MARINE INDUSTRIAL DESIGN

NIWA | Case Study Number 2

Equipping NZ scientists with a world-class research vessel

NIWA has an international reputation for the quality of its environmental research. And thanks to MID, it will have a vessel that's equipped for 21st century marine research – with a Dynamic Positioning System (DP2, Dynpos AUTR) to enable deployment of equipment on the seabed.

The vessel
RV Tangaroa is a 70m research vessel owned by NIWA Vessel Management Ltd. NIWA is a New Zealand Crown-owned entity that has a global reputation for being at the forefront of atmospheric and aquatic science.

Capable of working in conditions ranging from sub-tropical to sub-antarctic, Tangaroa is well-equipped for a wide range of fisheries assessment work and marine geological research. It is also contracted out to international research bodies, and commercial operations such as oil and gas pipe inspections.

Several years ago, NIWA Vessel Management identified a need to upgrade Tangaroa to meet modern scientific requirements. As general manager Fred Smits explains: "In 2006 we looked at the future of our ships, and where the requirements of science were moving. There was an increasing use of robotic instruments and ROVs (remotely operated vehicles) being deployed on the seabed. In order to do this type of work, the ship needs to stay in position."
As a result, NIWA made the decision to modify Tangaroa to include a Dynamic Positioning System (DP2, Dynpos AUTR). As part of the upgrade, NIWA also wanted to improve laboratory space on the ship, provide greater hydrographic capability and install a new deep ocean winch capable of spooling 10,000m of cable.

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> Fred Smits, NIWA

The task for MID
According to Fred Smits: "We knew what we wanted from a science perspective, but we had to make sure it was commercially responsible. We made several marketing trips to prospective clients to gauge their requirements, and the feedback was positive."
With the business case submitted and approved by the NIWA Board of Directors and NIWA's share holding Ministers, the challenge was to find someone to design such a major modification

Having already assisted NIWA with the initial cost estimates for the funding proposal, MID were then officially engaged as a key partner in Tangaroa's $20m upgrade. They were involved throughout the project – from initial scoping and design through to the final construction drawings.

"This is very specialised work and there are very few marine engineer design companies in NZ who can do these projects," says Fred Smits. "The ship is small and holds a lot of equipment – to put in new systems is not easy. From day one, MID showed exceptional capability."

The results

While retro-fitting is a common occurrence overseas, it has not been done in New Zealand before on a large scale. Fred Smits believes Tangaroa project is testament to the skills and collaborative approach of our local industry.

"This project has proved we can pull the resources together to make it happen, by assembling the right people." He says MID showed outstanding expertise in integrating the complex new equipment within the existing vessel. "MID was continually demonstrating their capability throughout this project. They have a lot of expertise in onboard electrical systems and mechanically they are very, very good."

They also played a key role in getting the vessel's new classification. "MID's first drawings were of such good quality, and they had such a thorough understanding of the requirements, there were only very minor changes required."

PROJECT OVERVIEW

Main features

- Comprehensive $20m refit
- Dynamic Positioning System (DP2, Dynpos AUTR)
- Expanded laboratory space on the ship
- Increased deck space
- Deep Ocean winch capable of spooling 10 km of hydrographic cable

Name of vessel: RV Tangaroa

Owner: NIWA Vessel Management Ltd

Classification: DNV-1A1 (stern trawler/research vessel + Ice 1C (light ice)

Size: 70m, 2282 gross tonnage

Crew capacity: 24 max

Upgrade: Including retrofitting additional 2.8MW generation, 2200kw thruster propulsion, and Dynamic Positioning system equipment.

Fred Smits say the collaborative approach of MID was also appreciated. "I think their service is fantastic. This was an extremely demanding job and their dedication was exceptional – in the three years they never let us down. It was a very collaborative process, and I consider MID as very much part of our team, not a separate consulting company."

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