



Alpha HPA doing it first

The start of pilot plant trials in Brisbane has moved Alpha HPA closer to the commercialisation of its unique process for the production of high purity alumina (HPA).

The company's pilot plant has been underway since early July, and was expected to lead to the dispatch of commercial qualification samples to selected end users in August.

Managing Director Rimas Kairaitis says confidence was running high that the pilot plant would confirm the company's industry-disruptive HPA First processing technology, which can deliver high-volume HPA production at low cost.

Unlike existing HPA production processes that use aluminium metal or mined kaolin as their starting point, the feedstock for HPA First is readily available aluminium chemical feedstocks.

Due to its potential to produce HPA at much lower costs, Alpha HPA has kept details of the HPA First process under wraps. But Kairaitis says that it is a highly selective solvent extraction process at atmospheric temperatures and pressures.

'We believe the processing technology is robust and, because of the expected low costs of production, it is going to be very

disruptive to existing and other proposed processes out there,' Kairaitis says.

HPA is the pure form of aluminium oxide, and is a critical part of batteries in the revolution underway in electric vehicles and the storage of renewable energy.

HPA-coated separators between the anode and cathodes in batteries provide thermal stability (preventing fires) while allowing ionic exchange. A new growth area is the use of an HPA coating on the electrodes themselves.

Apart from strong growth in demand from the battery sector, HPA is enjoying demand growth from its use in LED lighting and sapphire, or scratch-resistant glass.

The decision to proceed to pilot plant confirmation and customer acceptance of the HPA First process was triggered by the 'compelling' business case demonstrated in Alpha HPA's updated prefeasibility study, released earlier this year.

The pre-feasibility study assumed HPA pricing of US\$25,000 per tonne and project capital expenditure of US\$149

million for an operation producing 10,200 tonnes per annum of the high-value product at 99.99 per cent (4N) purity from 20,400 tonnes per annum of aluminium feedstock.

Unit cash costs were estimated at US\$5123 per tonne after by-product credits and annual pre-tax cash flow was estimated at just under US\$200 million.

Critically, sensitivity analysis indicated that the project would be able to withstand HPA prices as low as US\$10,000 per tonne.

The ability to produce 4N purity HPA is critical to customer acceptance and pricing of the product. Purity is determined by the concentration of trace elements in the alumina compound – e.g. iron, magnesium and sodium.

Alpha HPA confirmed that capability ahead of the pilot plant trials using a solvent extraction mini-rig process. Assay results reported in April confirmed more than 4N purity and that the HPA was in a form required for battery applications. **ARR&I**