



CHRISTCHURCH FOUNDRY ALL FIRED UP FOR ENERGY SAVINGS

For Christchurch foundry, AW Fraser, making energy savings is all part of their platform for staying competitive in the global marketplace.

As a successful export business, AW Fraser made the decision to invest in a new high efficiency air compressor that would reduce their electricity usage by about \$30,000 a year.

And according to AW Fraser's engineering manager, Robin Turland, the initiative made good economic sense for a company that spends more than \$1 million on energy per year.

"Because we deal on the world market, we have to work smarter and more efficiently to remain competitive," he says.

"Like all exporters, we deal with some variables such as the changing dollar which are outside our control. But energy costs are something we can affect by being more efficient."

AW Fraser uses a mixture of energy sources – LPG, diesel and electricity – to produce their high-quality brass and bronze bar and machined components.

At the end of 2007 they procured and installed a Variable Speed Drive high efficiency air compressor, to provide compressed air in their workshop.

Installing the air compressor was an energy-saving project, and was therefore eligible for a 40% grant towards the capital cost as part of Energy Efficiency and Conservation Authority's (EECA) Energy Intensive Business (EIB) grants programme.



About AW Fraser

The business has retained its original name from when it was founded back in the 1930s by Archibald William Fraser.

Today the company is privately-owned, and was acquired by its management in 2006. It specialises in producing continuous and centrifugally cast bronze, brass extrusions and precision machined components for manufacturing.

AW Fraser is primarily an export business, regularly sending its products to more than 35 countries. The company supplies industries such as mining, marine, heavy machinery, original equipment manufacturing and general engineering.

"We sell brass and bronze bar as a commodity product throughout the world – including Asia, North America and Europe," explains CEO Gordon Sutherland.

"We then take about half of that and machine it into components for various manufacturers. We currently supply the likes of GE and General Motors in North America."



The business case

Generally speaking, there's a lot of scope for energy savings when it comes to compressed air usage.

A recent EECA report* stated that New Zealand businesses pay around \$70-100 million a year for electricity to produce the compressed air they need. And given that the average energy return is poor – at around just 10% to 15% – there is plenty of room for improvement.

At AW Fraser, electricity is used to power the induction melting furnaces; which range from 500kg to 1500kg capacity. The fully-equipped machine shop previously used \$54,000 worth of electricity per annum for compressed air each year.

The EECA-supported project reduced AW Fraser's electricity usage by replacing their existing fixed speed compressor with a new, high efficiency Variable Speed Drive compressor. The compressor was supplied and installed by Atlas Copco (NZ) Ltd at a cost of around \$55,000.

*Managing the 'Fourth Utility', Emprove Resource: Compressed Air, June 2007, EECA

Variable Speed Drive (or VSD) compressors follow the installation's air demand profile and thereby minimise inefficient running time.

"Previously we had a fixed speed screw air compressor with a motor that ran 24 hours a day – which means you're always paying a set amount of power," says Robin Turland.

"With the new VSD compressor, the electric motor ramps up and down. It only produces as much air as is needed, so it won't run any harder than it has to."

EECA reports that VSD compressors are being increasingly utilised within New Zealand industries – and the technology is suitable for any site that uses compressed air but has a variable load.

Where do the savings come from?

Since the new compressor was installed, Robin Turland says anecdotal evidence shows the savings have been as predicted.

"We did a week's trial back in February, and the savings of 300,000 kWh predicted by our suppliers Atlas Copco were pretty much spot on."

With the 40% grant from EECA, the net cost of the project was approximately \$35,000. By delivering annual energy savings of around \$30,000, it quickly provides return on investment.

"The compressor has paid for itself in just over a year – so it's saving us money long-term now."

Other benefits

Other benefits of the project include improved reliability of the compressor, and reduced risk of emissions from the pulse-jet baghouses (or dust collectors).

Total project cost (approx)	\$55,000
EECA grant	\$22,945
Estimated annual energy savings	\$29,980
Project payback period (with grant)	1.1 years
Estimated annual reduction in energy consumption (kWh)	299,800

"Reliability of equipment is something we are aiming to apply throughout the plant," says Robin.

"If the compressor stops working, certain parts of the plant such as the automatic lathes and dust extractors will stop working. Our goal is only to have controlled shut down."

The pulse-jet baghouses require compressed air to clean their filters. If the air stops, there is a risk the bag might discharge dust and particles into the atmosphere.

As Robin Turland explains, AW Fraser is committed to improvement and investing in top-of-the-line equipment – reflecting the management principles of the Toyota Way.

EECA is completing an energy audit of AW Fraser's entire plant, to advise on any further energy savings.

"It's good to know that where we can save money and prove potential energy savings, EECA will help us out," says Robin Turland.

"Any saving we can make on our energy bill has to be a good move."

Energy Intensive Businesses – Project Grants

EECA has grants available of up to 40% of the capital cost of a project, with a maximum of \$100,000 for each grant. Projects that implement new or under utilised technologies to New Zealand are encouraged to apply.

The implemented technologies should:

- be capable of reducing the energy intensity of an organisation's operation
- have the potential to be applied to a majority of businesses across their industry sector
- be commercially available and offer an acceptable payback period.

Businesses who receive a grant must be willing for their project to be used as a case study, so others can learn from their experiences. Other businesses can look to you as an example of good energy management making you a leader in your field.

Contact: Phone: 0800 358 676
email: eib@eeeca.govt.nz

Other energy grants

Emprove

EECA offers the following services and funding for businesses energy efficiency projects:

Energy Achiever

- Hour-long session with EECA Emprove Account Manager to scope current energy usage
- Free for businesses spending more than \$500,000 a year on energy.

Energy Audit

- Comprehensive energy audit carried out by an independent consultant
- Funding available through Emprove programme towards the cost of an energy audit for businesses with energy bills of more than \$100,000 a year.

Contact: Phone: 0800 358 676
email: emprove@eeeca.govt.nz

Supporting the use of wood residue

The Wood Energy Grant Scheme offers help, by way of funding and information, to businesses interested in using wood residue as an energy source.

EECA can provide:

1. Funding for demonstration projects
2. Funding for feasibility studies that review the use of wood residue as a fuel
3. Relevant information to sawmills, forestry owners and the general public on the use of wood residues via the Bioenergy Knowledge Centre (www.bioenergy-gateway.org.nz).

Funding available for business grants

Business grants for capital/demonstration projects may be up to 40% of the capital cost of the project, with a minimum of \$10,000 and maximum of \$200,000.

Funding is available for projects involving technologies that:

- Have the potential for widespread industry adoption
- Have an acceptable payback period or ROI.

Applicants must be willing to have their project monitored by a third party and allow the results to be published to help promote energy efficiency.

Funding available for feasibility studies

Grants for feasibility studies are available up to a maximum of 75% of the feasibility study costs and the applicant must be willing to have the results of the studies publicised as a case study.

Funding is available for feasibility studies involving technologies that:

- Have the potential for widespread industry adoption
- Are capable of saving energy or have potential for increased use of renewable energy.

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