

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

|                        |   |                            |
|------------------------|---|----------------------------|
| DUESENFELD GMBH,       | ) |                            |
|                        | ) |                            |
| Plaintiff,             | ) |                            |
|                        | ) | C.A. No. 23-1194-JFM       |
| v.                     | ) |                            |
|                        | ) | <b>JURY TRIAL DEMANDED</b> |
| ASCEND ELEMENTS, INC., | ) |                            |
|                        | ) |                            |
| Defendant.             | ) |                            |

**ASCEND ELEMENTS, INC.’S INITIAL INVALIDITY CONTENTIONS**

Pursuant to the Scheduling Order (D.I. 22), Defendant Ascend Elements, Inc. (“Ascend”) hereby respectfully serves its Initial Invalidity Contentions for United States Patent No. 11,050,097 (“’097 Patent” or “Asserted Patent”) and accompanying document production on Plaintiff Duesenfeld GmbH (“Plaintiff”). Plaintiff asserts that Ascend infringes claims 1, 2, 3, 7, 8, 10, 12, 13, and 19 (collectively, “Asserted Claims”) under 35 U.S.C. § 271(a). (See Plaintiff Duesenfeld GmbH’s Initial Infringement Contentions, served April 24, 2024 (“Infringement Contentions”) at 2, & Ex. A at 5.) Ascend contends that the Asserted Claims are invalid for anticipation and/or obviousness based on the prior art cited in these Initial Invalidity Contentions; for lack of written description and/or enablement under 35 U.S.C. § 112(a); for indefiniteness under 35 U.S.C. § 112(b); and for lack of patentable subject matter under 35 U.S.C. § 101. Ascend expressly denies that any accused product, or any of Ascend’s other products or services, infringes any of the Asserted Claims, and nothing in these Initial Invalidity Contentions should be interpreted as contradicting that express denial of infringement.

Ascend reserves the right to amend, supplement, and/or otherwise modify these Initial Invalidity Contentions. Ascend’s Initial Invalidity Contentions are based on information reasonably known and available to Ascend at this time. Ascend has not yet completed its

investigation of the facts and documents relating to this action and has not completed its preparation for trial. Because Ascend's investigation, prior art search, analysis, discovery, and trial preparation are still ongoing, Ascend may identify additional prior art or arguments that will add meaning to already known prior art or arguments, lead to additions or changes to these Initial Invalidity Contentions, and/or provide additional prior art and arguments. Ascend further reserves the right to rely on any facts, documents, or other evidence that are (i) subsequently discovered; (ii) subsequently determined to be relevant for any purpose; or (iii) subsequently determined to have been omitted from these Initial Invalidity Contentions or from a production of documents or things in discovery including third-party discovery. Ascend further reserves the right to rely on reports and/or testimony from experts, as well as from fact witnesses such as prior artists. Documents relating to expert testimony, if any, will be produced when expert discovery is exchanged in accordance with the Scheduling Order (D.I. 22).

Plaintiff has not yet identified any way in which it disputes that the Asserted Claims are invalid based on the prior art identified by Ascend—including any way in which Plaintiff disputes that these prior art references disclose each and every element of the Asserted Claims either by anticipation or through obviousness. To the extent that Plaintiff disputes, for example, that a claim element is disclosed by a prior art reference, Ascend reserves the right to identify other aspects or disclosures of the prior art reference and any other prior art reference that would have made obvious the addition of the allegedly missing limitation(s) to the disclosed reference.

Plaintiff's Infringement Contentions do not disclose any theories of infringement under the doctrine of equivalents (DOE). To the extent Plaintiff is later permitted to assert any previously undisclosed DOE theories, Ascend reserves the right to provide and rely on supplemental invalidity contentions to address those DOE theories.

The Court has not yet construed any terms or phrases of the Asserted Claims. The parties will exchange proposed claim terms for construction and proposed constructions for such terms after Ascend serves these Initial Invalidity Contentions. Ascend therefore has based its Initial Invalidity Contentions, at least in part, on the claim constructions or positions that Plaintiff appears to have adopted (explicitly or implicitly) in its First Amended Complaint and in its Infringement Contentions, which include deficiencies and ambiguities that necessarily limit Ascend's ability to understand how Plaintiff is interpreting the Asserted Claims. Nothing in these Initial Invalidity Contentions should be construed as an admission that Ascend agrees with any of Plaintiff's explicit or implicit claim constructions. To be clear, Ascend expressly reserves the right to challenge the sufficiency of Plaintiff's Infringement Contentions and the construction of any claims or claim terms, phrases, or clauses that Plaintiff purports to have explicitly or implicitly construed, that Plaintiff identifies, or that Plaintiff may construe in the future. Prior art not included in this disclosure, whether or not now known to Ascend, may become relevant depending on the claim constructions ultimately adopted by the Court. To the extent that Plaintiff proposes new constructions, purports to clarify its existing constructions, and/or otherwise identifies any constructions in its forthcoming proposed claim terms for construction, preliminary constructions, or throughout the claim construction process, Ascend reserves its right to amend, supplement, and/or otherwise modify these Initial Invalidity Contentions.

Further, Plaintiff has not yet identified all of its factual or legal bases that demonstrate entitlement to the effective filing dates identified in Duesenfeld's Objections and Responses to Ascend's First Set of Interrogatories, served February 12, 2024. Ascend assumes for the purposes of these Invalidity Contentions that the Asserted Patent is entitled to an April 28, 2015, priority date, but reserves the right to challenge the priority for any of the Asserted Claims.

Ascend further reserves its right to amend, supplement, and/or otherwise modify these Initial Invalidity Contentions following Plaintiff's reduction(s) of the number of asserted claims pursuant to any agreement reached by the parties or Court order.

#### **I. IDENTIFICATION OF PRIOR ART**

Ascend lists below the evidence of the knowledge of a person of ordinary skill in the art ("POSITA") as well as prior art now known to Ascend that anticipates and/or renders obvious the Asserted Claims.

For prior art under 35 U.S.C. § 102(a)(1), the below identification and the references themselves, based on Ascend's current understanding and knowledge, disclose that the claimed invention was patented, described in a printed publication, in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention. For prior art under 35 U.S.C. § 102(a)(2), the below identification and references themselves, based on Ascend's current understanding and knowledge, disclose that the claimed invention was described in an issued patent or in a published application that names another inventor and was effectively filed before the effective filing date of the claimed invention.

For prior art under 35 U.S.C. § 103, the below identification and the references themselves, based on Ascend's current understanding and knowledge, establish that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a POSITA to which the claimed invention pertains.

