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Promising results from clean fuel technology trial - EECA

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The trial was conducted by Interislander and supported by the Energy Efficiency and Conservation Authority (EECA) Technology Demonstration programme, which trials new or underutilised technology. It showed a 3% to 5% saving in the fuel consumed in the generator engine of the Arahura, as well as a reduction in the level of particulate emissions through more complete combustion. The trial, which was monitored by an independent fuel consultant, also showed a small improvement in the base engine performance, believed to be due to a cleaning function of the fuel.

Leigh Ramsey, Managing Director of Blended Fuel Solutions NZ, the company which supplied the technology with its US based partner, Alternative Petroleum Technologies, says the trial included a month of monitored running on normal fuel to give a base line, along with pre and post-trial internal engine inspections.

"The fuel needs to be pre-processed to create emulsion, and requires no engine modification to run," Mr Ramsay says. "An emulsion is made when one substance coats another. In this case the oil and water emulsion is made in a high-shear mixer using an additive to keep it stable. This was done on board in-line, just prior to use.

Mr Ramsey says the fuel emulsion behaves like normal fuel in the engine until it is injected into the combustion chamber. The water in the fuel then rapidly turns into steam and this causes the fuel droplets to shatter into smaller droplets which provides for better combustion of the fuel.

"This leads to more complete combustion with less waste and fewer particulates and greenhouse gases."

Interislander, Strategy Manager, Peter Wells says the outcome of the trial could lead to significant fuel savings across the Interislander fleet.

"The outcome looks as though it could reduce our use of fuel and the level of emissions as well as giving us a significant financial saving. The trial is an example of the investment KiwiRail and the ship's engineering staff are making into reducing the company's use of fossil fuels," Mr Wells says.

EECA Project Manager, Dinesh Chand, says the principle of emulsified fuel could be applied in other areas to reduce the use of fossil fuels and so reducing carbon emissions, as well as saving money.

"We are excited that this trial showed promising results in the use of emulsified fuel in a large marine engine. The principle could be applied to other ferries and to coastal shipping," Mr Chand says.

Mr Chand says the technology should only be used with expert advice and using specialist equipment.