



29 March 2023

ALTECH – LAUNCH OF CERENERGY® 1.0 MWh GRIDPACK DESIGN FOR RENEWABLE ENERGY STORAGE MARKET

Highlights

- Launch of 1.0 megawatt-hour (MWh) GridPack design
- Non-Lithium Battery – Sodium Alumina Solid State
- Rated at 600 Volts DC and 100 Ah
- Specially designed for renewable energy and grid storage market
- Able to be safely installed outdoors in any weather conditions
- Sea container design, easy transportation by sea or road
- “Plug and play” site installation
- GridPacks are modular and stackable which reduces battery footprint
- Noiseless operation - ideal for noise-sensitive environments
- Low maintenance costs over battery life

Altech Batteries Limited (Altech/the Company) (ASX: ATC and FRA: A3Y) is pleased to advise that, in relation to its battery joint venture with Fraunhofer, it has launched the design for the CERENERGY® Sodium Alumina Solid State (SAS) 1.0 MWh GridPack (ABS1000) destined for the renewable energy and grid storage market. Based on preliminary discussions with potential off-takers and to minimise on site installation of individual ABS60 60KWh battery packs, a pre-installed solution has been launched. Each GridPack will have up to twenty 60 KWh battery packs installed and connected to pack power management system. Every GridPack has a distinct rating of 600 volts DC and 100 Ah, and it can be arranged in series (cluster or array) to achieve the required rating of several thousand KWs for grid functioning. A video in relation to this can be viewed on Altech’s website.



Figure 1 – 1.0 MWh GridPack (ABS1000)

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The Altech GridPacks have been specifically engineered to adhere to the Ingress Protection (IP) 65 standard (relating to a high level of electrical enclosure sealing), ensuring complete protection from both dust and inclement weather. This means that there is no need for any additional shelters or buildings to house the Altech GridPack batteries, and they can be safely installed outdoors in any weather conditions. The Altech GridPacks will be constructed using a sea container design, which facilitates their easy transportation by sea or road to the installation site, as well as ensuring simple installation.

The “plug and play” feature of the site installation for the GridPacks ensures that they can be easily installed in remote locations. Additionally, the containers have been designed to be stackable, which minimizes the battery footprint (refer to Figure 2). Unlike other mega battery pack designs on the market, these GridPacks can be stacked on top of each other. This stackable feature, coupled with the “plug and play” design, makes the GridPacks easily scalable and adaptable to meet future energy storage requirements of the site.

Furthermore, the Altech GridPacks are designed without the requirement for any moving parts such as cooling fans, which are typically found in lithium-ion battery mega packs. This is a notable advantage as end-use customers have raised concerns about the noise generated by mega packs, preventing them from being placed near residential areas. With the absence of any moving parts, the Altech GridPacks are completely noise-free operation, making them an ideal solution for noise-sensitive environments. Finally, GridPacks are extremely low in maintenance costs over the battery life.



Figure 2 – Stackable and all-weather Altech 1 MWh GridPacks

The Altech 1 MWh GridPacks are designed to operate in any climate, without the need for thermal management. The battery's internal temperature remains relatively constant throughout the charging and discharging cycles, due to its endothermic and exothermic properties. These 1 MWh GridPacks will offer significant benefits for the fast growing renewable energy and grid storage sectors. These larger battery packs are capable of storing more energy, resulting in more efficient utilisation of renewable energy sources such as wind and solar power.

Altech believes that the proposed GridPacks are an excellent means of stabilising the grid by providing a source of backup power during periods of high demand or when renewable energy sources are not producing at capacity. They are also a cost-effective solution for storing and distributing renewable energy across a variety of applications, including grid-scale storage, microgrids, and electric vehicle charging.

Moreover, they are non-flammable and pose zero fire and explosion hazards. With a projected lifespan of over 15 years with unlimited cycling and can operate in extreme cold and hot climates. Altech believes that these GridPacks will be the preferred choice for companies seeking a reliable and long-lasting energy storage solution.

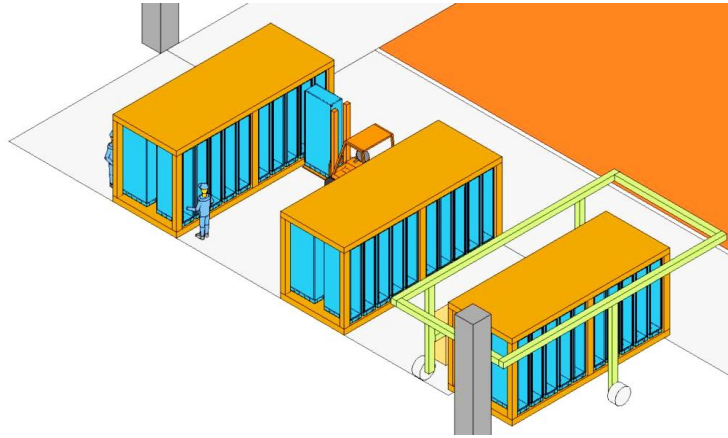


Figure 3 – GridPack assembly design in the proposed 100 MWh pa plant in Saxony, Germany

