record
herein.

A P P E A R A N C E S

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FOR THE PLAINTIFF:
Mr. Michael Cowen
COWEN | MASK | BLANCHARD
6243 IH-10 West
Suite 801
San Antonio, Texas 78201
(210) 941-1301
Michael@cmbtrial.com

FOR THE DEFENDANTS:
Mr. Sean Higgins
LEWIS, BRISBOIS, BISGAARD & SMITH
Welayan Tower, Suite 1400
24 East Greenway Plaza
Houston, Texas 77046
(713) 659-6767
Sean.higgins@lewisbrisbois.com

THE VIDEOGRAPHER:
Mr. John Castro

THE INTERPRETER:
Mr. Teak-Sung Song

THE CHECK INTERPRETER:
Mr. Kyoo (John) Y. Song PhD.

1 THE VIDEOGRAPHER: Today's date is November
2 29th, 2017 and the time is, approximately, 3:29 p.m. We
3 are on the record.

4 JOON YOUNG SHIN,
5 having been duly sworn, through interpreter, testified
6 as follows:

7 EXAMINATION

8 BY MR. COWEN:

9 Q. Good morning.

10 A. Good morning.

11 Q. What is your name?

12 A. My name is Shin, Joon Young. Mr. Shin, last
13 Shin, S-H-I-N. First name Joon, J-O-O-N-Y-O-U-N-G.

14 Q. And, Mr. Shin, are you here to testify as the
15 representative of LQ Chem Limited?

16 A. Yes, I am.

17 Q. Have you testified on behalf of LG Chem Limited
18 before?

19 A. No, I have not.

20 Q. Have you given a deposition before?

21 A. No.

22 Q. Who is your employer?

23 A. LG Chemicals.

24 THE INTERPRETER: Sorry, LG Chem.

25 Correction by the interpreter, LG Chem.

1 Q. (BY MR. COWEN) And what is your job title?

2 A. On the Customer Service Team, Team Leader.

3 Q. What are your job duties as the Customer Service
4 Team, Team Leader?

5 A. Responding to customers on quality issues outside
6 the company.

7 Q. How many people work in the Customer Service
8 Team?

9 A. About 15 in Korea, 15.

10 Q. Is there anyone in the United States who works
11 with the Customer Service Team?

12 A. No, there is not.

13 Q. What is your -- no -- let me ask a different
14 question. To whom do you report?

15 A. Mr. Yoon. Last name "Yoon." First name "Suk
16 Won."

17 Q. And what is Mr. Yoon's position?

18 A. We call him "person in charge."

19 Q. In charge of what?

20 A. In charge of internal -- company internal,
21 company external issues regarding small cells.

22 Q. What is your educational background?

23 A. I have a bachelors degree.

24 Q. In what topic?

25 A. ISE.

1 Q. And what is ISE?

2 A. Industry Systems Engineering.

3 Q. And where did you get your bachelors degree?

4 A. I graduated from Ohio State University.

5 Q. So even though you have a degree from Ohio State
6 University, we are still using an interpreter for your
7 deposition; is that correct?

8 MR. HIGGINS: Objection. Form.

9 A. Yes, that is.

10 Q. (BY MR. COWEN) Were you able to take classes at
11 Ohio State University without an interpreter?

12 A. Yes. That's what I did.

13 Q. So why do you need an interpreter today?

14 MR. HIGGINS: Objection. Form.

15 A. My mother tongue is Korean, and I believe in this
16 right to use the mother tongue in important matters.

17 Q. (BY MR. COWEN) Do you have any other college
18 degree besides the one you have from Ohio State
19 University?

20 A. No.

21 Q. Did you have any involvement in the design of the
22 LG HG2 battery?

23 A. I was not involved in designing the HG2 battery.

24 Q. Have you been involved in the design of any
25 battery?

1 Q. Tell me about the E-cigarette issues that you
2 received.

3 MR. HIGGINS: Objection. Form.

4 A. Is there anything in particular you would like to
5 know?

6 Q. (BY MR. COWEN) Everything you remember. You
7 said that there was some E-cigarette issues that you
8 received that caused LG to change the design of the
9 aluminum tab. What were those issues that were
10 received?

11 A. At the time any E-cigarette user had a
12 lithium-ion cell, HG2 cell, in a bag and together with
13 the cell had keys, key chains, and whatnot in the bag as
14 well and together with other conductive materials and
15 that caused the fire. Such issue happened.

