MEDIA RELEASE

ARENA
Australian Government
Australian Renewable Energy Agency

10 August 2022

# MGA Thermal to demonstrate a fresh approach to energy storage

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced $1.27 million in funding for MGA Thermal Pty Ltd (MGA Thermal) to help demonstrate their innovative thermal energy storage technology.

The Medium Duration Thermal Energy Storage demonstrator (MDTES), with an expected budget of $2.85 million, will see the construction of a pilot unit able to demonstrate the generation of steam from stored thermal energy. The MDTES, which will be located at the company's head office and manufacturing facility near Newcastle, NSW, has a planned storage capacity of 5 MWh and will demonstrate charging and discharging of up to 500 kW.

The pilot unit will produce valuable performance data and provide a tangible demonstration of the technology for prospective customers. Data gathered will cover the charging and discharging behaviour, fluid dynamics and temperature distributions, and validate the efficacy of mid-to-long term thermal storage in a practical system.

Miscibility Gap Alloy (MGA) technology consists of small particles of an alloy embedded within graphite-based blocks which are enclosed within a fully insulated system. Electrical heating elements superheat the alloy to an operating temperature of 400-700℃, while the graphite matrix contains the molten alloy.

The MGA blocks can store heat for periods ranging from hours to days with minimal loss of energy. Heat exchangers use a transfer gas to absorb heat from the MGA blocks, with the heated gas or fluid suitable for industrial heat applications or to drive a steam turbine to generate electricity.

The versatile range of applications for the MGA blocks make it a promising solution to multiple decarbonisation challenges. Proving the generation of useful steam from stored thermal energy paves the way for wider implementations into industrial process heating, waste heat capture, and for use in mid to long term firming of grid scale electricity generation from renewable energy sources.

ARENA CEO Darren Miller said MGA Thermal's unique technology has enormous potential to support the uptake of renewable energy.

"The electricity transition is going to require a variety of storage technologies that are able to discharge over a range of timeframes from hours to days," Mr Miller said.

"MGA Thermal's novel approach could make a real difference in the medium and longer term storage category, supporting hydrogen and pumped hydro.

"With potential deployments for industrial heating end uses, MGA Thermal could play a valuable role in decarbonising both the electricity grid and heavy industry, which often requires high temperature heat and steam for their manufacturing needs.

"ARENA is proud to be supporting an Australian innovation success story, helping bring a research breakthrough from the University of Newcastle closer to a commercially viable product." he said.

The Australian Energy Market Operator (AEMO) in their 2022 Integrated System Plan indicated the National Electricity Market will need more than 60 GW of dispatchable generation and storage by 2050 to support the uptake of renewable energy. Firming and developing Australia's energy storage technology and solutions is critical to the successful execution of this dispatchable generation plan.

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