



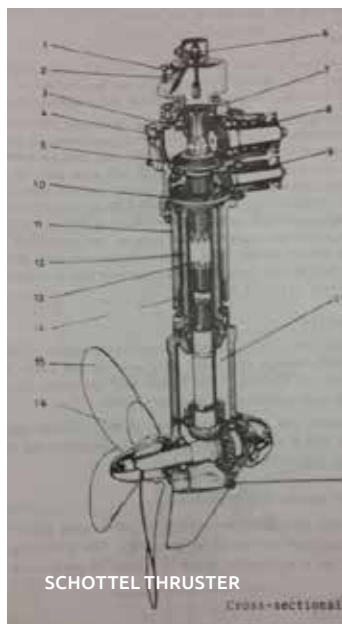
P&O Maritime is a premier maritime solutions provider to governments, businesses and organisations across the world.

PROJECT REQUIREMENTS

- Improve reliability and extend the useful service life of the vessel.
- Upgrade the 2 existing ASEA Tyrac 8A DC converters to ABB DCS800- SO1-1200-05, 1200A Digital DC Converters for both the Port and Starboard Stern Thrusters.
- Electrical equipment and works were to be certified by Lloyds Maritime Register.



DC DRIVE MOTOR



SCHOTTEL THRUSTER

CLIENT

P&O Maritime Services, Hobart

DATE OF WORKS

September 2014

VALUE

\$133,000

CHALLENGE

Improve reliability and extend the useful service life of the vessel.

SOLUTION

Replace existing DC converters, retain existing cubicles, supply fuses, isolators and field cables. Replace auxiliary control equipment and speed feedback encoder and cable. Improve operator interface and emergency stop safety function.

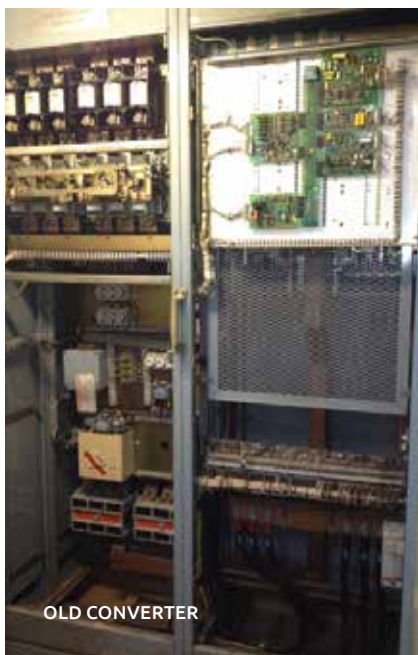
RESULTS

The operation was improved by additional emergency stops and fault indication on the vessel's bridge, one button press to start the drives and reliable indication of actual drive speed.

Continued overleaf

PROJECT SOLUTIONS

- Retain the existing drive cubicles. Retain the existing motor wiring for the Armature, Field and Motor cooling fan.
- Retain the existing main switch and supply fuses.
- Power interconnections between components utilised Lloyds approved flexible cables sized to suit the requirements, i.e. Low Smoke and Halogen Free.
- Install additional I/O card to facilitate monitoring of motor temperature and 3 phase supply unbalanced currents (Earth leakage).
- Manufacture new auxiliary equipment panels to include interface relays, Safety relay, Cooling fan contactor and O/L, Circuit breaker board, etc.
- Install a Line reactor for the 3 phase supply to the Armature converter and Motor field supply to reduce Harmonic distortion and Supply voltage spikes.
- Supply and install 2 new main contactors (connected in parallel).
- Remove unnecessary equipment from the existing panel door and install a remote control panel for the drive.
- Perform standard DC Drive startup and commissioning procedures.
- Test motor direction, speed feedback, field supply, and set armature current limits, etc. to suit the application.
- Re commission all existing inputs, outputs and references.
- Document and commission installation suitable for certification.



PROJECT OUTCOMES

- Old Converter was replaced. Supply Fuses and Isolator (top left) were retained. Everything else was removed.
- New Converter installed. New Digital converter in right hand panel, with cooling air duct at top. Auxiliary relay panel and main contactors shown in bottom half of the left hand panel.

Less impact on the electrical supply generation system to <8% total harmonic distortion and reduced voltage spikes.

The maintainability of the converters have been improved by with the inclusion of a low maintenance speed feedback encoder, digital DC converter with a remote mounted controller to allow easy access to parameter editing, monitoring of operational variables, etc.

Reduced manual handling when changing major components. The auxiliary electrical components are now readily available current generation components.

The digital control function of the DC Drives means that any future changes to the drives operational parameters can be easily implemented and documented either via the local control panel or a laptop and the ABB Drive Windows Lite application.

ACKNOWLEDGMENTS

Design and implementation by Cromarty Instrumentation and Electrical Engineers.

Onboard Installation by ALPHA Electrical, Kingston.

DC Drive supplied by ABB.

Auxiliary Panel manufacture by Cromarty, Devonport.

- The old high maintenance analog tacho generators were replaced with new Leine & Linde optical pulse encoders. These are more accurate and require substantially less maintenance. Bridge Thruster controls (below right), showing E/Stop and fault lamps, etc.



ANALOG TACHO GENERATOR



BRIDGE THRUST CONTROLS

- New control panel, emergency stop, emergency stop reset button and anti-condensation heater controls.

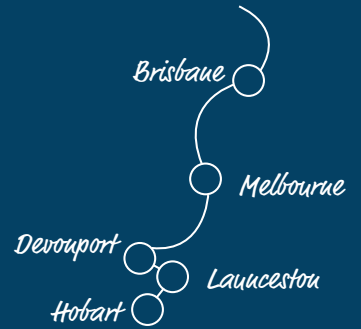


OLD CONVERTER FRONT PANEL



NEW CONVERTER FRONT PANEL

- The remote mounted control panel (above right) enables access to all the drive parameters, displays 3 lines of configurable actual values and contains a backup of the complete drive parameter list which can be used to download to a replacement drive if needed.
- Access to the drive parameters can also be achieved by a specific ABB application, standard laptop and serial cable.



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