##### **A. Exemplary Knowledge of a POSITA**

A POSITA in the field of the alleged invention would have had at least a master's degree in chemical engineering, mechanical engineering, materials science/engineering, or a related field, and three to five years of experience in design and implementation of battery recycling processes. A relevant advanced degree may substitute for some work experience. Similarly, relevant work

experience may substitute for formal education. A POSITA would therefore have experience in electrochemistry used in batteries (including, but not necessarily limited to, lithium-ion batteries), an working understanding of the physical properties and characteristics of the metals, solvents, and other compounds used in such batteries, as well as an understanding of the costs and risks associated with waste streams stemming from the construction and recycling of these batteries. A POSITA would also have experience in the engineering, design and/or implementation of machinery and physical plants used to process or recycle used batteries. In addition to the admitted prior art from the Asserted Patents and their file histories, the following exemplary documents provide evidence of the state of the art and knowledge of a POSITA at the time of the alleged invention:

#### 1. Patents

| Patent No.   | Publication Date | Bates#           |
|--------------|------------------|------------------|
| CN100344015C | 10/17/07         | ASCEND_000000350 |
| CN100428561C | 10/22/08         | ASCEND_000000362 |
| CN100559649C | 11/11/09         | ASCEND_000000371 |
| CN101030663A | 9/5/07           | ASCEND_000002264 |
| CN101030663A | 9/5/07           | ASCEND_000002254 |
| CN101170204A | 4/30/08          | ASCEND_000000381 |
| CN101290974B | 8/25/10          | ASCEND_000000388 |
| CN101673829A | 3/17/10          | ASCEND_000000398 |
| CN101969148A | 2/9/11           | ASCEND_000000409 |
| CN102208705B | 6/19/13          | ASCEND_000000417 |
| CN102277495B | 5/22/13          | ASCEND_000000422 |
| CN102496752B | 8/28/13          | ASCEND_000000430 |
| CN102637921B | 12/10/14         | ASCEND_000000436 |
| CN102735023B | 12/2/15          | ASCEND_000000443 |
| CN103184340A | 10/29/14         | ASCEND_000000448 |
| CN103214523B | 1/6/16           |                  |
| CN103289112A | 9/11/13          | ASCEND_000000455 |
| CN103346365B | 6/24/15          | ASCEND_000000459 |
| CN103730704B | 3/16/16          | ASCEND_000000469 |
| CN103931041B | 6/15/16          | ASCEND_000000478 |
| CN104143667A | 11/12/14         | ASCEND_000000491 |
| CN104157927B | 10/5/16          | ASCEND_000000498 |
| CN104183888A | 12/3/14          | ASCEND_000002333 |
| CN104600227B | 6/9/17           | ASCEND_000000523 |

|                  |          |                  |
|------------------|----------|------------------|
| CN104600392A     | 5/6/15   | ASCEND_000000530 |
| CN104659437B     | 1/11/17  | ASCEND_000000537 |
| CN104852102B     | 3/8/17   | ASCEND_000000545 |
| CN105006589B     | 8/25/17  | ASCEND_000000552 |
| CN105098280B     | 7/18/17  | ASCEND_000000563 |
| CN105098281B     | 9/12/17  | ASCEND_000000568 |
| CN105098284A     | 11/25/15 | ASCEND_000000576 |
| CN105161719B     | 2/23/18  | ASCEND_000000592 |
| CN105244561A     | 9/12/17  | ASCEND_000000599 |
| CN105355999A     | 2/24/16  | ASCEND_000000608 |
| CN105356000A     | 2/24/16  | ASCEND_000000613 |
| CN105374988B     | 2/23/18  | ASCEND_000000624 |
| CN105375079A     | 3/2/16   | ASCEND_000000655 |
| CN105390765A     | 3/9/16   | ASCEND_000000663 |
| CN105594056B     | 7/6/18   | ASCEND_000000669 |
| CN105703002A     | 6/22/16  | ASCEND_000000678 |
| CN106532079B     | 2/1/19   | ASCEND_000000683 |
| CN1204650C       | 6/1/05   | ASCEND_000000688 |
| CN1252856C       | 4/19/06  | ASCEND_000000698 |
| CN1260850C       | 6/21/06  | ASCEND_000000708 |
| CN1357938A       | 2/2/05   | ASCEND_000002350 |
| CN201383517Y     | 1/13/10  | ASCEND_000000715 |
| CN204793106U     | 11/18/15 | ASCEND_000000721 |
| DE102012024876A1 | 6/26/14  | ASCEND_000002434 |
| EP3172793B1      | 6/20/18  | ASCEND_000000733 |
| GB2522395A       | 7/29/15  | ASCEND_000000746 |
| JP2001131647A    | 1/13/10  | ASCEND_000002357 |
| JP2002198096A    | 7/12/02  | ASCEND_000000815 |
| JP2003100337A    | 4/4/03   | ASCEND_000000821 |
| JP2008177067A    | 7/31/08  | ASCEND_000000826 |
| JP2013109841A    | 6/6/13   | ASCEND_000000838 |
| JP2917304B2      | 7/12/99  | ASCEND_000000848 |
| JP4601917B2      | 12/22/10 | ASCEND_000000854 |
| JP4950164B2      | 6/13/12  | ASCEND_000000867 |
| JP5151072B2      | 2/27/13  | ASCEND_000000882 |
| JP5510166B2      | 6/4/14   |                  |
| JP56162473A      | 12/14/81 | ASCEND_000000932 |
| JP5729153B2      | 6/3/15   |                  |
| JP60236466A      | 11/25/85 | ASCEND_000000934 |
| JPH10255861A     | 9/25/98  | ASCEND_000000917 |
| KR100942410B1    | 2/17/10  | ASCEND_000000937 |
| KR101516376B1    | 5/11/15  | ASCEND_000000949 |
| TW200826343A     | 6/16/08  | ASCEND_000002299 |
| US10355296       | 7/16/19  | ASCEND_000000991 |
| US10396408       | 8/27/19  | ASCEND_000001004 |
| US10497993       | 12/3/19  | ASCEND_000001016 |
| US10511020       | 12/17/19 | ASCEND_000001030 |
| US10581057       | 3/3/20   | ASCEND_000001049 |
| US10707544       | 7/7/20   | ASCEND_000001066 |

