



Underway for a year, the SHARES project on the understanding of thruster dynamics is showing unique results, both at full and model scale.

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## SHARES shows unique results

Instrumented 5 MW thruster ready to re-enter service

Led by Allseas, 14 participants, including equipment manufacturers, are taking part in this interesting project that examines the dynamic loading and responses of thrusters. The project was initiated following the unexplained behaviour of gears and bearings within thrusters. The latter are summarised in a first JIP report based on the incident databases of the three participating class societies.

One of the main objectives of SHARES is to identify what amplitude peak loads can 'really' occur and under what conditions, when compared to design assumptions. To this end, Allseas agreed to instrument one of the 10, 5MW thrusters of Solitaire – the world's largest pipe laying vessel. The 60-tonne thruster was extracted and disassembled during a docking in Italy and fitted with sensors by Allseas, Wärtsilä and MARIN to capture gear and bearing dynamics, drive shaft loads, the overall thrust and steering torque.

Long-term monitoring under service conditions started in November 2012 and will continue for a year. In April, off design

conditions such as crash stops, high-speed zig-zag tests and thruster interactions were evaluated during transit to Australia. An extensive model test program is being conducted alongside full-scale measurements to investigate specific dynamic phenomena. Two mechanical azimuthing thrusters have been selected for studying loads – a pulling thruster with open propellers and a pushing thruster with a ducted propeller. Interaction tests with a second thruster are being carried out in open water conditions for all advance speed and steering angles. At ventilation condition, tests are planned with different immersion levels in waves – with and without cavitation – in MARIN's Depressurised Wave Basin.

In order to determine the static and dynamic loads on these thrusters, high accuracy sensors have been developed. A 6-component shaft sensor has been instrumented to measure dynamic loads up to 500Hz on a key blade, duct and on the total unit.

If you would like to 'share' in this journey of discovery, the SHARES JIP is still open to new participants so please get in touch. ▢