



Altech Chemicals
Limited

ASX ANNOUNCEMENT AND MEDIA RELEASE

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GREEN CREDENTIALS OF GERMAN BATTERY MATERIALS PLANT ESTABLISHED

Highlights

- Green credentials assessment completed for battery materials coating plant
- Environmentally sustainable design features
- Lower CO₂ emissions of between ~19% and ~52% possible
- Independent green project status assessment by CICERO, Norway

Altech Chemicals Limited (Altech/the Company) (ASX: ATC) (FRA: A3Y) is pleased to report on the green credentials assessment that has recently been completed for a battery materials coating plant that is subject to a preliminary feasibility study (PFS) currently being finalised by Altech Industries Germany GmbH (AIG), a 75% owned subsidiary of Altech.

As part of the PFS, AIG has concluded a detailed carbon dioxide (CO₂) footprint assessment for a battery materials coating plant with a capacity of 10,000tpa. The plant would be located at the Schwarze Pumpe Industrial Park, Saxony, Germany and has been designed with a specific focus on minimising environmental impact, and in accordance with prevailing German, European and International environmental standards. The plant design would also satisfy the Equator Principles that any future potential project lender would require be met.

The assessment took into account various environmentally friendly design features such as a hydrochloric acid recovery package whereby close to 100% of the acid is recovered and recycled, and the use of 100% green electricity generated from renewable sources. It was also assumed that the plant's proposed end product, alumina coated silicon, when incorporated with graphite anode battery material would result in an increase in lithium-ion battery energy storage capacity. This extra capacity would transpire into a lower CO₂ footprint battery when compared to the incumbent lithium-ion battery using a graphite only anode. This part of the assessment determined that coated silicon anode material could result in a CO₂ emissions reduction of ~19% where 5% coated silicon is used in a battery anode, up to a ~ 52% reduction if 20% coated silicon was used (refer Table 1).

Table 1: Estimated reduction in CO₂ footprint from use of coated silicon in Lithium-ion battery anode

Silicon Content %	Reduction in CO ₂ footprint in LIB (equivalent power)
5%	18.7%
10%	34.9%
15%	44.9%
20%	51.8%

Following this positive environmental assessment, AIG has now engaged the Centre of International Climate and Environmental Research (CICERO) in Norway to conduct an independent evaluation of the project and provide an accreditation status. A similar process was undertaken by CICERO for Altech's Johor HPA plant (refer to ASX Announcement on 20 May 2020).

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Authorised by: Iggy Tan (Managing Director)

About Altech Chemicals (ASX:ATC) (FRA:A3Y)

Altech Chemicals Limited (ASX: ATC, "Altech" or "Company") is a specialty alumina technology and production company that has finalised Stage 1 and Stage 2 construction of its high purity alumina (HPA) plant in Johor, Malaysia, and continues with innovative research and development of its downstream alumina coating technology used to improve the battery life and performance in lithium-ion batteries. Altech's alumina coating technology is successful on both silicon and graphite particles, typical of those used in the anode of lithium-ion batteries, particularly within the burgeoning electric vehicle industry.



The Company has commenced a preliminary feasibility study (PFS) for the construction of a high purity alumina (HPA) battery materials coating plant in Saxony, Germany. The PFS is being undertaken by Altech's 75% owned German subsidiary, Altech Industries Germany GmbH (AIG). Work on the preliminary engineering design for the 10,000 tpa battery materials plant is in the final stages of completion. Altech has also commenced the green accreditation of the environmental credentials of the battery materials process.

Altech is further aiming to become one of the world's leading suppliers 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. 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.

HPA is a high-value, high-margin and highly demanded product as it is the critical ingredient required for the production of synthetic sapphire. Synthetic sapphire is used in the manufacture of substrates for LED lights, semiconductor wafers used in the electronics industry, and scratch-resistant sapphire glass used for wristwatch faces, optical windows and smartphone components. Increasingly, HPA is used by lithium-ion battery manufacturers as the coating on the battery's separator, which improves performance, longevity and safety of the battery. With global HPA demand approximately 19,000t (2018), it is estimated that this demand will grow at a compound annual growth rate (CAGR) of 30% (2018-2028); by 2028 HPA market demand is forecast to be approximately 272,000t, driven by the increasing adoption of LEDs worldwide as well as the demand for HPA by lithium-ion battery manufacturers to serve the surging electric vehicle market.

German engineering firm SMS group GmbH (SMS) is the appointed EPC contractor for construction of Altech's Malaysian HPA plant. SMS has provided a USD280 million fixed price turnkey contract and has proposed clear and concise guarantees to Altech for plant throughput and completion. Altech has executed an off-take sales arrangement with Mitsubishi Corporation's Australian subsidiary, Mitsubishi Australia Ltd (Mitsubishi) covering the first 10-years of HPA production from the plant.

Conservative (bank case) cash flow modelling of the HPA plant shows a pre-tax net present value of USD505.6million at a discount rate of 7.5%. The project generates annual average net free cash of ~USD76million at full production (allowing for sustaining capital and before debt servicing and tax), with an attractive margin on HPA sales of ~63%. (Refer to ASX Announcement "Positive Final Investment Decision Study for 4,500TPA HPA project" dated 23 October 2017 for complete details. The Company confirms that as at the date of this announcement there are no material changes to the key assumptions adopted in the study).

The Company has been successful in securing senior project debt finance of USD190 million from German government owned KfW IPEX-Bank as senior lender. Stage 1 and Stage 2 early works construction has been completed on time and on budget.

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Forward-looking Statements

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