|               |          |                  |
|---------------|----------|------------------|
| US11028460    | 6/8/21   | ASCEND_000001074 |
| US11031641    | 6/8/21   | ASCEND_000001086 |
| US20110147679 | 6/23/11  | ASCEND_000000958 |
| US20160049701 | 2/18/16  | ASCEND_000000966 |
| US20170170532 | 6/15/17  | ASCEND_000000973 |
| US3671318     | 6/20/72  | ASCEND_000001095 |
| US3904436     | 9/9/75   | ASCEND_000001101 |
| US4001036     | 1/4/77   | ASCEND_000001106 |
| US4118219     | 10/3/78  | ASCEND_000001111 |
| US4308324     | 12/29/81 | ASCEND_000001121 |
| US5071444     | 12/10/91 | ASCEND_000001129 |
| US5120409     | 6/9/92   | ASCEND_000001139 |
| US5128600     | 7/7/92   | ASCEND_000001146 |
| US5135820     | 8/4/92   | ASCEND_000001151 |
| US5491037     | 2/13/96  | ASCEND_000001162 |
| US5571634     | 11/5/96  | ASCEND_000001178 |
| US5632863     | 5/27/97  | ASCEND_000001185 |
| US5698147     | 12/16/97 | ASCEND_000001191 |
| US5972531     | 10/26/99 | ASCEND_000001196 |
| US6329096     | 12/11/01 | ASCEND_000001219 |
| US6497976     | 12/24/02 | ASCEND_000001246 |
| US6511639     | 1/28/03  | ASCEND_000001254 |
| US6524737     | 2/25/03  | ASCEND_000001262 |
| US6676714     | 1/13/04  | ASCEND_000001308 |
| US6686086     | 2/3/04   | ASCEND_000001322 |
| US6936371     | 8/30/05  | ASCEND_000001333 |
| US7078122     | 7/18/06  | ASCEND_000001346 |
| US7192564     | 3/20/07  | ASCEND_000001354 |
| US7235326     | 6/26/07  | ASCEND_000001322 |
| US8357470     | 1/22/13  | ASCEND_000001369 |
| US8497030     | 7/30/13  | ASCEND_000001434 |
| US8616475     | 12/31/13 | ASCEND_000001444 |
| US8714361     | 5/6/14   | ASCEND_000001451 |
| US8807466     | 8/19/14  | ASCEND_000001460 |
| US8882007     | 11/11/14 | ASCEND_000001466 |
| US9147918     | 11/29/12 | ASCEND_000001473 |
| US9160043     | 10/13/15 | ASCEND_000001499 |
| US9359659     | 6/7/16   | ASCEND_000001512 |
| US9394585     | 7/19/16  | ASCEND_000001521 |
| US9450277     | 9/20/16  | ASCEND_000001555 |
| US9509025B2   | 11/29/16 | ASCEND_000001563 |
| US9620790     | 4/11/17  | ASCEND_000001578 |
| US9620828     | 4/11/17  | ASCEND_000001593 |
| US9780419     | 10/3/17  | ASCEND_000001601 |
| US9825341     | 11/21/17 | ASCEND_000001609 |
| US9843077     | 12/12/17 | ASCEND_000001615 |
| US9912022     | 3/6/18   | ASCEND_000001627 |
| US9958508     | 5/1/18   | ASCEND_000001635 |
| WO1998059385  | 12/30/98 | ASCEND_000001918 |

|              |          |                  |
|--------------|----------|------------------|
| WO2004062023 | 7/22/04  | ASCEND_000001949 |
| WO2008111709 | 9/18/08  | ASCEND_000001995 |
| WO2011079409 | 7/7/11   | ASCEND_000002036 |
| WO2014034409 | 3/6/14   | ASCEND_000002050 |
| WO2014097861 | 6/26/14  | ASCEND_000002091 |
| WO2014208597 | 12/31/14 | ASCEND_000002151 |
| WO2015046218 | 4/2/15   | ASCEND_000002169 |
| WO2015046232 | 4/2/15   | ASCEND_000002192 |
| WO2017041185 | 3/16/17  | ASCEND_000002217 |

## 2. Non-Patent Literature

| Document                                                                                                                  | Publication Date | Bates#           |
|---------------------------------------------------------------------------------------------------------------------------|------------------|------------------|
| “Recycling of Spent Lithium-Ion Battery: A Critical Review” by Xianlai Zeng                                               | 2014-04-16       | ASCEND_000002388 |
| “Processing of Li-based electric vehicle batteries for maximized recycling efficiency” by Bernd Friedrich                 | 2011-09-21       | ASCEND_000002370 |
| “One-step Pyrolysis Process for Recover Zinc and Mercury from Spent Zinc-manganese Batteries” by Zhao Shuqing             | 2010-06-07       | ASCEND_000002365 |
| “Development of a Highly Efficient Hydrometallurgical Recycling Process for Automotive Li-Ion Batteries” by Honggang Wang | 2015-01-04       | ASCEND_000002445 |

For example, as of the effective filing date of the '097 Patent, the background of the prior art included (and a POSITA would have known about) the material composition and electrochemistry used in batteries (including, but not limited to, lithium-ion batteries), the awareness of and concerns about hazards and risks associated with recycling such batteries, as well as techniques used in such recycling processes.

For example, lithium-ion battery designs were known in the 1990s using cathodes consisting of a lithium-containing transition metal oxide or phosphate, anodes made using graphite, a binder consisting of polyvinylidene fluoride (PVDF), and an electrolyte using lithium hexafluorophosphate (“LiPF<sub>6</sub>”), dissolved in a mixture of organic carbonate solvents. (*E.g.*, Lain US6447669 (BATES NO.); Tanii US6524737 (BATES NO.); Chern US5698147 (BATES NO.); Schmidt US6511639 (BATES NO.). Batteries using electrochemistry other than lithium-ion designs have been known for substantially longer. (*E.g.*, Moe US3671318 (BATES NO.); Berman US4001036 (BATES NO.); Elmore US4118219 (BATES NO.)).

Comminution of used batteries in recycling processes has been well-known in the art since at least the 1970s, (*e.g.*, Elmore US4118219 (BATES NO.)), and has been well-known in the context of recycling lithium-ion batteries since the 1990s. (*E.g.*, Lain US6447669 (BATES NO.); Tanii US6524737 (BATES NO.); Kawakami US6329096 (BATES NO.); Schmidt US6511639 (BATES NO.); Meador US 5632863 (BATES NO.)).

In another example, the use of heat under reduced pressure to evaporate electrolyte solvents has been known in the context of batteries since the 1970s. (*E.g.*, Moe US3671318 (BATES NO.); Martin 6686086 (BATES NO.)) This technique has also been well-known in the context of recycling lithium-ion batteries before the effective filing date of the '097 Patent. (*E.g.*, Tanii US6524737 (BATES NO.); Iida US9509025 (BATES NO.); Kawakami US6329096 (BATES NO.); Shin US 10396408 (BATES NO.); Hayashi US9843077 (BATES NO.)). It has also been known in the prior art that LiPF<sub>6</sub>, a commonly used electrolyte in lithium-ion batteries, undergoes hydrolysis in the presence of water to form hydrogen fluoride, a toxic substance. (*E.g.*, Hayashi US9843077 (BATES NO.); Lain US6447669 (BATES NO.); Tanii US6524737 (BATES NO.)). Further, it has been well-known in the prior art that organic carbonate solvents, such as ethyl

methyl carbonate and dimethyl carbonate, used in the electrolyte are also volatile and flammable. (E.g., Tanii US6524737 (BATES NO.); Hayashi US9843077 (BATES NO.)).

The use of suitable containers to transport recycled battery material was also well-known in the prior art, such as “super sacks” or other similar containers. (E.g., Dunagan US10707544 (BATES NO.); Petermann DE102012024876A1 (BATES NO.)).

All of this would have been known by a POSITA prior to the effective filing date of the '097 Patent.

