Victorian Energy Upgrades

Case study

The Large Energy User Electrification Support program

MainStream Aquaculture's electric potential to reduce energy bills, emissions

MainStream Aquaculture, a global aquaculture business based in Werribee, specialising in breeding and growing barramundi fish, has been exploring energy efficient upgrades to lower its bills and emissions. Its products are exported all over the world.

As part of the Victorian Government's Large Energy User Electrification Support program, MainStream Aquaculture analysed potential electrification opportunities at its Werribee site. The site consists of a main grow hall housing eight 600 kilolitre (kL) grow pools and two 650 kilowatt (kW) natural gas boilers.

The Large Energy User Electrification Support program is a $1.6 million initiative helping Victorian commercial and industrial gas users identify ways to electrify their operations to reduce energy use, cost and emissions.

With a $19,000 grant, MainStream Aquaculture undertook a feasibility study which proposed two solutions: replacing the two 650kW natural gas boilers with a 550kW water-to-water heat pump and attaching a geothermal and trade waste heat pump to improve efficiency and mitigate water wastage.

The program outlined that:

- By replacing the gas boilers which amount to 70 per cent of the site's gas usage, the water-to-water heat pump can leverage the site's geothermal bore resources (a well drilled into the ground) and provide 29°C of efficient heat generation;
- The geothermal and trade waste heat pump can provide a circular economy approach by capturing and processing otherwise wasted water containing biosolids such as uneaten fish feed, metabolic waste and organic matter;
- Implementing thermal storage into the site's design can manage peak loads, improve efficiency and reduce costs by storing excess energy and redistributing it during peak demands;
- The site's 11 smaller gas boilers can be consolidated into an electrical system which powers future heat pumps; and,
- These solutions can position MainStream Aquaculture as an industry leader in sustainable aquaculture and support the businesses environmental targets.

Installation of the geothermal heat pump could result in:

A **$113,000** annual energy savings cost.

A **10,413 Gigajoule (GJ)** reduction in gas use per year.

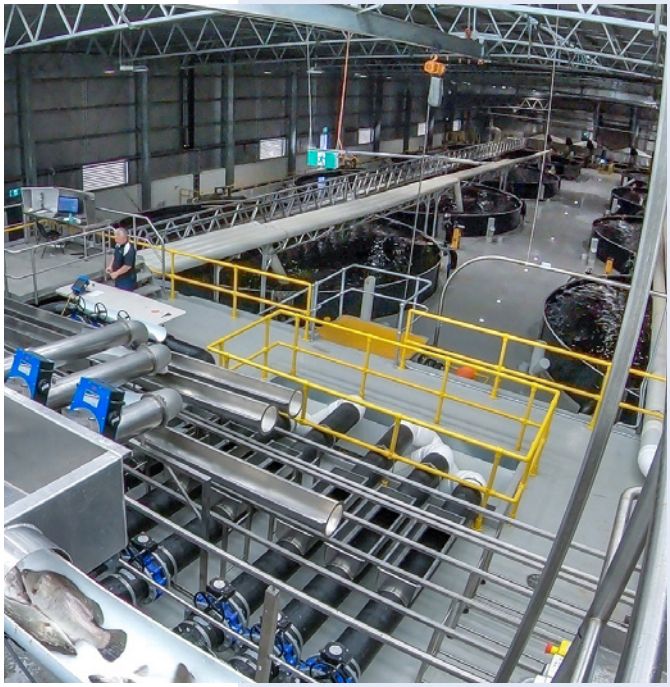
A **70 per cent reduction** of the site's annual gas use, saving 537 TCO_2 per annum.

VEU upgrades potentially worth **$281,250** in financial incentives.

The water-to-water heat pump would offer a simple payback up to **five years** with a net present value of $596,000.

Sustainability Victoria

VICTORIA State Government



Building Victoria's renewable energy future

The Large Energy User Electrification Support program forms part of the Victorian Energy Upgrades (VEU) program, the flagship program which helps Victorians upgrade their homes and businesses with energy-efficient products and services by offering discounts and rebates.

MainStream Aquaculture formed one of 36 facilities which participated in the program. Grants of up to $60,000 per facility were available to support innovative electrification feasibility assessments of commercial and industrial businesses that use between 10 to 100 terajoules of gas per annum.

These feasibility assessments provided a business case for bespoke energy efficiency upgrades through the VEU program's Project Based Activity (PBA) method, such as upgrading hot water boilers, furnaces, ovens and dryers, by tailoring the best way forward to transition from gas to electricity.

Homes and businesses which become more energy-efficient through the VEU program allow accredited providers to create Victorian Energy Efficiency Certificates (VEECs). Each certificate represents one tonne of greenhouse gas prevented from entering our atmosphere.

If pursued, the industrial-sized heat pumps could generate 3,125 VEECs for MainStream Aquaculture.

Approved businesses create certificates for every upgrade they perform. Energy retailers are required to purchase certificates each year corresponding to their share of energy they sell and to meet annual emissions targets set by the Victorian Government. Energy savings achieved in the program benefit all energy consumers as they reduce the need for upgrades to energy infrastructure.

Questions?

For more information on switching to electrification see the VEU page at www.energy.vic.gov.au/victorian-energy-upgrades/about

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