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Alcoa to investigate low emissions alumina

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$11.3 million in funding to Alcoa of Australia Limited (Alcoa) to demonstrate technology that can electrify the production of steam in its alumina refining process using renewable energy.

Australia is the world's largest exporter of bauxite and one of the largest exporters of alumina accounting for 15% of global alumina refining capacity. Alumina refining is an energy intensive process that uses high pressure steam to produce the heat required to process bauxite into alumina. Alumina can then be converted to aluminum in a smelting process. In 2019, alumina refining accounted for over 14 million tonnes of carbon dioxide in Australia, which represents approximately 24% of Australia's scope 1 manufacturing emissions.

The first-of-its-kind deployment in Australia is planned to be undertaken at Alcoa's existing alumina refining facility at Wagerup, Western Australia.

Approximately 70 per cent of the total fossil fuels consumed in alumina refining relates to the production of steam in boilers. Mechanical Vapour Recompression (MVR) is a potential alternative to produce steam using renewable electricity. MVR recompresses waste steam that would otherwise be exhausted to the atmosphere and recycles it in the refining process. This technology has the potential to improve efficiency, reduce costs and reduce emissions.

Alcoa's main objective for the project, the total cost of which is \$28.2 million, is to demonstrate the technical and commercial feasibility of using MVR powered by renewable energy to produce process heat. Stage 1 of the project will investigate the feasibility of integrating MVR at the refinery. If proven feasible, for Stage 2 of the project, Alcoa will deliver a 3 MW MVR module, powered using renewable energy at the Wagerup Alumina Refinery.

The Australian Government's first Low Emissions Technology Statement highlights the importance of developing a low emissions steel and aluminium industry to help reduce emissions and stimulate economic activity. Innovation in metals refining can improve the competitiveness and emissions intensity of Australia's steel and aluminium production.

ARENA CEO Darren Miller said this exciting project was a significant step towards making low emissions alumina, and an important step towards decarbonising metals production.

"It's great to see companies like Alcoa take the initiative to create a pathway to reduce their emissions in what is an energy-intensive hard to abate process."

"This technology represents an opportunity to electrify a refining process that is currently powered by fossil fuels using a renewable solution which addresses our investment priority of helping industry to reduce emissions, as well as the Government's Technology Investment Roadmap. This is an important step on the pathway towards green aluminium in Australia."