## **B. Prior Art That Invalidates the Asserted Patents**

Ascend identifies the following prior art as anticipating the Asserted Claims of the Asserted Patents under 35 U.S.C. § 102 and/or rendering each and every Asserted Claim obvious under 35 U.S.C. § 103, combined with background knowledge of a POSITA at the time of the alleged invention of the Asserted Patents and/or each other as set forth in Exhibits A-1 to A-6:

### **1. Patents**

| <b>Patent No./Short Cite/Bates #</b> | <b>Title</b>                                                                                                                                                     | <b>Inventor(s)</b>                                                     | <b>Priority Date</b> | <b>Publication Date</b> |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------|-------------------------|
| US9780419<br>("Hanisch")             | Method for Reclaiming Active Material from a Galvanic cell, and an Active Material Separation Installation, Particularly an Active Metal Separation Installation | Christian Hanisch, Wolfgang Haselrieder, Arno Kwade                    | August 12, 2011      | February 21, 2013       |
| US5632863<br>("Meador")              | Battery Pyrolysis Process                                                                                                                                        | W.R. Meador                                                            | November 22, 1994    | May 27, 1997            |
| US10396408<br>("Shin")               | Waste Battery Treatment Apparatus Using Continuous Heat Treatment, and Method for                                                                                | Shun Myung Shin, Sung Ho Ju, Dong Ju Shin, Jei Pil Wang, Chang Hyun Oh | February 11, 2015    | August 18, 2016         |

|                         |                                                                                                    |                                                                                                                |                    |                    |
|-------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------|--------------------|
|                         | Recovering valuable metals From Lithium-based Battery Using Same                                   |                                                                                                                |                    |                    |
| US9843077 (“Hayashi”)   | Method for Processing Fluorine-Containing Electrolyte Solution                                     | Hiroshi Hayashi, Koichiro Hirata, Hidenori Tsurumaki, Hisashi Hoshina                                          | March 29, 2013     | October 2, 2014    |
| US9509025 (“Iida”)      | Recycling Method and Treatment Device for Battery Pack                                             | Shuji Iida, Keiji Shukuya, Mitsuo Shimotori                                                                    | March 23, 2011     | September 27, 2012 |
| US8807466 (“Bhandari”)  | Method and System for Reclamation of Battery Constituents                                          | Ashish Bhandari, James N. Ewles, Wayne Elliott                                                                 | June 6, 2011       | December 6, 2012   |
| US9,450,277 (“Dunagan”) | System for Recycling Volatile Battery Sources                                                      | Dennis J. Dunagan, Teague C. Ostrander                                                                         | Sept. 13, 2013     | March 19, 2015     |
| US6329096 (“Kawakami”)  | Process and Apparatus for Recovering Components of Sealed Type Battery                             | Soichiro Kawakami, Naoya Kobayashi, Masaya Asao                                                                | Mar 5, 1996        | July 9, 2001       |
| US10497993 (“Billy”)    | Method for Recycling the Electrolyte of a Li-Ion Battery and Method for Recycling Li-Ion Batteries | Emmanuel Billy, Richard Laucournet                                                                             | July 22, 2014      | January 28, 2016   |
| US6524737 (“Tanii”)     | Method for Crushing Cell                                                                           | Tadaaki Tanii, Satoshi Tsuzuki, Shiro Honmura, Takeo Kamimura, Kenji Sasaki, Masakazu Yabuki, Kiyonori Nishida | September 28, 1999 | April 6, 2000      |
| US8882007 (“Smith”)     | Process for Recovering and Regenerating Lithium Cathode Material from                              | W. Novis Smith, Scott Swoffer                                                                                  | November 21, 2013  | November 11, 2014  |

|                                |                                                                                                                                                                                                                 |                                                                                                  |                   |                    |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------|--------------------|
|                                | Lithium-Ion Batteries                                                                                                                                                                                           |                                                                                                  |                   |                    |
| US8714361 (“Ellis”)            | Process for the Separation of Materials from Recycled Electrochemical Cells and Batteries                                                                                                                       | Timothy W. Ellis                                                                                 | May 10, 2010      | November 10, 2011  |
| US6511639 (“Schmidt”)          | Process for Recycling Negative-Electrode Materials from Spent Lithium Batteries                                                                                                                                 | Michael Schmidt, Reinhard P. Hemmer, Margret Wohlfahrt-Mehrens, Giesela Arnold, Christian Vogler | May 28, 1999      | January 28, 2003   |
| US6686086 (“Martin”)           | Battery Reclamation System                                                                                                                                                                                      | Douglas Martin, Kristine Burgess, Todd Leonard                                                   | June 30, 2000     | February 3, 2004   |
| US4118219 (“Elmore”)           | Process for Recycling Junk Lead-Acid Batteries                                                                                                                                                                  | Marion Edward Elmore, James Kenneth Klang                                                        | July 1, 1977      | October 3, 1978    |
| US3671318 (“Moe”)              | Method for Producing a Water Activatable Battery                                                                                                                                                                | George Moe                                                                                       | June 12, 1969     | June 20, 1972      |
| US9147918B2 (“Ueda”)           | Effective Recovery of Lithium from Lithium Ion battery Waste                                                                                                                                                    | Masahiro Ueda                                                                                    | May 27, 2011      | December 6, 2012   |
| WO 2010/102377 A1 (“Stevens”)  | Battery Recycling                                                                                                                                                                                               | Wayne C Stevens                                                                                  | March 13, 2009    | September 16, 2010 |
| DE102012024876A1 (“Petermann”) | Apparatus for transferring transportable critical electrolytic cells into transportable state, has material discharge device with opening for gas-tight attachment of portable collection device for collecting | Matthias Petermann<br>Guido Sellin                                                               | December 19, 2012 | June 26, 2014      |

|  |               |  |  |  |
|--|---------------|--|--|--|
|  | chopped cells |  |  |  |
|--|---------------|--|--|--|

## 2. Non-Patent Literature

Ascend identifies the following non-patent publications.

| Title                                                       | Author                      | Publication Date | Bates# |
|-------------------------------------------------------------|-----------------------------|------------------|--------|
| LithoRec – Recycling von Lithium-Ion Batterien (“LithoRec”) | Arno Kwade, Gunnar Bärwaldt | June 20, 2012    |        |

## 3. Systems and Products

Ascend identifies the following systems and/or products, which shall be considered a single prior art reference, regardless of whether that instrumentality is described by multiple patents, publications, or other material (collectively, the “supporting documents”). In other words, each prior art “instrumentality” is one prior art “reference,” and Ascend has identified the supporting documents as exemplary materials that collectively describe each such prior art instrumentality. To the extent Ascend relies on these instrumentalities as systems and/or products, the individual supporting documents themselves shall not be considered separate prior art references for the purpose of limiting the total number of prior art references asserted.

Each supporting document independently may be prior art under 35 U.S.C. § 102 because it was published before the earliest possible asserted priority date of April 28, 2015, for the Asserted Claims. The below-listed systems may also be described in documents published after the priority date of the '097 Patent; any such publications that are not themselves prior art to the '097 Patent nonetheless describe and corroborate that the alleged invention of the '097 Patent was already in public use prior to the priority date of the '097 Patent. These prior art systems, alone or in combination with other references as explained below and in Exhibits A-1 to A-6 and/or the knowledge of a POSITA also independently render obvious the Asserted Claims.

| System                    | Exemplary Supporting Documents                                                                                                                                                                            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LithoRec Pilot Process    | <ul style="list-style-type: none"> <li>• LithoRec – Recycling von Lithium-Ion Batterien (“LithoRec”)</li> <li>• DUESENFELD_0006492</li> <li>• DUESENFELD_0006556</li> <li>• DUESENFELD_0006967</li> </ul> |
| LithoRec II Pilot Process | <ul style="list-style-type: none"> <li>• DUESENFELD_0006919</li> </ul>                                                                                                                                    |

#### 4. Incorporation of *Inter Partes* Review Proceedings

Ascend hereby incorporates by reference any documents filed, or to be filed, in any *inter partes* review (IPR) proceedings involving the '097 Patent, including without limitation the respective Petitions, responses and replies, briefs, deposition transcripts, oral arguments, PTAB decisions and orders, expert declarations, exhibits, and/or demonstratives from each such proceeding. These IPR proceedings include:

- URT Umwelt und Recyclingtechnik GmbH v. Duesenfeld GmbH, IPR2024-00887 (filed May 1, 2024);
- Ascend Elements, Inc. v. Duesenfeld GmbH, IPR2024-00948 (filed May 21, 2024);
- and
- Any future IPR proceedings to be filed by a party or non-party.

