



# COOKING UP SAVINGS AT BACKPACKERS

Cooking oil from Kaikoura's fish and chip shops is getting a second lease of life, firing up the boiler at the local Lazy Shag backpacker hostel. The innovative project was supported by an EECA capital grant – and has resulted in this backpackers slashing their electricity bill for hot water by a massive 92%, to the delight of its owner.

*"It's a part of the whole Kaikoura thing."*

Lazy Shag owner David Stanford had 'mucked around' with biofuels for the last five years' before hitting on adapting the idea to water heating, and installing a clean-burning multi-oil boiler. He was motivated by the cost savings he stood to gain through increased energy efficiency, as well as fitting in with the environmental ethos of the whale-watching town. "It's a part of the whole Kaikoura thing".

#### Abundant renewable fuel supply

The fuel for the boiler is waste cooking oil obtained cheaply from local restaurants and fast food outlets. It currently costs \$10 plus delivery per 200-litre drum and there's plenty of it available; the Lazy Shag has around five years of used cooking oil stockpiled currently. In the unlikely

event that supplies run out, the boiler can run on anything flammable – used engine oil, diesel, or even tallow.

#### Electrifying savings

Savings in electricity from the multi-oil boiler have been remarkable. The amount of electricity used to heat water decreased from around 52,000 kilowatts per year before the installation, to only 3,000 kilowatts per year afterwards – a saving of 49,000 kilowatts and many thousands of dollars per year.

The electricity saved also equates to big reductions in greenhouse gasses. The drop in carbon dioxide emissions for the backpackers has been estimated at over 10 tonnes per year.

"It only needs refueling and cleaning every month"

### Installing and maintaining savings

David opted for a CB 200 multi-fuel boiler for his business, which was readily available from a local supplier. The Energy Efficiency and Conservation Authority (EECA) supported David with a capital grant to purchase the boiler to get the project underway.

In order to install a different boiler, the existing network of pumps and pipes throughout the building had to be retrofitted to enable the upgrade of the hot water heating system. David describes the retrofit as awkward at times. "The existing system wasn't designed to run on waste oil. It took careful planning and a process of trial and error to complete the installation – it took us three months."

The upgrade required a one-off consent from Environment Canterbury for emissions as well as other resource consents and building compliance from the local authorities.

Now that the boiler is installed, however, he says it is easy to run and maintain. "It only needs refueling and cleaning every month."

### Before and after installation

David Stanford's backpackers has three levels and can accommodate 52 people at one time. Each of its fifteen rooms has its own bathroom and uses water radiators for heating. Prior to the multi-oil boiler being installed, The Lazy Shag supplied heated water to the rooms and radiators using electrically powered hot water cylinders.

To gauge the effectiveness of the new system, an independent energy consultancy company EMSOL (Energy Management Solutions Ltd) was employed to monitor energy use, cost and CO<sub>2</sub> emissions before and after the installation of the new boiler.

The efficiency of the new hot water supply system was calculated at 57%. This efficiency rating is derived from the boiler efficiency minus the heat losses incurred during distribution.

The new hot water system uses considerably less electricity as it is only used for operating the compressor and boiler and circulation pumps. The estimated savings and emissions reductions are illustrated below.

	Before boiler installation	After boiler installation
Hot water electricity use	52,830 kWh/yr	3,670 kWh/yr
Annual CO <sub>2</sub> emissions	10 tonne/yr	0.4 tonne/yr

Any business that has an existing diesel boiler could convert to this technology.

Saving power is a top priority for the Lazy Shag, and David Stanford is already planning how he can utilise more renewable energy in the hostel. He intends to use the boiler to preheat air for the driers there. "I want to lessen my reliance on the big electricity providers. My next target is to use wind power and eventually I would like to get the hostel right off the national grid altogether."

EECA enables organisations to increase their domestic and international competitiveness by adopting energy efficiency and renewable energy practices.

We work with businesses to identify the opportunities for energy management that are available to them and help them develop energy management action plans to make the most of these opportunities.

Good energy management has many benefits for businesses, including lower costs, increased productivity,

reduced greenhouse gas emissions and a positive effect on the brand.

We have a particular interest in:

- encouraging new or under-used technology that can make processes more efficient
- projects that reduce greenhouse gas emissions, and
- developing the wood fuel industry.

For more information, contact us directly – see details below.

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