16 Q. Where did that happen, the E-cig user that had a
17 fire?

18 A. In the U.S. Happened in the U.S.

19 Q. Do you know what year that happened?

20 A. I believe it was towards the end of 2015 or early
21 2016.

22 Q. Was there a lawsuit against LG involving that
23 incident?

24 A. My recollection is that there was not.

25 Q. Are there any documents within LG Chem that

1 Q. And what was the change in the thickness of the
2 tab? I see it was a .15 and it became a .1. .15 what?
3 And .1 what?

4 A. It was changed from .15 millimeters to .1
5 millimeter.

6 Q. Are you familiar with the warnings or
7 instructions that accompanied HG2 batteries?

8 A. I am aware.

9 Q. How did LG package the HG2 batteries?

10 A. When we send them out, a hundred single cells go
11 loaded onto a small box and two small boxes are packaged
12 into one big box and sent out. For your information,
13 about 10,000 or more cells go out on a single palette.

14 Q. And what kinds of customers buy these boxes of
15 batteries?

16 MR. HIGGINS: Objection. Form.

17 A. Companies that make power tools and packers that
18 make battery packs to be used on power tools and also
19 small agents.

20 Q. (BY MR. COWEN) What do you mean by "small
21 agents"?

22 A. Companies that sell to small packers and small
23 power tool companies and not big packers or big -- not
24 big sized packers or big size power tool companies. We
25 call those companies that sell to the small packers and

1 small power tool companies agents.

2 Q. Did LG intend for the HG2 battery to be used in
3 E-cigarettes?

4 A. No. We had no idea.

5 Q. Why did LG not want the HG2 batteries being used
6 in E-cigarettes?

7 MR. HIGGINS: Objection. Form.

8 A. I don't think not wanting is the proper
9 expression here. We never fathomed that it would be
10 used in an E-cigarette.

11 Q. (BY MR. COWEN) Why would you not want it used in
12 an E-cigarette?

13 MR. HIGGINS: Objection. Form.

14 A. It's not about wanting or not. We just never
15 knew that they were being used in E-cigarettes.

16 Q. (BY MR. COWEN) I'd like to look at Exhibit 8.
17 Does Exhibit 8 show the instructions and cautions that
18 accompanied the batteries as of September of 2016?

19 A. That is correct.

20 Q. Prior to September 2016, were there any kind of
21 instructions or cautions on the battery or on the
22 packaging?

23 A. No, there weren't.

24 Q. So it was just -- what was written on the outside
25 of the battery prior to September of 2016?

1 A. The production numbers -- production --
2 production data, about that.

3 Q. And starting on September 2016, the word
4 "caution" was added to the battery. Correct?

5 A. Yes.

6 Q. Who made the decision to add the word "caution"
7 to the battery in September of 2016?

8 A. I think I could say us and the legal team made
9 the decision.

10 Q. What are the names of the people that made the
11 decision?

12 A. There's actually quite a number of people that
13 knew about the application of the warning language.
14 There's quite a number of them and the president of the
15 company knows as well.

16 Q. But who's idea was it to add the caution
17 language?

18 A. It was the ideas of us and the legal team.

19 Q. What do you mean by -- what do you mean by "us"?

20 A. The CS Team.

21 Q. And who on the CS Team was involved in the
22 decision to add a caution label to the HG2 battery back
23 in September of 2016?

24 A. From the CS Team, myself, and the senior manager
25 named Ji-Hyun Lee. Last name Lee, L-E-E. First name

1 changes made to the labeling, specifically, because of
2 what happened with Juan Manuel Flores?

3 MR. HIGGINS: And I am going to caution the
4 witness not to disclose any communications that he may
5 have had with counsel.

6 A. In the early parts of 2016 these E-cigarette
7 issues kept on occurring and prior to that, we were not
8 aware of our batteries or even just 18650 batteries
9 being used for different purposes and we had been doing
10 business for ten years or so and we had no such issues
11 and our customers were aware of this and then come early
12 2016, these issues started to occur and that's when we
13 started to take action and make a decision to apply this
14 language, warning language, for protection of customers
15 with -- with the -- considering the possibilities of
16 these incidences happening.

17 Q. (BY MR. COWEN) When did LG Chem make the
18 decision to add the caution label to the HG2 battery,
19 the label that was added in September '16, when was that
20 decision made to add it?

21 A. My understanding is that the decision was made in
22 August and we turned around and started applying them
23 immediately afterwards from September 1st.

24 Q. When did LG Chem first become aware of the
25 incident in which Juan Manuel Flores was burned?

1 Q. (BY MR. COWEN) When did LG first become aware
2 that there was a possibility of a lithium-ion battery
3 catching fire if someone was carrying the battery in
4 their pocket?