## II. DISCLOSURES REGARDING ANTICIPATION AND OBVIOUSNESS

### A. Obviousness of the Asserted Patents

Accompanying Exhibits A-1 to A-6 are exemplary invalidity charts that identify prior art combinations that render obvious the Asserted Claims of the Asserted Patents under 35 U.S.C. § 103.

Exhibits A-1 to A-6 identify specific examples of where a prior art reference discloses—either expressly, implicitly in the larger context of the passage, or inherently—each limitation of the Asserted Claims and/or examples of disclosures in view of which a POSITA would have considered each limitation anticipated and/or obvious. For many prior art references and claim elements, the prior art reference discloses the claim element in multiple places (including any of the supporting documents used to describe each prior art instrumentality) and/or there are multiple descriptions of where and how the prior art reference discloses the claim element. Thus, Ascend has provided exemplary citations to descriptions of where each element of the Asserted Claims is found within each prior art reference. Ascend may rely on other descriptions of where each element of the Asserted Claims is found within each prior art reference. In instances where Ascend cites a particular figure or table in a prior art reference, the citation should be understood to encompass the caption and description of the figure or table, as well as any text relating to that figure or table. Similarly, where a cited portion of text refers to a figure or table, the citation should be understood to include the figure or table as well.

In addition, Exhibits A-1 to A-6 include examples of where the prior art discloses the subject matter recited in the preambles of the Asserted Claims without regard to whether the preambles are properly considered to be limitations of these claims.

In Exhibits A-1 to A-6, Ascend has endeavored to identify the most relevant portions of the references. But the references may contain additional support for particular claim limitations—including additional invalidity support for ambiguous terms, phrases, or clauses for which it is unclear how Plaintiff purports to construe the term/phrase/clause or how it should be properly construed. Ascend reserves the right to rely on uncited portions of prior art references, other documents and/or instrumentalities, and fact and/or expert testimony to provide context or to aid

in understanding the references and/or cited portions thereof. Moreover, Ascend may rely on admissions concerning the scope of the prior art relevant to the Asserted Patents found in, inter alia, (1) the patents themselves, including any references cited therein; (2) the patent prosecution history for the Asserted Patents and related patents and/or patent applications, including any references cited therein; (3) any testimony or declarations of named inventor(s) or other fact or expert witnesses concerning the prior art, the Asserted Patents, and/or related patents and/or patent applications; (4) any papers filed or evidence submitted by Plaintiff in connection with this litigation or in any other pending or future proceeding involving Plaintiff or any of its predecessors-in-interest, one or more of the Asserted Patents, or any related patents; or (5) other evidence, including fact and expert testimony, to prove that the Asserted Claims are anticipated and/or rendered obvious under 35 U.S.C. §§ 102 and/or 103.

The table below identifies the primary reference(s) in each exhibit.

| <b>Charts</b> | <b>Prior Art Reference</b> |
|---------------|----------------------------|
| A-1           | Hanisch                    |
| A-2           | Meador                     |
| A-3           | LithoRec                   |
| A-4           | Stevens                    |
| A-5           | Lain                       |

In addition, Exhibit A-6 sets out additional and relevant exemplary, non-exhaustive disclosures in the prior art for each limitation of each Asserted Claim. A POSITA would have been motivated and would have found it obvious, straightforward, and advantageous to apply the teachings of the prior art as set out in Exhibits A-1 to A-6 to each of the above primary references and, in doing so, would have rendered obvious and invalid the Asserted Claims of the '097 Patent.

The references in the table may be combined in this way with one or more of the secondary references as indicated in Exhibits A-1 to A-6:

| <b>Primary Reference</b> | <b>Secondary References Rendering Obvious The Challenged Claims</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hanisch                  | US 5,632,863 (“Meador”), US 10,396,408 (“Shin”), US 9,843,077 (“Hayashi”), US 9,509,025 (“Iida”), US 8,807,466 (“Bhandari”), US 9,450,277 (“Dunagan”), US 6,329,096 (“Kawakami”), US 10,497,993 (“Billy”), US 6,524,737 (“Tanii”), US 8,882,007 (“Smith”), US 8,714,361 (“Ellis”), US 6,511,639 (“Schmidt”), US 6,686,086 (“Martin”), US 4,118,219 (“Elmore”), US 3,671,318 (“Moe”), US 9,147,918 (“Ueda”), WO 2010/102377 A1 (“Stevens”), DE 10 2012 024876A1 (“Petermann”), U.S. Patent No. 6,447,669 (“Lain”), and/or LithoRec. |
| Meador                   | Hanisch, Shin, Hayashi, Iida, Bhandari, Dunagan, Kawakami, Billy, Tanii, Smith, Ellis, Schmidt, Martin, Elmore, Moe, Ueda, Stevens, Petermann, Lain, and/or LithoRec.                                                                                                                                                                                                                                                                                                                                                              |
| LithoRec                 | Hanisch, Meador, Shin, Hayashi, Iida, Bhandari, Dunagan, Kawakami, Billy, Tanii, Smith, Ellis, Schmidt, Martin, Elmore, Moe, Ueda, Stevens, Lain, and/or Petermann.                                                                                                                                                                                                                                                                                                                                                                |
| Stevens                  | Hanisch, Meador, Shin, Hayashi, Iida, Bhandari, Dunagan, Kawakami, Billy, Tanii, Smith, Ellis, Schmidt, Martin, Elmore, Moe, Ueda, Stevens, Petermann, Lain, and/or LithoRec.                                                                                                                                                                                                                                                                                                                                                      |
| Lain                     | Hanisch, Meador, Shin, Hayashi, Iida, Bhandari, Dunagan, Kawakami, Billy, Tanii, Smith, Ellis, Schmidt, Martin, Elmore, Moe, Ueda, Stevens, Petermann, and/or LithoRec.                                                                                                                                                                                                                                                                                                                                                            |

As explained herein and/or in the accompanying charts, it would have been obvious to a POSITA at the time of the alleged inventions claimed in the Asserted Patents to combine the various references cited herein to arrive at the Asserted Claims.

The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including “(1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness.” *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 877 (Fed. Cir. 1993); *see also Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). The U.S. Supreme Court’s decision in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 415–

16 (2007), reaffirmed *Graham*, and further held that a claimed invention can be obvious even if there is no teaching, suggestion, or motivation for combining the prior art to produce that invention. In summary, *KSR* holds that patents based on new combinations of elements or components already known in a technical field may be found to be obvious. *See generally KSR*, 550 U.S. 398. Specifically, the Court in *KSR* rejected a rigid application of the “teaching, suggestion, or motivation [to combine]” test. *Id.* at 418–19. “In determining whether the subject matter of a patent claim is obvious, neither the particular motivation or the avowed purpose of the patentee controls. What matters is the objective reach of the claim.” *Id.* at 419. “Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *Id.* at 420. In particular, in *KSR*, the Supreme Court emphasized the principle that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. A key inquiry is whether the “improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417.