Background

On 14 September 2022, Altech announced a JV Agreement with world-leading German battery institute Fraunhofer IKTS (“Fraunhofer”) to commercialise Fraunhofer’s revolutionary CERENERGY® Sodium Alumina Solid State (SAS) Battery. Altech, together with associated Altech Advanced Material AG, will be the majority owner at 75% of the JV company, which will commercialize a 100 MWh project to be constructed on Altech’s land in Schwarze Pumpe, Germany. CERENERGY® batteries are the game-changing grid storage alternative to lithium-ion batteries. CERENERGY® batteries are fire and explosion-proof; have a life span of more than 15 years and operate in extreme cold and desert climates. The battery technology uses table salt and is lithium-free; cobalt-free; graphite-free; and copper-free, eliminating exposure to critical metal price rises and supply chain concerns. The Altech-Fraunhofer joint venture is developing a 100 MWh SAS battery plant (Train 1) on Altech’s site in Saxony, Germany specifically focussed on the grid (stationary) energy storage market.

Fraunhofer have previously estimated that the cost of producing CERENERGY® batteries should be in the region of 40% cheaper than lithium-ion batteries, primarily due to not requiring lithium, graphite, copper or cobalt. This will be confirmed in the Definitive Feasibility Study that Altech is currently undertaking.



Altech Chemicals Interactive Investor Hub

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About Altech Batteries Ltd (ASX:ATC) (FRA:A3Y)

CERENERGY® Batteries Project

Altech Batteries Ltd is a specialty battery technology company that has a joint venture agreement with world leading German battery institute Fraunhofer IKTS ("Fraunhofer") to commercialise the revolutionary CERENERGY® Sodium Alumina Solid State (SAS) Battery. CERENERGY® batteries are the game-changing alternative to lithium-ion batteries. CERENERGY® batteries are fire and explosion-proof; have a life span of more than 15 years and operate in extreme cold and desert climates. The battery technology uses table salt and is lithium-free; cobalt-free; graphite-free; and copper-free, eliminating exposure to critical metal price rises and supply chain concerns.

The joint venture is commercialising its CERENERGY® battery, with plans to construct a 100MWh production facility on Altech's land in Saxony, Germany. The facility intends to produce CERENERGY® battery modules to provide grid storage solutions to the market.



Silumina Anodes™ Battery Materials Project

Altech Batteries has licenced its proprietary high purity alumina coating technology to 75% owned subsidiary Altech Industries Germany GmbH (AIG), which has commenced a definitive feasibility study for the development of a 10,000tpa silicon/graphite alumina coating plant in the state of Saxony, Germany to supply its Silumina Anodes™ product to the burgeoning European electric vehicle market.

This Company recently announced its game changing technology of incorporating high-capacity silicon into lithium-ion batteries. Through in house R&D, the Company has cracked the "silicon code" and successfully achieved a 30% higher energy battery with improved cyclability or battery life. Higher density batteries result in smaller, lighter batteries and substantially less greenhouse gases, and is the future for the EV market. The Company's proprietary silicon graphite product is registered as Silumina Anodes™.

The Company is in the race to get its patented technology to market, and recently announced the results of a preliminary feasibility study (PFS) for the construction of a 10,000tpa Silumina Anode™ material plant at AIG's 14-hectare industrial site within the Schwarze Pumpe Industrial Park in Saxony, Germany. The European graphite and silicon feedstock supply partners for this plant will be SGL Carbon and Ferroglobe. The project has also received green accreditation from the independent Norwegian Centre of International Climate and Environmental Research (CICERO). To support the development, AIG has commenced construction of a pilot plant adjacent to the proposed project site to allow the qualification process for its Silumina Anodes™ product. AIG has executed NDAs with two German automakers as well as a European based battery company.



HPA Production Project

Altech is also further aiming to become a supplier of 99.99% (4N) high purity alumina (Al₂O₃) through the construction and operation of a 4,500tpa high purity alumina (HPA) processing plant at Johor, Malaysia, and has finalised Stage 1 and Stage 2 construction of its HPA plant in Johor, Malaysia. Feedstock for the plant will be sourced from the Company's 100%-owned near surface kaolin deposit at Meckering, Western Australia and shipped to Malaysia. The HPA project is significantly de-risked with a bankable feasibility study completed, senior lender project finance from German government owned KfW IPEX-Bank approved, and a German EPC contractor appointed – with initial construction works at the site completed. In addition to the senior debt, conservative (bank case) cash flow modelling of the HPA plant shows a pre-tax net present value of USD 505.6million at a discount rate of 7.5%. The project generates annual average net free cash of ~USD76million at full production. Altech is in the final stages of project finance with a potential raising of US\$100m of secondary debt via the listed green bond market. In addition, US\$100m of project equity is being sought through potential project joint venture partners.