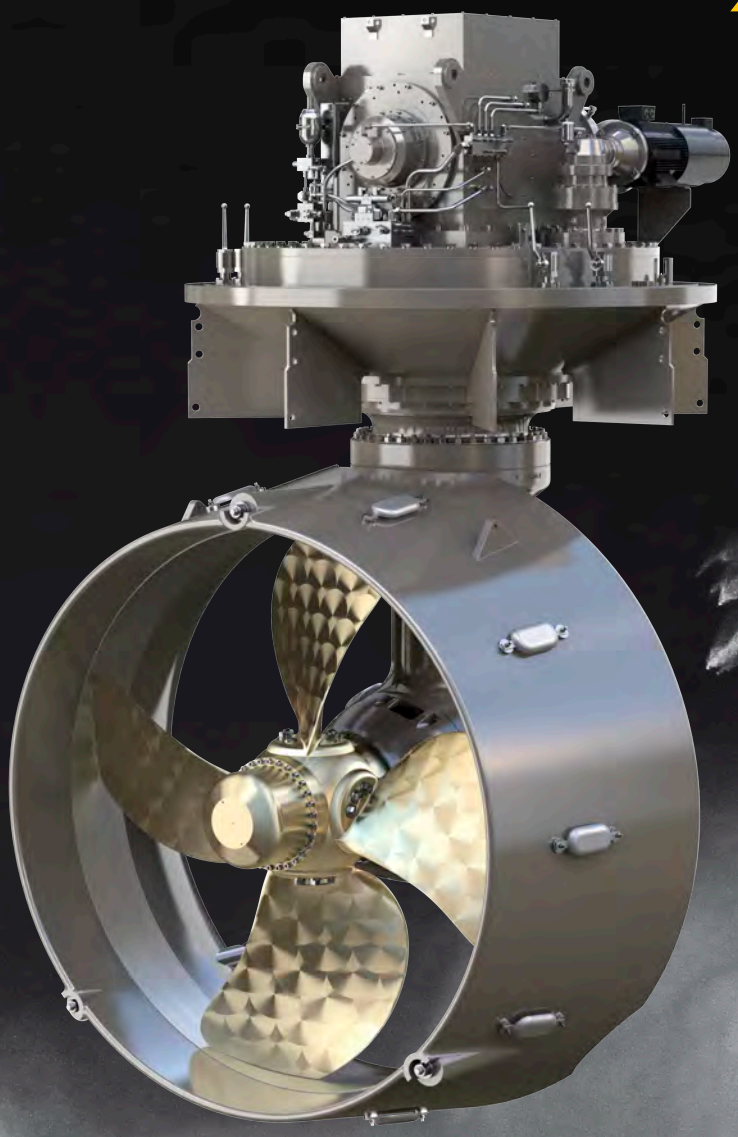
MTA
AZIMUTH THRUSTER



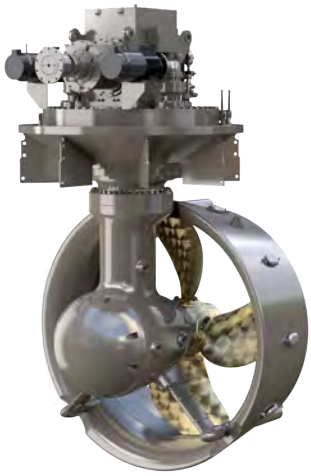
CUSTOM-BUILT FOR LONG-TERM PERFORMANCE

The Azimuth Thruster System is a steerable thruster with a custommade controllable or fixed pitch propeller. The thruster unit is available in both L-drive and Z-drive configurations.

The Azimuth Thruster has been designed to provide unparalleled flexibility and in-service performance.

Z-DRIVE

Hydraulic steering



Electric steering

CORE PROPERTIES

Meeting customer preferences has been key to the development of the Azimuth Thruster. It is available with controllable or fixed pitch propellers, and in either Z- or L-drive configurations; it can be powered by any power source, and its turning system can be either electric or hydraulic. The blade and hub materials are either bronze or stainless steel.

