Silver Fern Farms compresses power bill at Finegand site

Silver Fern Farms, the country's largest meat exporter, has cut its power bill at its Finegand site in Otago by rationalising control of compressors that cool much of the plant's refrigeration.
It got a further boost by retrofitting a heat exchanger to its largest air compressor.

[Silver Fern Farms compreses power bill at Finegand site [pdf 83 KB]](#)

OVERVIEW

A $20,000 investment modifying the compressors controls saved over 600,000 kWh of power, costing around $71,000 annually, or nearly 2% of the site's near $3.5 million annual energy bill.

Payback for the investment was just four months. Much of the money put in would have been spent anyway as obsolete parts had needed replacement -– so the real cost came down to the engineer's time.

This initiative is part of Silver Fern Farms' Energy Management Plan which was established in 2013 to try to reduce $30 million-plus annual energy bill (nearly 400 GWhs) -- across its 17 sites. A 2016 report showed that overall energy savings across just seven sites had achieved savings in the order of $1.3 million.

Those seven sites, including Finegand, received energy audits whereby costs and benefits are estimated within a 20% range.

Finegand, where up to 1100 staff process premium lamb and beef, consumes 88GWh of energy at an annual cost of $3.5 million. Energy experts Enercon, who advised Silver Fern Farms during the project, identified the most intense energy users as the compressors in the main engine room that used one fifth of the site's total consumption.

On the first project they narrowed things down further to the controls for the large refrigeration compressor, installed in 2004, but with separate PLC controller fitted. This compressor had variable speed control while the others did not, meaning they were less efficient at part load.

Enercon recommended modifying the controls so the large VSD compressor took the base load and the smaller Howden compressors kicked in and out as required. That's where the savings came.

In the second Finegand project, Enercon's energy audit found the big air compressor was expelling 90% of its energy input as waste heat. It was sited only 10 metres from hot water tanks that required 60°C water. Enercon recommended an oil/water heat exchanger be installed to take energy from the compressor to pre-heat water going into the tanks.

Implementation costs came in below budget so the payback time reduced from 2.6 years to 2.1-1.4 years – depending on energy prices. Water heated by the exchanger came into the tanks 37°C warmer than previously.

Silver Ferns' Engineering Manager Sheep and Venison, Jeremy Lush, said Enercon's energy audits, energy strategy and education programme had had a three-fold effect.

"It raised opportunities the organisation was unaware of, quantified opportunities the organisation was aware of, and provided engineering staff with documentation to refer to, not only for capital expenditure applications, but for procedures to follow for the development of energy efficient solutions for the organisation.

EECA Business has a list of expert energy companies that meet the performance criteria to become an approved business partner. Information and funding is available to assist large energy using businesses with energy efficiency programmes. For more information, click [here](#)

BIG NUMBERS

- A $20,000 investment refining compressor controls saved around 2% of Finegand's approximately $3.5 million bill
- A tweak of the compressor controls saves over 629,000 kWh of electricity annually
- A $16,000 investment in a heat exchanger is saving over 500,000 kWh of thermal electricity annually

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