With regard to motivation to combine and other obviousness factors, a POSITA at the time of the alleged invention of the Asserted Patents would have been motivated to combine each of the prior art references identified in the accompanying charts and would have had a reasonable expectation of success in doing so. The motivation and/or incentive to combine these references comes from many sources, including, but not limited to, the known, published prior art references and products themselves; the background knowledge of those of ordinary skill in the art, including the references listed in Section I.A; the common field of technology of the references; and the teachings in the references directed to solving the problem that the Asserted Patents were allegedly directed to solving. These references identify and address many of the same technical issues and

suggest similar solutions to those issues. Accordingly, the teachings of the individual prior art references, combined with the background knowledge of a POSITA at the time of the alleged invention of the Asserted Patents, would have rendered obvious the Asserted Claims for at least the reasons described below and in the accompanying charts. Furthermore, a POSITA would have had a reasonable expectation of success in doing so for the same reasons, e.g., the references identify and address many of the same technical issues and suggest similar solutions to those issues, the teachings in the references directed to solving the same problem, and the standards required specific functionalities.

For example, U.S. Patent No. 5,632,863 (“Meador”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries, then subjecting the comminuted material to heating around 350°C to 600°C under vacuum to decompose the materials. WO 2010/102377 A1 (“Stevens”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries, then subjecting the comminuted material to heating to dry the material. U.S. Patent No. 9,843,077 (“Hayashi”) discloses the processing of used lithium-ion batteries by heating the batteries under a vacuum to evaporate the electrolyte. Indeed, Hayashi’s disclosure corresponds directly to one of the examples in the ’097 Patent. (“It is indeed possible and represents a preferred embodiment that the batteries are exposed to a vacuum when in an uncomminuted state such that at least parts of the electrolyte vaporise, wherein the resulting gas either escapes through a safety valve in the rechargeable battery or the battery is destroyed by the pressure difference between the external environment and the internal pressure, enabling a vaporising electrolyte to escape.” (’097 Patent at 2:39-48.) U.S. Patent No. 6,447,669 (“Lain”) discloses methods and apparatus for recycling batteries, including lithium-ion batteries, using techniques such as comminuting the batteries and using heat to evaporate electrolyte solvents

and/or decompose the binder material, where the heating can be done under vacuum. Lain also discloses that lithium batteries use an electrolyte that includes fluorine compounds such as LiPF<sub>6</sub> (lithium hexafluorophosphate), which can undergo hydrolysis to form hydrogen fluoride, a toxic substance, and that the electrolyte also includes organic solvents that are volatile and flammable. U.S. Patent No. 10,396,408 (“Shin”) discloses methods and apparatuses for treating used batteries involving the heating of batteries, such as lithium-ion batteries, under vacuum to evaporate electrolyte. U.S. Patent No. 9,509,025 (“Iida”) discloses inactivating recycled battery material through drying. U.S. Patent No. 10,707,544 (“Dunagan”) discloses systems and methods for the recycling of lithium-ion batteries or the like. The system methods include comminution and destruction of used batteries, controlling the explosive reaction of the battery components during processing, and processing the materials into a suitable form for sampling and recycling, including by placing the material into a transport container. U.S. Patent No. 6,329,096 (“Kawakami”) discloses methods and apparatuses for recycling used batteries, including the use of heating under vacuum to evaporate electrolyte and volatile compounds. U.S. Patent No. 10,497,993 (“Billy”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 8,807,466 (“Bhandari”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries, then subjecting the comminuted material to heating to evaporate electrolyte and volatile compounds and/or decompose the comminuted material. U.S. Patent No. 6,524,737 (“Tanii”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries, as well as the use of heat under vacuum to facilitate evaporation of organic components of batteries. U.S. Patent No. 8,882,007 (“Smith”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 8,714,361 (“Ellis”) discloses methods and

apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 6,511,639 (“Schmidt”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 6,686,086 (“Martin”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 4,118,219 (“Elmore”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. U.S. Patent No. 3,671,318 (“Moe”) discloses the evaporation of electrolyte under heat and vacuum to inactivate a battery. U.S. Patent No. 9,147,918 (“Ueda”) discloses methods and apparatuses for recycling used batteries, including the use of comminuting batteries. German Patent Application, DE 10 2012 024876A1 (“Petermann”) discloses an apparatus for transferring critical electrolytic cells into transportable state by placing them into a transportable collecting device.

Ascend generally contends that the Asserted Claims of the Asserted Patents would have been obvious because they, at most, only slightly modify a known solution to a common issue at the time or merely arrange old elements, with each performing the same function that had previously been known, to perform and yield no more than what one of ordinary skill would expect from such an arrangement. For example, as already explained in the background state of the art, it was well-known that: comminution could be used to process used batteries; the removal of electrolyte from a battery would render it inactive; heat and reduced pressure could be used to evaporate electrolyte components; it was beneficial to reduce the formation of hydrogen fluoride by  $\text{LiPF}_6$  hydrolysis by using reduced temperature when evaporating lithium-ion battery electrolytes; evaporation of solvents such as those in lithium-ion battery electrolytes was facilitated at reduced pressure due to the reduction in boiling point; and that using commercially available

“super sacks” or other suitable containers was a safe and effective means of transporting recycled battery materials.

Before the effective filing date of the '097 Patent, a POSITA would have been aware of the economic and environmental benefits of reclaiming valuable materials from used batteries and would thus have been motivated to combine prior art teachings in the manner identified and/or with the POSITA's own knowledge. Additional reasons or motivations to implement such combinations and modifications are provided in each Exhibit. To the extent that Plaintiff challenges an identified combination of prior art teachings, Ascend reserves the right to supplement these Initial Invalidity Contentions to further specify reasons or motivations to combine teachings in the manner suggested.

The obviousness combinations provided herein are exemplary and are not intended to be exhaustive. In addition to the specific prior art references and combinations of prior art references identified above, the further combination of these references and combinations with the background knowledge of a POSITA at the time of the alleged invention render obvious the Asserted Claims. Additional obviousness combinations of the references identified above or references yet to be identified are possible and Ascend reserves the right to use any such combination(s) in this litigation. In particular, Ascend is currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the art identified by Ascend. To the extent that Plaintiff contends that a particular claim limitation is allegedly missing in a particular reference, a POSITA would have found it obvious to combine that reference with any of the other references cited herein or in the accompanying charts to arrive at the allegedly missing claim limitation. Ascend further reserves the right to identify other

references that would have made obvious the addition of the allegedly missing limitation to the disclosed product or method.

## **B. Secondary Considerations**

Ascend is not aware of any legally sufficient evidence that so-called secondary considerations of non-obviousness rebut the prima facie showing of obviousness over the prior art in this litigation. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019) (“In order to accord substantial weight to secondary considerations in an obviousness analysis, ‘the evidence of secondary considerations must have a nexus to the claims, i.e., there must be a legally and factually sufficient connection between the evidence and the patented invention.’”). Duesenfeld “bears the burden of showing that a nexus exists” and Duesenfeld has provided no such evidence tying any secondary consideration to the claimed invention. *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999); *see also Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (“To determine whether the patentee has met that burden, we consider the correspondence between the objective evidence and the claim scope.”).

