Sterntube-less Ship with Thordon COMPAC



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THORDON BEARINGS INC.

ZERO POLLUTION | HIGH PERFORMANCE | BEARING & SEAL SYSTEMS

REVOLUTIONARY DESIGN

On June 9, 2022, classification society ABS granted Approval in Principle (AIP) to the "sterntube-less ship" concept developed in cooperation with CSSC - Shanghai Merchant Ship Design & Research Institute (SDARI), the National Technical University of Athens (NTUA) and Thordon Bearings Inc.

This revolutionary design replaces a vessel's sterntube with an irregular shaped chamber that allows for a shorter propeller shaft with a seawater lubricated single bearing and seal that can be inspected and maintained while the vessel is afloat, without ever having to withdraw the shaft in drydock..

Compared to a traditional sealed oil-lubricated shaftline, the sterntube-less ship concept removes the sterntube casting, decreases the shaft line length, reduces the engine room space and increases the cargo space in most ships.

This new design can better support simplified compliance with environmentalfocused regulations, such as the Energy Efficiency Design Index (EEDI), and can enable more efficient use of the engine's propulsive power, since the whole

RPM range of speeds is available for continuous operation. And it completely eliminates the need for oil-lubricated sterntube seals and bearings – a major source of marine pollution – the design can save shipowners hundreds of thousands of dollars in capital and operational expenditure over a vessel's lifespan.

KEY SHIP OWNER BENEFITS

More Cargo Carrying Capacity (Engine Moved Aft)

• The design of the stern and the ship does not change, but by moving the engine further aft, more cargo space is created.

Improved EEDI

- Shortening the shaftline and bringing the engine aft wards, minimizes engine room space and maximizes cargo space.
- The lack of BSR (Barred Speed Range) is estimated to reduce emissions and fuel consumption only for those vessels that frequently pass through BSR, based on their operating profile and where a Torsional Vibration Damper has been installed.

No Shaft Withdrawal Needed for Bearings and Seals

• Propeller shaft never needs to be withdrawn for bearing and seal inspection or maintenance. An open seawater lubricated propeller shaft, bearing, liner and seal can to be inspected and maintained while the vessel is afloat, without having to withdraw the shaft in drydock.

If oil-lubricated bearings require replacement, shaft withdrawal is necessary.

• Class Societies consider a seawater lubricated propeller shaft bearing system to be technically equivalent to an oillubricated system. Based on monitoring criteria, shaft withdrawal periods for seawater lubricated systems can now be extended similar to oil-lubricated systems.

Lower Operating Expenses

• Elimination of Environmentally Acceptable Lubricants (EALs) or oil propeller shaft lubricant as shaft lubricated with FREE seawater and there is no aft seal nor seal maintenance.

Zero Pollution

• Lubricant is seawater (no oil is used) and is future compliant with all global regulations.



THE STERNTUBE-LESS SHIP SYSTEM

Thordon has over 35 years of experience designing long life marine bearing systems that operate without oil. Since our bearings have zero impact on the environment, they not only meet but exceed all environmental regulations while reducing your vessels' operating costs. The Sterntube-less Ship with a Thordon COMPAC propeller shaft bearing system includes the following items:



Non-metallic homogeneous elastomeric polymer alloy COMPAC bearing is at the heart of the award-winning seawater lubricated propeller shaft bearing system. The COMPAC bearing has no grooves on the lower half of the bearing to promote early formation of a hydrodynamic film between shaft and bearing, comparable to oil. Given the unique elastomeric nature of Thordon COMPAC bearings, this concept is more tolerant to shaft misalignment with go home capability.

The COMPAC bearing is supplied split with a tapered keyset that allows bearing to be withdrawn inboard, inspected and re-installed in a matter of hours with the shaft in place.



The Thordon Bearing Condition Monitoring System allows bearing wear measurements from inside the ship by pushing a button, supporting the Classification Societies' bearing clearance requirements.

Thordon **BlueWater Seal** An axial lip seal with Safe Return to Port (SRTP) capability that will deliver reliable performance and value to the shipowner with the low friction RENFORM main sealing ring.

Today, a Sterntube-less Ship with a Thordon COMPAC propeller shaft bearing system offers considerable advantages to shipowners and shipbuilders, offering easy monitoring and maintenance of bearing and seal condition without shaft withdrawal, lower operational expenses, de-carbonization of the ship and elimination of oil emissions forever.

COMPAC AFT Bearing with Tapered Keyset

Thordon Bearings Inc

Thordon Water Quality Package

A Thordon Water Quality Package delivers a consistent supply of conditioned water to the seal and bearing to ensure long predictable bearing wear life.

CUSTOMER FOCUSED TO QUICKLY MEET YOUR NEEDS

Quick and Responsive Service

It takes quality products to be globally successful in the bearing and shaft seal industry. It also takes great service to keep customers coming back.

Thordon Bearings Inc. is geared to respond quickly to supply high performance bearing and seal solutions. Our products arrive quickly, fit right and last!

Extensive Distribution Network

Thordon Bearings has an extensive distribution network of more than 75 distributors in 100 countries to supply and service our global customer base. Non-standard requests are met with responsive design, quick machining and speedy delivery.

Application Engineering

Thordon engineers work closely with customers to provide innovative bearing and shaft seal system designs and solutions.

The Global Service and Support team can install, commission, service and maintain the full range of Thordon Bearings' environmentally-safe products.

Manufacturing Quality

Thordon Bearings Inc. is a family-owned company with manufacturing and new product development facilities in Burlington, Ontario, Canada. In addition, we operate a new leading edge manufacturing plant in Slupsk, Poland.

We manufacture to ISO 9001 Quality System requirements. Contact us for our installation references.

High Performance Bearings and Seals; Industry-Leading Service

Thordon Bearings is an industry leader in the design, manufacture, supply and installation of high performance, pollution-free, shaft bearing and seal systems.



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