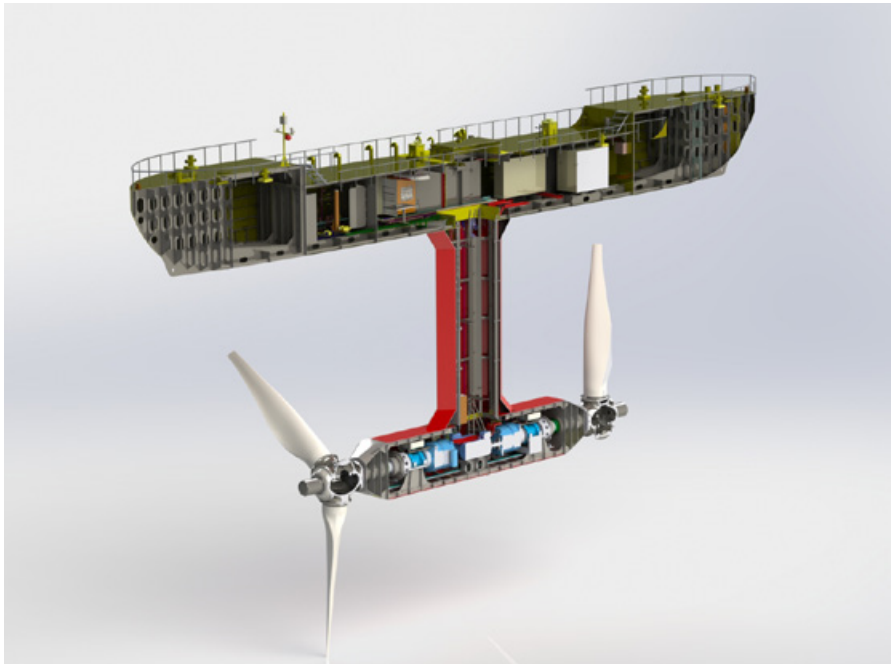
# SEAWATER LUBRICATED BEARING SOLUTION

**Thordon Bearings proposed a seawater lubricated bearing solution to support the main turbine shafts on the OCEAN_2G tidal energy platform being developed by Magallanes Renovables, Spain**



With 40+ years of experience supplying seawater lubricated bearings for propeller shafts on thousands of ships worldwide, Thordon was the logical choice having expertise running large underwater machinery reliably in an open ocean environment.

## TECHNICAL CHALLENGES

The company undertook a careful review of the design loads and expected shaft speeds which would vary through the range of expected tidal currents, at a depth of up to 16m. The biggest technical challenge on this project was to ensure that the design would establish a stable hydrodynamic water film to lift and support the shaft with minimal running friction and maximum bearing wear life.

Although the operating profile of a tidal energy platform is arguably more predictable than a typical ocean going ship, it has the added challenge of starting and stopping four times per day with each reversal of the tide. If the bearing is not correctly sized in this application, the starts and stops may shorten the bearing life.

## CORROSION PROTECTION

In addition, careful consideration was given to protecting the rotating shafts against sea water corrosion. A specialised stainless steel cladding solution was chosen to protect the 600mm diameter shaft, and Thordon's COMPAC elastomeric polymer alloy bearings were selected to ensure the longest possible life in an unpredictable and demanding open ocean environment.

In order to establish a reliable flow of seawater for cooling and lubrication of the bearing system, a pumped water supply was incorporated in an open-loop configuration to deliver 100L/min of water flow to the forward end of the bearing assembly. The forced water supply has the added benefit of slightly pressurising the bearing space to prevent entry of abrasives and debris.

## FULL SCALE TESTING

After a straightforward installation of the bearings in 2017, the OCEAN_2G platform was launched in Vigo, Spain and went through a series of preliminary tow tests. After successful completion of these trials, this exciting new technology will now be deployed for full scale testing and development work at EMEC in Scotland.

**Thordon Bearings**

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