5 MR. HIGGINS: Objection. Form.

6 A. We first became aware in early 2016.

7 Q. (BY MR. COWEN) And you first became aware when
8 you got a claim letter?

9 A. That's correct.

10 Q. When was LG Chem first sued over an allegation
11 that a lithium-ion battery caught fire and burned
12 somebody?

13 MR. HIGGINS: Objection. Form.

14 A. I do not recollect the exact date, but I think it
15 will be early 2016.

16 Q. (BY MR. COWEN) Has LG Chem ever had any customer
17 complaints other than lawsuits or claim letters
18 regarding an allegation that a lithium-ion battery
19 caught fire?

20 A. Yes.

21 Q. When did LG Chem receive the first such
22 complaint?

23 A. Early 2016.

24 Q. How many complaints has LG Chem received outside
25 the legal process from customers complaining that -- let

1 me rephrase that -- how many complaints has LG Chem
2 received, other than lawsuits or demand letters from
3 lawyers, claiming that LG batteries caught fire?

4 A. Most cases -- most cases come through the legal
5 team and I do not believe there were any cases where I
6 was directly -- I received such directly from the
7 general consumer.

8 Q. Is there any kind of address or telephone number
9 in the United States that consumers would direct
10 complaints to if they thought an LG battery caught fire?

11 A. Yes. It's on the website.

12 Q. Does LG Chem keep records of any kind of customer
13 complaints?

14 A. Customer complaint records, you say?

15 Q. Does LG Chem either keep a data base, a written
16 record, an electronic record, something documenting when
17 customers complain about batteries?

18 A. We write it down, yes.

19 Q. What is -- go ahead.

20 A. And we do have records of sending it over to the
21 -- to our insurance company with the advice of the legal
22 team.

23 Q. But outside of the legal team, does LG Chem keep
24 records of any kind of customer complaints?

25 A. Yes. My team, myself, and the person that works

1 with me create a spreadsheet for that.

2 Q. And where is that spreadsheet maintained?

3 A. In the PC.

4 Q. In your computer at work?

5 A. Mostly in the PC in the computer of the person in
6 charge and I open it up.

7 Q. Does that spreadsheet contain -- let me rephrase.
8 Does that spreadsheet contain any claims that
9 lithium-ion batteries caught fire?

10 A. When E-cigarette cases are received, we relay
11 that to the legal team and what we -- and what is
12 conveyed to us is summarized and put on that spreadsheet
13 and, with that, can we take a quick break, please.

14 Q. Yes.

15 THE VIDEOGRAPHER: Off the record at 6:53
16 p.m.

17 (Break taken from 6:53 p.m. to 7:05 p.m.)

18 THE VIDEOGRAPHER: We are now back on the
19 record. The time now is 7:05 p.m.

20 Q. (BY MR. COWEN) Could you get Exhibit 9.

21 A. Yes.

22 Q. Exhibit 9 is four pages. Could you identify what
23 those pages are?

24 A. These are affidavits that we send to the agents
25 that deal with us.

1 Q. When were these documents created?

2 A. I remember it to be around June 2016.

3 Q. And were they created on a computer?

4 A. Well, yeah, the legal team created this so I
5 guess.

6 Q. Do you know if the original digital file still
7 exists?

8 A. I can ask the legal team.

9 Q. You don't know?

10 A. Correct. I was knowledgeable with this -- this
11 work.

12 Q. What was the reason that these documents were
13 sent out?

14 A. The idea was that that might possibly be a
15 possibility of our agents that deal with small packers
16 and selling our products for E-cigarette purposes. So
17 we thought it would be a good idea to raise -- re-raise
18 this warning.

19 Q. Does LB Chem maintain a list of the persons or
20 companies to which it sent the documents that are in
21 Exhibit 9?

22 A. I'll have to check.

23 Q. I want you to go to the third page of the
24 exhibit. The one Bates Nod. 60.

25 A. Yes.

1 Q. And it's -- looks like a letter with a subject
2 line of "Notice on Prohibition of Unauthorized Sales of
3 Battery Cells."

4 A. Yes.

5 Q. To whom was that letter sent?

6 A. The agents and companies that we supply our cells
7 to.

8 Q. How many agents and companies in the United
9 States does LG provide its cells to?

10 A. I, personally, don't know the details of what
11 businesses in the U.S. the -- what agents might have.

12 Q. What was the reason for sending this letter to
13 the people buying these batteries from LG?

14 THE INTERPRETER: Counsel, it didn't come
15 across. Could you repeat that, please?

16 MR. COWEN: Sure.

17 Q. (BY MR. COWEN) What was the reason for sending
18 out the letter that's Page 3 of Exhibit 9?

19 A. This was to emphasize that just in case our
20 customers that purchase our cells might consider
21 businesses other than intended usage in businesses other
22 than intended with our sales, don't do it. It's to
23 emphasize that.

