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Decarbonising the meat industry using heat pump technology

On behalf of the Australian Government, the Australian Renewable Energy Agency (ARENA) has today announced \$838,000 in funding to Hardwick Processors to install a 1 MW (thermal) demonstration scale heat pump and upgrade the electrical supply system at its meat processing plant in Kyneton, Victoria.

The heat pump upgrade will enable the site to produce enough hot water to operate at levels to improve shelf life and access further export market growth, while helping to reduce the site's reliance on natural gas by over 75 per cent.

The project will also be able to benefit from Hardwick Processors' previous commitments to reducing emissions by utilising existing on-site renewable energy supply infrastructure of 2.5 MW solar PV and a 2 MWh battery storage system.

Around half of the total energy used by Australian industry is due to industrial process heat, which typically uses natural gas. Reducing the reliance on natural gas for process heat represents a significant opportunity to decarbonise Australian industry and reduce exposure to volatile gas prices.

Low temperature (~80°C) industrial process heat applications, such as hot water, are amongst the most accessible to supply with renewable energy. Heat pumps operate in this range comfortably and can be powered with renewable electricity.

In 2019 Hardwick Processors was selected from a shortlist of manufacturers to undertake a feasibility study into using renewable energy to provide process heat, as part of a project led by the Australian Alliance for Energy Productivity (A2EP) and funded by ARENA. The study found that it would be most efficient to run a smaller and less expensive heat pump continuously, storing hot water in existing thermal storage tanks. The positive results led to ARENA funding the current demonstration scale project.

In addition to the heat pump installation, Hardwick Processors will also upgrade their electrical supply system to become a high voltage customer, taking any excess electricity required from the Powercor network. This upgrade will provide valuable insights into the electrical supply infrastructure requirements associated with completely electrifying process heat for industry.

ARENA CEO Darren Miller said the demonstration project would help to reduce barriers to uptake for the industry.

"The project offers us the opportunity to trial how using heat pumps can reduce reliance on natural gas and prove to the industry that this is technically and economically feasible and a viable solution to dramatically reduce emissions at their facilities."

"Hardwick Processors is at the forefront of helping to reduce emissions in the meat processing industry. Having already installed on-site solar PV and battery, it is now able to demonstrate how the hot water demand of industrial processing can be managed with the addition of heat pumps and use of thermal energy,

"This is a solution that we could see being replicated across other businesses in the industry." Mr Miller said.

ARENA also recently announced funding to Ground Source Systems to demonstrate a full-scale solar PV and [ground-source heat pump system](#), with gas backup, for heating and cooling at a commercial broiler facility in Yanderra, NSW. The hybrid system will see LPG replaced as a fuel for heating and cooling a single shed for housing chickens.

For more information on these projects, visit arena.gov.au/projects.

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For more information

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