

The Green RIG – Just How Green Is It?



One kilowatt of roof-mounted solar panels

It's green on the outside—but is it green on the inside? The Green RIG tries to tread lightly on the environment by....

1) Offsetting its Carbon emissions:

The Green Rig is Climate Conscious™! All carbon that it produces as it drives around the Horizons region is offset through planting native trees as part of the Climate Conscious™ system (run by Kyoto Forests of New Zealand Limited). For more information see www.climate-conscious.com. It is thought operating the RIG will produce 16-25 tonnes of carbon each year. Actual figures will depend on the mix of rural to urban driving, driving efficiency and engine maintenance – all of which we will be endeavouring to manage for maximum efficiency.

2) Hoping to use Biofuel:

As the transport sector emits approximately 45% of New Zealand's carbon dioxide pollution, it is critical the RIG runs efficiently and steps are taken to reduce its emissions. Biofuels are renewable fuels that have the potential to produce lower carbon dioxide emissions than conventional Commercial availability of biofuel for

large diesel vehicles is currently limited to experimental trials in the Christchurch and Auckland regions. Horizons is in discussions with biofuel suppliers about the potential for the Green RIG to be a test vehicle for biodiesel in the next couple of years. In the meantime, we aim to operate the RIG in a fuel efficient manner using conventional diesel.

We bought a new tractor unit to pull the Green RIG to ensure it had a cleaner-burning Euro 3 engine, i.e. compliant with stringent European vehicle exhaust emission standards.

3) Being Energy Efficient:

On-board the RIG we use energy-efficient LED interior lighting, energy efficient appliances, and actively manage power consumption to ensure on-board electrical equipment is run efficiently. LPG (which produces only about a third of the greenhouse gas emissions of electricity) powers the on-board BBQ, heater and hot-water cylinder. The RIG's outdoor dome is kept inflated by a custom-modified energy efficient electric blower unit.



Tree planting helps offset the RIG's carbon emissions



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4) Generating its own Green Power:

The RIG has eight roof-mounted solar panels that can generate up to 1kW. We hope in the long term this renewable energy source will provide 25-50% of the RIG's power needs. The solar energy is stored in an on-board bank of 2-volt lead acid gel bell batteries, with a total energy storage capacity of 20kWh. In locations where mains power is not available the batteries are supported by a fuel-efficient (eco-throttle), low-emission Honda petrol generator.

5) Relying on Passive Cooling:

No air-conditioning is provided on the RIG as it would be a huge waste of energy trying to cool an indoor-outdoor space. Natural convective ventilation and air circulation is provided by doors, windows and hatches. Forced-air roof fan ventilation is available if needed, extensive wall and ceiling insulation provides thermal protection, and a light-coloured roof exterior reduces the heat gain. The elevated nature of the RIG also increases its exposure to cooling breezes and the light-coloured outdoor inflatable dome structure also shades the RIG interior and cools it during summer.

6) Smart use of Technology:

To reduce the impacts of support vehicle and personnel travel, technology such as video conferencing, remote connections for computer and technology servicing, and an SMS text alarm system are used on the RIG.



Energy-efficient LED lighting throughout

7) Thoughtful Day-to-Day Management:

The operational management of the RIG is targeted at keeping the RIG's ecological footprint small through waste minimisation, use of recycled papers for printing, use of eco-friendly products (for cleaning, catering etc), and purchasing of other 'green' support products. The RIG's annual programme will be planned to try and avoid excessive driving and inefficient travel routes.

Design/Construction Process:

In designing and building the RIG careful material choices were made to try and ensure the materials used were either: made with less environmental impact (eg. Environmental Choice NZ accredited products), or materials with recycled content (eg. Autex Greenstuf insulation), or quality materials with a long lifespan (equivalent to the 10-year projected life of the RIG). Construction materials were used efficiently with efforts made to minimise construction waste.



A Euro III clean-burning engine

The RIG was designed to allow for easy adaptation and modification of the interior for future changes and updates. The outdoor 'Streamulator' exhibit which utilises water, has a built-in recirculation system to re-use the water rather than waste it after each use.

Perhaps the most important eco-design approach of all was local contractors and suppliers were used wherever possible. This minimised the energy used to transport materials or people during the project.

Watch this space for more ways the Green RIG will be working to demonstrate ideas on how to reduce your own ecological footprint.