24 Q. And I'd like to turn to the second paragraph of
25 that letter.

1 A. Yes.

2 Q. The first sentence is that "LGC has learned that
3 consumers are able to and have been purchasing LGC's
4 products directly from E-commerce websites and retail
5 stores often for use in personal E-cigarette devices."
6 Did I read that correctly?

7 A. Yes.

8 Q. And does LGC stand for LG Chem Limited?

9 A. Yes, that's the abbreviation.

10 Q. And how did LGC learn that consumers were
11 purchasing their batteries for use in personal
12 E-cigarette devices?

13 THE INTERPRETER: Counsel, could you repeat
14 that question again, please.

15 MR. COWEN: Sure.

16 THE INTERPRETER: It just didn't come
17 across.

18 Q. (BY MR. COWEN) How did LG Chem learn that
19 consumers were purchasing its batteries from retail
20 stores to use in personal E-cigarette devices?

21 THE INTERPRETER: Thank you.

22 A. In the -- if you have a look at the claim letters
23 that were sent to us, the company, by general consumers,
24 they state that the purchase was made over the internet
25 or at vape shops. That's how we got to know. In other

1 words, LG Chem's customers are packers and agents and we
2 were curious as to how individual and general consumers
3 got their hands on and purchased the cells and in the
4 letters that -- in those letters -- what those letters
5 contained that piece of information.

6 Q. (BY MR. COWEN) Did LG Chem ever find out how the
7 batteries ended up in retail stores being sold to people
8 for E-cigarette use?

9 A. Initially, when we found out -- when we became
10 aware of the E-cigarette issues and after becoming
11 aware, a member of my team was sent to the U.S. to
12 investigate and that person visited vapor shops to
13 conduct use and find out how they purchased our products
14 and through what route the products ended up there but
15 nobody would tell us.

16 Q. Who was that person on your team that came to the
17 U.S. to do the investigation?

18 A. Ms. Lee, Senior Manager. Last name Lee, L-E-E.
19 When Ms. Lee visited the vapor shops and tried to
20 determine how the batteries were being purchased, it was
21 reported that when the batteries were being purchased,
22 there was some cases -- well, they were in white paper
23 boxes that sometimes had warning labels and sometimes
24 did not have warning labels on the paper cases and when
25 cells were being sold to the general consumers, in some

1 cases they were being sold together with plastic cases
2 and sometimes not with the plastic cases.

3 Q. Were any documents created regarding Ms. Lee's
4 investigation?

5 A. Just two things to what I've just said about
6 that. There was a letter, if one would recall that,
7 that was created.

8 Q. And does will LG Chem still have those documents?

9 A. I'll have to look.

10 Q. Going back to the third page of Exhibit 9. The
11 last sentence of the second paragraph reads, "LGC
12 strictly prohibits the sale of individual cells without
13 protection circuits as such unprotected cells may create
14 a fire hazard leading to serious bodily injury when
15 mishandled."

16 Did I read that correctly?

17 A. Yes, that's correct.

18 Q. So the reason that LG Chem does not want these
19 batteries sold for use in E-cigarettes is because they
20 may create a fire hazard leading to serious bodily
21 injury?

22 MR. HIGGINS: Objection. Form.

23 A. We're not just talking about E-cigarettes here.
24 That's not the only thing that is the issue. Any and
25 every application of lithium-ion cells, it must have a

EXHIBIT 24

1 protective circuit. I don't think that it's only the --
2 it is exclusively the people that use E-cigarettes that
3 can carry around cells in their pockets and that they
4 are the only people that could do it. For all the other
5 applications that use cells and that in which the cells
6 can be put in and out and taken out of the device that
7 such a usage and such cells and such applications and
8 there is a risk of danger because our products are only
9 to be used together with a protective circuit as an
10 embedded type.

11 Q. (BY MR. COWEN) Are HG2 batteries manufactured by
12 LG Chem?

13 A. Yes. My company uses HG2 batteries.

14 Q. And are they manufactured in Korea?

15 A. Yes, they are manufactured in Korea.

16 Q. What is LG Chem's position as to whether the vape
17 store that sold the battery to Mr. Flores was negligent
18 for selling him an HG2 battery for use in an
19 E-cigarette?

20 MR. HIGGINS: Objection. Form.

21 A. I have no knowledge on how the vape shop had sold
22 it to the person that received the damage and I did not
23 receive any explanation on what was explained and what
24 was not but my thought is, on the E-cigarette issue, is
25 that what's wrong is that the lithium-ion batteries are