Duesenfeld, in its interrogatory responses, suggests that the alleged invention is non-obvious because it solves a long-felt but unresolved need, addressed the failures of others, were praised by others, have been commercially successful, and produced surprising results. However, none of the evidence identified in Duesenfeld’s interrogatory responses addresses any claim limitations of the ’097 Patent, let alone any allegedly novel element of the claims. For example, Duesenfeld argues that “[i]n recognition of [its] research and development, Duesenfeld GmbH was awarded the German Sustainability Award in 2024,” but the subsequently quoted press release confirms that Duesenfeld itself provided the quotes for the article allegedly tying the award to the claimed invention. *See* <https://www.thelec.net/news/articleView.html?idxno=4691> (“German battery recycling firm Duesenfeld said on Tuesday that it has won the German Sustainability

Award 2024...”). Likewise, that the process for recycling electric batteries may be hazardous does not suggest that Duesenfeld succeeded where others failed or solved any long-felt **but unresolved** needs. Accordingly, there continues to be no evidence that: (1) Duesenfeld developed a product embodying the claimed subject matter of any Asserted Claim that has enjoyed commercial success because of the alleged invention; (2) any Asserted Claim is directed to any long-felt but unresolved need; (3) any Asserted Claim addresses any failure of others; (4) there is teaching away from the claimed subject matter by the prior art; (5) the claimed subject matter of any Asserted Claim has been copied or acclaimed by others; or (6) experts would have been skeptical of the claimed approach or idea set forth in the Asserted Claims. Nor is Ascend aware of any evidence that there is a nexus between any such secondary consideration and any Asserted Claim.

Ascend reserves the right to supplement these Initial Invalidity Contentions with respect to secondary considerations as discovery progresses and in view of any further arguments or evidence provided by Duesenfeld of alleged secondary considerations and/or their nexus to the Asserted Claims.

### **III. GROUNDS OF INVALIDITY OTHER THAN ANTICIPATION OR OBVIOUSNESS**

At least Asserted Claims 2, 7, and 13 are invalid for failure to meet one or more of the requirements of 35 U.S.C. § 112. Each and every Asserted Claim is also invalid as directed to non-patentable subject matter as required by 35 U.S.C. § 101.

Ascend reserves the right to amend, supplement, and/or otherwise modify these Invalidity Contentions with respect to grounds of invalidity other than anticipation or obviousness.

Where claim construction in the case has yet to occur, Ascend lacks a complete understanding of Plaintiff’s claim construction positions and any resulting effect on Plaintiff’s contentions of alleged infringement. Ascend thus reserves the right to argue that the specification

does not enable and/or provide a written description for such an interpretation or that such an interpretation renders the claim indefinite.

Ascend lists below exemplary grounds upon which Ascend presently contends that at least Asserted Claims 2, 7, and 13 of the '097 Patent are invalid for failure to meet one or more of the requirements of 35 U.S.C. § 112. Ascend identifies at least the following grounds of invalidity based on inadequate written description under 35 U.S.C. § 112(a), invalidity based on lack of enablement under 35 U.S.C. § 112(a), and invalidity based on indefiniteness under 35 U.S.C. 34 § 112(b) for the Asserted Claims. These grounds are identified based on knowledge in Ascend's possession at this time. A more detailed basis for Ascend's written description, enablement, and/or indefiniteness defenses will be set forth in Ascend's claim construction briefs and expert reports on invalidity to be served in accordance with the schedule entered by the Court (D.I. 22).

**A. Invalidity under 35 U.S.C. § 112(b) (Indefiniteness)**

Below is a list of exemplary claim elements that are indefinite and/or render claims that include such elements indefinite under 35 U.S.C. § 112(b). These claim limitations “fail to inform, with reasonable certainty, those skilled in the art at the time of the alleged invention about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014); *see also Allen Eng'g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1348 (Fed. Cir. 2002) (quoting *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1377 (Fed. Cir. 2000) (“[F]irst, [the claim] must set forth what ‘the applicant regards as his invention’ and second, it must do so with sufficient particularity and distinctness, i.e., the claim must be sufficiently ‘definite.’”) (second alteration in original)). For example, some claim limitations impose a requirement that would be understood as nonsensical or physically impossible. *See, e.g., WSOU Investments LLC v. Google LLC*, 2023 WL 6210607, at \*7–\*8 (Fed. Cir. 2023) (self-contradictory claim elements reciting a “second part in between the first part and the second part” held indefinite “because it ‘does not allow a reader

to differentiate the first instance of ‘a second part’ from the second’’); Other claim elements appear to lack proper antecedent basis. *See, e.g., Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (“[A] claim could be indefinite if a term does not have proper antecedent basis where such basis is not otherwise present by implication or the meaning is not reasonably ascertainable”).

Because Ascend’s investigation, prior art search, analysis, discovery, and trial preparation are still ongoing, Ascend expressly reserves the right to amend, supplement, and/or otherwise modify these Initial Invalidity Contentions, including by identifying and providing additional evidence and arguments that the Asserted Claims are indefinite under 35 U.S.C. § 112(b) following Plaintiff’s reduction(s) of the number of asserted claims pursuant to Scheduling Order (D.I. 22) and/or any constructions proposed by Plaintiff or adopted by the Court.

Any deficiencies that render claims invalid for indefiniteness under 35 U.S.C. § 112(b) also infect and thereby invalidate any and all claims depending therefrom including any dependent claims asserted by Plaintiff.

At least the following claim elements, or portions thereof, used in the Asserted Patents are indefinite under 35 U.S.C. § 112(b) for failure to inform, with reasonable certainty, those skilled in the art about the scope of the invention:

- “inactivating the comminuted material such that an inactivated comminuted material is obtained . . . wherein the inactivating step is performed by drying the comminuted material”  
/ “inactivation device comprising a drying device configured to inactivate the comminuted material”
  - o As used in claims 1 and 12, the terms “inactivating” and “drying” are indefinite for failure to inform, with reasonable certainty, those skilled in the art about the full

scope of the invention as claimed. For example, neither claim 1, claim 12, nor the specification makes clear whether inactivation of the comminuted material requires either one of, or both of, (a) drying “until an electrolyte content is so low that an electrochemical reaction is not possible”, and (b) “drying at a drying temperature and for a drying time that have been selected such that the binder which binds the active material of the lithium battery to a carrier at least largely decomposes.”

- “one or more of the following conditions is met: no flammable or explosive gas mixture is formable above the comminuted material in the transport container, and the comminuted material is so dry that no flammable or explosive gas mixture is able to emerge in the transport container.”
  - As used in claim 7, this claim element is indefinite for failure to inform, with reasonable certainty, those skilled in the art about the scope of the invention as claimed. For example, the language recites “one or more of the following conditions,” but then describes two conditions connected with the conjunctive “and,” where the only mention of these conditions in the specification uses “and/or” modifier. It is unclear whether the claim limitations require both or just one of these conditions to be met. Further, the specification provides a basis to evaluate whether only one of these conditions has been met, providing no guidance on how to determine whether the other condition has been met.
- “an electrochemical reaction is impossible”
  - As used in claims 2 and 13, this claim element is indefinite for failure to inform, with reasonable certainty, those skilled in the art about the scope of the invention as claimed. For example, it is not clear that such an outcome is physically

achievable in the context of the claimed invention, nor does the specification provide clarity on the scope of this term.

