

THE GREEN RIG – HOW GREEN IS IT?



In building the big Green RIG mobile environmental education vehicle, Horizons has taken care to try and tread lightly on the environment by...

Offsetting the RIG's Carbon emissions:

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

Aiming 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 fuels, and they are made from food crops and animal waste bi-products (tallow). The commercial availability of biofuel alternatives for heavy diesel vehicles is currently limited to experimental trials in the Christchurch and Auckland regions. The use of biofuel is expected to become more widespread as the Government has placed an obligation on the NZ oil industry to commence selling biofuels at the pump by 2008.

Horizons is in discussions with a major biofuel supplier regarding the potential for the Green RIG to be a test vehicle for biodiesel in the next couple of years. In the meantime, we will be aiming to operate the RIG in an efficient manner using conventional diesel. A conscious decision was made to purchase a new tractor unit to pull the Green RIG, one that has a cleaner burning Euro 3 engine (ie. it is compliant with European emission standards that define acceptable limits for exhaust emission pollutants in new vehicles).

Being Energy Efficient:

On-board efficiencies are achieved through the use of energy-efficient LED interior lighting, energy efficient appliances, and active power load management (to ensure on-board electrical equipment is run efficiently). Natural gas (which produces only about a third of the greenhouse emissions of electricity) powers the on-board BBQ, heater and hotwater cylinder. The outdoor dome is kept inflated by a custom-modified energy efficient electric blower unit.



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Running partly on Green Power:

The RIG has 8 Sharp roof-mounted solar panels with a maximum generation capacity of approximately 1kW. It is hoped 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 Cell 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 6.5kVA Petrol Generator.

Designing for Passive Cooling:

No air-conditioning is provided on the RIG in acknowledgement of the 'waste of energy' involved in cooling 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.

Use of Technology:

To reduce the impacts of support vehicle travel, the use of technology such as video conferencing, remote connections for computer and technology servicing and interrogation, and SMS security alarm system are being used.

Operational Management:

Daily operational management of the RIG will be 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.

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 allow water to be re-used within it rather than wasted after each use.

And perhaps most importantly, local contractors and suppliers were used wherever possible in an effort to minimise the energy used to transport materials or people.

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

