Press Releases

Performance results of Leclanché's 60 Ah cells validate their use in fast-charge and long-range automotive applications

• Presentation at International Battery Production Conference 2020 cites Leclanché research confirming capabilities of production cells over 4,000 cycles • Company's water-based binder manufacturing technology provides many environmental and production benefits

YVERDON-LES-BAINS, Switzerland; DALLAS; and ANDERSON, Indiana, 4th November 2020 – Year-long testing of Leclanché SA (SIX: LECN)'s 60 Ah[1] G/NMC battery cells has proven them to be both high energy density and high life cycle, critical characteristics for a wide range of automotive and e-transportation energy storage solutions.

The presentation of results was made by Dr. Petronela Gotcu, manager R&D Cells and Dr. Hilmi Buqa, vice president R&D Cells, Leclanché, at the International Battery Production Conference 2020 Braunschweig, Germany, held online this year from November 2 - 3. A poster with the results, presented at the conference, can be viewed at this link. Leclanché is one of the world's leading energy storage companies.

Key findings include:

- The lifetime tests on these cells validate over 4000 cycles at ca. 1C/1C[2] continuous for a 100% DoD[3] at room temperature conditions. At the same time, the energy efficiency is stable and above 90% (minimal impedance increase).
- Our standard 60 Ah production G/NMC[4] cells are high energy density and high power cells allowing good lifetime with higher C-rates symmetrical cycling: fast charge/ discharge within 30 minutes. This can be suitable for various applications, especially for fast charging EV-applications.
- Stable cells cycled between 3.00 - 4.35 V reaching 10% capacity increase in comparison to a standard G/NMC cell resulting in lower cost of installed battery pack (euros per kWh) for EV-applications.

Leclanché Cells Manufactured Using Green, Water-Based Technology

Leclanché offers two kinds of rechargeable lithium-ion cells: G/NMC cells for energy intensive applications, and LTO/NCA[5] for leading performance in long-life and rapid charge applications. Both cell types are produced in a pouch format in the company's Willstätt, Germany manufacturing facility.

Its cell assembly starts with the electrode manufacturing exclusively using a water-based binder (WBB) process in an eco-friendly environment. In comparison to organic solvent-based processes, Leclanché's green manufacturing technology leads to minimal environmental impact, reduced end-cost of the cell manufacturing and improved cell performance. Leclanché is one of the global leaders in applying the WBB technology. Finished pouches are assembled into battery modules in Yverdon-les-Bains, Switzerland based on specific customer requirements.

"These research findings validate that Leclanché can now offer next generation, high energy density and high life cycle cells which support both long-range and fast-charging battery applications, a key requirement of the automotive and e-transportation industries," **said Pierre Blanc, chief technology and industrial officer, Leclanché.**

Automotive and e-Transportation Commercialization Opportunities

The path to a potential mass market application of its technology started back in 2008 with investments of CHF 250 million and more than a decade of in-house research and development and more than 200 patents. The company's storage solutions have already been implemented in a broad array of maritime industry vessels, hybrid railroad locomotives and other specialized vehicles.

"We are now adding a new strategic growth area to our business by leveraging our high energy density and fast charging 2C G/NMC cells. We bring to market 100% inhouse cell technology developed in Europe, combined with the valuable knowhow gained from more than eight years of large-scale production in our factory in Willstätt, Germany. This sets Leclanché apart from the bold and aspirational announcements based on technologies imported essentially from Asia," **said Anil Srivastava, CEO, Leclanché.** *"We are in the process to federate Leclanché technologies to enable large scale production of cells. Currently we are in active discussions with strategic parties to license Leclanché technologies to set up large-scale automotive battery cell production facilities in Europe."*

For more information about Leclanché's 60 Ah cells, write toinfo@leclanche.com or visit www.leclanche.com.

About Leclanché

Headquartered in Switzerland, Leclanché SA is a leading provider of high-quality energy storage solutions designed to accelerate our progress towards a clean energy future. Leclanché's history and heritage is rooted in over 100 years of battery and energy storage innovation and the Company is a trusted provider of energy storage solutions globally. This coupled with the Company's culture of German engineering and Swiss precision and quality, continues to make Leclanché the partner of choice for both disruptors, established companies and governments who are pioneering positive changes in how energy is produced, distributed and consumed around the world. The energy transition is being driven primarily by changes in the management of our electricity networks and the electrification of transport, and these two end markets form the backbone of our strategy and business model. Leclanché is at the heart of the convergence of the electrification of transport and the changes in the distribution network. Leclanché is the only listed pure play energy storage company in the world, organised along three business units: stationary storage solutions, e-Transport solutions and specialty batteries systems. Leclanché is listed on the Swiss Stock Exchange (SIX: LECN).

SIX Swiss Exchange: ticker symbol LECN | ISIN CH 011 030 311 9

Disclaimer

This press release contains certain forward-looking statements relating to Leclanché's business, which can be identified by terminology such as "strategic", "proposes", "to introduce", "will", "planned", "expected", "commitment", "expects", "set", "preparing", "plans", "estimates", "aims", "would", "potential", "awaiting", "estimated", "proposal", or similar expressions, or by expressed or implied discussions regarding the ramp up of Leclanché's production capacity, potential applications for existing products, or regarding potential future revenues from any such products, or potential future sales or earnings of Leclanché or any of its business units. You should not place undue reliance on these statements. Such forward-looking statements reflect the current views of Leclanché regarding future events, and involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from any future results, performance or achievements expressed or implied by such statements. There can be no guarantee that Leclanché's products will achieve any particular revenue levels. Nor can there be any guarantee that Leclanché, or any of the business units, will achieve any particular financial results.

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[1] Ah: Ampere hour is the rating used to tell consumers how much amperage a battery can provide for exactly one hour.

[2] A **C-rate** is a measure of the rate at which a battery is charged/discharged relative to its maximum capacity. A 1C rate means that the charge/discharge current will charge/discharge the entire battery in 1 hour.

[3] **Depth of Discharge** (**DoD**) is the fraction or percentage of the capacity which has been removed from the fully charged battery. It is an alternative method to indicate a battery's state of charge.

[4] NMC622: Layered lithium nickel manganese cobalt oxide ($LiNi_{0.6}Mn_{0.2}Co_{0.2}O_2$, also referred to as NMC) cathodic material.

[5] LTO/NCA: lithium titanium oxide ($Li_4Ti_5O_{12}$, also referred to as LTO) / lithium nickel cobalt aluminum oxide ($LiNi_{0.80}Co_{0.15}Al_{0.05}O_2$, also referred to as NCA).