ASX ANNOUNCEMENT AND MEDIA RELEASE

29 August 2023

ALTECH – UPDATED SILUMINA ANODES™ PLANT CALCINER DESIGN AND LAYOUT

Highlights

- DFS Calciner design and layout complete
- DFS on track and progressing well
- Preliminary discussions on permitting with regulatory bodies have commenced

Altech Batteries Limited (ASX: ATC, FRA: A3Y) provides an update to designs on its cutting-edge Silumina Anodes™ pilot plant project in Saxony, Germany, as well as the Definitive Feasibility Study for the planned Silumina Anodes™ 10,000tpa plant.

The Company has completed the final design phase for the front-end calciners as well as the corresponding plant layout. To complete the Definitive Feasibility Study, a more comprehensive engineering design was necessary, for it to be sourced and priced from suppliers. The calciners, which have been designed in-house, are of the packed bed type and are intended to operate at temperatures around 600 degrees Celsius. These calciners play a crucial role in the Silumina Anodes™ process, wherein they facilitate the conversion of aluminum chloride present on the surface of graphite and silicon particles into alumina. This innovative coating technology has been developed by Altech. Notably, a distinctive feature of these calciners is the utilisation of 3D-printed silicon carbide linings. These linings are employed to effectively handle the acidic atmosphere during the calcination process. Altech's process places significant emphasis on managing impurities, highlighting its importance in the overall production process.

Figure 1 – Front end section of Silumina Plant design

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The design of the calciner and cooler has progressed to a more advanced stage by incorporating manufacturing and stress test data from the research plant's component production and testing phase. This evolution in design has resulted from comprehensive testing that has refined the dimensions of the dryers, calciners, and coolers for the DFS. The finalised design now consists of two dryers and a four-circuit calciner/cooler configuration. The geometry of the calciners and cooler has undergone refinement, leading to the optimisation of a twin-chamber design. This design choice results in lighter modules that facilitate both assembly and maintenance processes. Additionally, the components have been meticulously designed to remain within the constraints of available manufacturing equipment size and capabilities.

Efforts to advance manufacturing discussions are underway, with ongoing detailed conversations held with leading Silicon Carbide (SiC) vendors in Europe, strategically located in proximity to the Spreetal plant. These discussions center around the suitability of the DFS plant design for 3D printing, encompassing aspects such as material selection optimisation, manufacturing processes, standardisation, and production consistency.

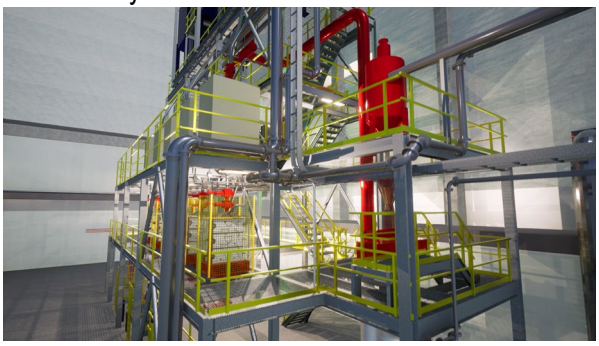

Figure 2 – Day hopper and mixer

Figure 3 – Control system

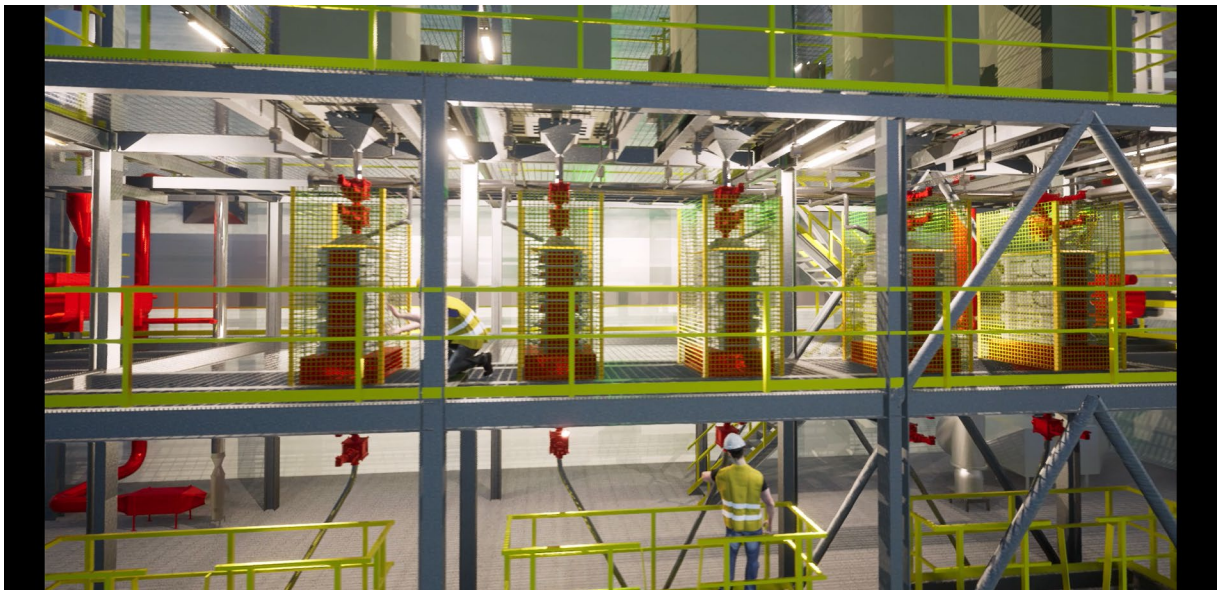

Figure 4 – In-house designed packed bed calciners

Considering the specialised demands of the battery coating process, the manufacturing techniques required are cutting-edge and incorporate the latest advancements in SiC industry technology. This dynamic collaboration involving Altech, Australian designers, Specialist Dryer technology Vendors, and German manufacturers has paved the way for continuous development of the SiC components essential for the drying and calcination phases.

Permitting Process

The advancement of the Silumina Anodes™ Definitive Feasibility Study is on track, and notable progress has been made. The Company has obtained final quotations from essential suppliers, and work on the conclusive design of civil and site infrastructure is currently underway. Concurrently, Arikon has initiated initial dialogues with regulatory authorities to initiate the permitting process for the Schwarze Pumpe project. Up to this point, favourable cooperation and backing have been observed from both local authorities and regulatory entities.

The Company has previously concluded a Preliminary Feasibility Study concerning the establishment of a 10,000tpa Silumina Anodes™ plant located in Saxony, Germany, which has yielded a remarkable NPV of US$507M. As Altech accelerates its efforts to introduce its patented technology to the market, it has initiated the construction of a pilot plant in close proximity to the intended project site. This pilot plant's primary objective is to support the qualification process for the Silumina Anodes™ product. It will have the capability to supply interested customers with commercial samples to facilitate their testing and qualification procedures.

Altech Batteries Interactive Investor Hub

Engage with Altech directly by asking questions, watching video summaries and seeing what other shareholders have to say about this, as well as past announcements, at our Investor Hub https://investorhub.altechgroup.com

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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-Chloride Solid State (SCSS) 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.

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Sodium Alumina Solid State Batteries

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.

Silumina Anodes™

HPA Production Project

Altech is also further aiming to become a supplier of 99.99% (4N) high purity alumina (Al_2O_3) 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.