ARENA
Australian Government
Australian Renewable Energy Agency
10 YEARS

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New iron reduction technology targets low emissions steel

On behalf of the Australian Government, the Australian Renewable Energy Agency has today announced $947,035 in funding to Calix Limited (ASX:CXL) to evaluate the feasibility of a low emissions method for reducing iron.

A $1.96 million pre-Front End Engineering and Design (FEED) and FEED study will scope the design for a proposed demonstration scale Hydrogen Direct Reduced Iron (HDRI) production plant utilising Calix's proprietary Zero Emissions Steel Technology (ZESTY).

Calix's proposed demonstration plant would be capable of producing 30,000 tonnes each year of HDRI as a feedstock for steel production.

The majority of global steel production uses carbon intensive blast furnace technology that requires coking coal at numerous stages of the production process.

HDRI is a suitable feedstock for electric arc furnaces, which produce steel using only electricity. When powered by renewables, electric arc furnaces can reduce the emissions from this stage of the process to virtually zero.

Electric arc furnace steel plants today generally use Direct Reduced Iron produced with natural gas. HDRI can use renewable hydrogen to eliminate the need for natural gas and cut emissions from iron reduction.

The process builds on Calix's existing Calix Flash Calciner technology that is used for a variety of industrial processes.

As the world's largest producer of iron ore, Australia is uniquely positioned to reduce emissions from the steel value chain.

Reducing emissions from metals production is a strategic priority for ARENA, with a focus on decarbonising the steel and aluminium value chains.

ARENA has previously supported Australian steel manufacturer BlueScope to investigate reducing emissions from the Port Kembla Steelworks using biochar or renewable hydrogen.

ARENA CEO Darren Miller said that ZESTY is a prime example of Australian innovation helping tackle global challenges.

"Decarbonising heavy industries like steel is a big challenge, and a big opportunity, and ARENA is looking to support companies like Calix that are developing potential solutions," Mr Miller said.

"For Australia and the world to meet our net zero targets, we'll need to develop new ways of making materials the world relies on.

Steel is among the most carbon intensive industries, accounting for more than seven per cent of global CO2-e emissions, and Australia is well positioned to be a leader in this space.

With abundant renewable energy resources and the world's largest iron ore deposits, we have a unique opportunity to decarbonise an industry that is critical to the global economy.

We're looking forward to the outcomes of this study and hope to see ZESTY play an important role in the future of Australian iron and steel." he said.

Calix is an Australian company established in 2005 that offers flash calcination and kiln technology used for more sustainable high temperature processing of minerals and chemicals.

The ZESTY pre-FEED / FEED Study is due to be completed in late 2023 and will inform Calix's decision whether to proceed with the demonstration plant.

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