- “under a vacuum”
  - As used in at least claim 3, this claim element is indefinite for failure to inform, with reasonable certainty, those skilled in the art about the scope of the invention as claimed. For example, it is not clear whether a vacuum includes ambient pressures at or above 300 hPa or not.

**B. Invalidity under 35 U.S.C. § 112(a) (Written Description/Enablement)**

Pursuant to 35 U.S.C. § 112(a), a patent specification:

shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make, and use the same[.]

The Federal Circuit has held that this language creates two closely related, yet separate requirements for a specification: (i) a written description of the invention (“written description”); and (ii) a written description of the manner and process of making and using the invention (“enablement”). *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1344 (Fed. Cir. 2010) (en banc).

The test for sufficiency of a patent’s written description requires:

an objective inquiry into the four corners of the specification from the person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan to show that the inventor actually invented the invention claimed.

*Ariad*, 598 F.3d at 1351. A patent is invalid for inadequate written description unless “the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Id.*

The enablement requirement mandates that the disclosure in the specification describe “the manner and process of making and using [the invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the [invention].” 35 U.S.C. § 112(a). For a patent’s specification to be enabling, “the specification must enable the full scope of the invention as defined by its claims” without undue experimentation. *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023).

Below is an exemplary list of claim elements for which there is inadequate written description and/or lack of enablement under 35 U.S.C. § 112(a). For example, certain claim limitations fail to describe an invention understandable to a skilled artisan at the time of the invention and/or fail to show that the inventor actually possessed the invention claimed. *See Ariad*, 598 F.3d at 1351. As an additional example, certain claim limitations encompass any and all structures or acts for performing a recited function, including those beyond what their applicant(s) invented, such that the specification fails to provide a scope of enablement commensurate with the scope of the claim as asserted by Plaintiff. *Amgen*, 598 U.S. at 610.

Any deficiencies that render claims invalid for written description and/or enablement under 35 U.S.C. § 112 also infect and thereby invalidate any and all claims depending therefrom—including any dependent claims asserted by Plaintiff.

In addition to the claims as a whole, at least the following claim elements, or portions thereof, of the Asserted Claims are not supported by the written description and/or are not enabled under 35 U.S.C. § 112(a):

- “comminuted material is so dry that no flammable or explosive gas mixture is able to emerge in the transport container”

- o As used in claim 7, this claim element fails to meet the written description requirement and/or is not enabled. For example, the specification does not provide a basis to evaluate whether this condition has been met, despite providing guidance on how to determine whether other, distinct conditions are met. The specification would not convey to one of skill in the art that, as of the filing date, the inventors had possession of the broader interpretations. Nor would the specification teach one of ordinary skill in the art how to practice this claim element without undue experimentation. Additionally, the claims containing this limitation are invalid for failing to enable the full scope of the invention as defined by the claims.
- “an electrochemical reaction is impossible”
  - o As used in claims 2 and 13, this claim element fails to meet the written description requirement and/or is not enabled. For example, it is not clear that such an outcome is physically achievable in the context of the claimed invention, nor does the specification provide guidance on how to achieve such an outcome. The specification would not convey to one of skill in the art that, as of the filing date, the inventors had possession of the broader interpretations. Nor would the specification teach one of ordinary skill in the art how to practice this claim element without undue experimentation. Additionally, the claims containing this limitation are invalid for failing to enable the full scope of the invention as defined by the claims.

**C. Invalidity under 35 U.S.C. § 101 (Patent Eligibility)**

The '097 Patent is invalid under 35 U.S.C. § 101 because it is directed to ineligible subject matter—the mere application of a natural law—and does not include any inventive concept. *See*

*Am. Axle & Mfg., Inc. v. Neapco Holdings LLC*, 967 F.3d 1285, 1298-99 (Fed. Cir. 2020) (finding ineligible claim that “clearly invokes a natural law, and nothing more, to achieve a claimed result).

Here, the Asserted Claims are directed to the natural law principle of vacuum evaporation—namely, that the boiling temperature for liquids is lower when air pressure is reduced. For example, claim 1 recites “a method for the treatment of used batteries, comprising the steps: (a) comminuting the batteries such that comminuted material is obtained; (b) inactivating the comminuted material such that an inactivated comminuted material is obtained, wherein the inactivating step is performed during or after the comminuting step; and (c) filling a transport container with the inactivated comminuted material; wherein the inactivating step is performed by drying the comminuted material, and wherein the drying occurs at a maximum pressure of 300 hPa.” (’097 Patent, claim 1). The specification admits that comminution and inactivation through drying were already known principles in the art. (*E.g.*, ’097 Patent, 1:25-50.) By specifying that inactivation must occur through drying at a maximum pressure of 300 hPa, the claims merely recognize and attempt to monopolize well-known laws of nature. For example, it is basic chemistry that evaporation occurs quicker and at lower temperatures under reduced air pressure. This is the same phenomenon that people recognize when boiling water at high altitudes. Moreover, the claims are directed to a result. Like the ineligible claims in *American Axle*, the claims here “confer[] patent coverage if the [inactivation through drying] goal is achieved by one skilled in the art using any method, including any method implemented by . . . trial and error.” *Am. Axle*, 967 F.3d at 1294. Indeed, the ’097 specification itself confirms that the claimed drying process requires a trial-and-error approach: “Pre-tests determine whether the criteria [that the drying is complete] has been fulfilled. If a flammable gas mixture does form, the drying must be conducted for a longer time and/or at a lower pressure. The preliminary tests are repeated until a

drying time and/or a drying pressure has been identified at which, in a set of tests of three transport containers, the requirements for the property have been fulfilled for all three transport containers.” In other words, the patent merely claims the physical quality that drying an electrolyte for some unspecified amount of time results in inactivated material.

At step two, the patent claims fail to add any inventive concept sufficient to transform the claim into patent-eligible subject matter. As noted in the background of the specification, the prior art already included comminution and inactivation through drying. Further, the step of filling a transport container with the resulting inactivated material is nothing more than insignificant post-solution activity that cannot save the claims at step two. *Diamond v. Diehr*, 450 U.S. 175, 191–92 (1981) (“[I]nsignificant post-solution activity will not transform an unpatentable principle into a patentable process.”).

#### **IV. ACCOMPANYING DOCUMENT PRODUCTION**

Pursuant to the Scheduling Order, Ascend is producing and/or providing for inspection, alongside its Initial Invalidity Contentions, the known invalidating references referred to herein and in the accompanying claim charts at production numbers ASCEND\_000000350-ASCEND\_000007756. To the extent that any such item is not in English, an English translation of the portion(s) relied upon has been or will be produced within a reasonable timeframe.

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## **CERTIFICATE OF SERVICE**

I, David E. Moore, hereby certify that on May 29, 2024, true and correct copies of the within document were served on the following counsel of record at the addresses and in the manner indicated:

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