



A little juice goes further

A game-fishing charter boat improved more than its electrical power by switching to lithium-ion batteries.

When the gel house batteries on the Salhouse launch *Gladiator* came up for replacement, owner/skipper Ken Pascoe approached Enertec Marine Ltd. The company, coincidentally, was about to release its New Zealand-designed and manufactured lithium-ion marine battery range.

Pascoe was offered some from the first production run. And he was happy to try the technology to solve some of *Gladiator's* on-going systems problems.

The vessel had recently been fitted with a gyro stabiliser which provided a huge improvement in stability, but it required the on-board AC genset to be run while in use. As *Gladiator* spends much of her time trolling, the combined 540-amp main engine alternators don't spin fast enough to provide the energy to run the stabiliser.

Lithium-ion batteries have transformed the way *Gladiator* operates.



The gyro runs via a DC/AC inverter system – and at slow speeds there was always a danger of the gel batteries' voltage collapsing, shutting down the inverters.

Since fitting the lithium-ion batteries the voltage hasn't dropped below 13.1 volts, enabling several hours of inverter-powered stabiliser operation without the use of the genset. Pascoe's now aiming to reduce annual genset hours (around 1,100) by 50 percent.

At a replacement cost in excess of \$20k, doubling the genset's life also has significant financial benefits – and this saving alone outweighs the initial cost of the lithium-ion battery installation.

Further benefits have been a huge reduction in weight from the gel bank (360kg) to the lithium-ion bank at 79.5kg. This has not only improved trim – the inverters were relocated adjacent to the batteries to boost efficiency – but the physical size of the battery bank is around 70 percent smaller, freeing up space for other equipment and improving access to parts of the hull.

Projected lifetime for the new batteries is considerably longer than for the gel bank, further justification for the change.

Enertec's lithium-ion batteries – marketed as 'Juice' – are the result of cooperation with the University of Auckland's electrical engineering department. The batteries are designed to meet the

“Re-charging is far faster with lithium-ion batteries, and the fuel bill is lower.”



AS/NZS 3004 standard pertaining to lithium-ion battery installations in boats.

As such they incorporate a sophisticated electronic cell balancing and management system (BMS), ensuring a reliable and safe installation with maximised battery life.

Also incorporated is a self-test feature, believed to be a world first. It enables the system protection mechanisms to be checked at the press of a button on the remote operation-and-monitoring panel, supplied with each battery bank.

Juice batteries are also designed for easy retrofitting to any existing system. Most sales are expected to come from customers upgrading from existing lead acid technologies.

While *Gladiator's* operational requirements related directly to the use of the stabiliser system, lithium-ion batteries can transform electrical supply issues on smaller vessels, in particular through rapid recharging – a fraction of the time compared with lead acid technology. This means a far lower fuel burn where the main engine's alternator is the primary charging source.

Because DC battery loads have increased over the years, mainly with DC refrigeration, many vessels struggle to recharge batteries adequately. Lithium-ion technology can be a game changer and its extra costs are offset by longer life and better system performance. **B**

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