HYDRODYNAMICS

Caterpillar Propulsion continues to focus on hydrodynamics in design, using modern tools such as CFD (Computational Fluid Dynamics) to optimize the hydrodynamic performance of our products.

These tools are used to develop structures that achieve the lowest possible resistance and the highest possible functionality.

REDUNDANT LUBRIFICATION SYSTEM WITH MOISTURE MONITORING

The thruster lubrication oil circulation is handled by two full capacity pumps for redundancy and thereby reliable performance. In the CP-hub itself, oil is circulated by a controlled leakage from the hydraulic system, also with two full capacity pumps, to the lubrication system. Thanks to this constant flow, the oil condition can be monitored for moisture, be cooled and filtered. Furthermore, the oil condition is displayed continuously on the control panel on the bridge.

STRUCTURAL OPTIMIZATION

Caterpillar Propulsion uses finite element structural optimization schemes to optimize the structure. The structure is designed to maximize lifetime, and it is analyzed both statically and dynamically.

MAXIMIZED EFFICIENCY BY CENTERING THE NOZZLE

In reality, when all tolerances are considered, it is impossible to perfectly center the propeller without adjusting the nozzle position. However, by using our unique mechanism for moving the centre of the nozzle to coincide with the centre of the propeller, a regular and even gap can be created between the nozzle and the propeller. The result is zero losses in nozzle and propeller efficiency as well as minimized nozzle wear and tear.

UNIQUE NOZZLE ATTACHMENT SIMPLIFIES MOUNTING/ DISMOUNTING

Our nozzle attachment makes it easy to mount and dismount the nozzle – this is advantageous both at the installation stage and in service.

L-DRIVE

Electric steering

Hydrodynamic optimization
by CFD simulations

Structural optimization and
verification by advanced simulations

FLEXIBLE STEM LENGTH TO FIT ANY HULL

Our customer-driven design has been developed specifically so that it can be adjusted to fit any hull.

RELIABLE PROPELLER SHAFT SEAL WITH GOOD SERVICEABILITY

Using a reliable 4-lip shaft seal with HML-coated liner, long-term sealing performance will be achieved. The shaft seal is constantly fed with circulating pressurized lubrication oil that can be separated from the lubrication system in case of contamination. This functionality increases the life of the seal material by continuously cooling the shaft seal and allows separate monitoring of the shaft seal oil moisture content. Owing to a shrink-fit mounted propeller hub flange and a split rope guard, it is possible to service the entire propeller shaft seal without dismounting the shaft from the thruster. This enables simple and fast MTA service. Rope guard, net cutter, and wire winder are included as standard and dirt barrier as an option.

CONVENIENT OIL DRAINING

Lubrication oil is supplied at the bottom of the thruster. As well as achieving good circulation and cooling performance, this makes it possible to drain lubrication oil or take oil samples from inside the vessel.

LONG LIFE NON-POLLUTING 3-LIP AZIMUTH SEAL

The unit features one sealing lip facing inwards – towards the oil, and two lips facing outwards – towards the water, plus a dirt barrier protecting the water lips. Between the inward and outward lips, there is a void space. Any water or oil that leaks into the void space between the water seals and the oil seals is conveyed to an inboard container, with a readable gauge. Thus, seal condition is monitored and unexpected damage / breakdown can be avoided by planning for repair at the first possible convenient dry-docking. The life of the seal liner is extended by developing an intelligent sealing solution which comprises a spacer that allows for two different seal positions on the liner.

CLASSIFICATION

The MTA meets the requirements of all major classification societies.

AZIMUTH THRUSTER FEATURES

- Modular design – most components are used in other CAT® models. This means that you get a proven and reliable design.
- Custom-designed blades guarantee the highest possible efficiency with low levels of noise and vibration to suit each individual application. The propeller diameter can be from 1.1 to 3.4 metres.
- Conservatively designed heavy-duty gears & bearings with extra heavy-duty material give robust margins that meet all major classification standards.
- Can be driven by an electric motor or a diesel engine from 500 to 3 400 kW.
- A highly reliable control system with more redundancy than most of our competitors. In principle, all functions are doubled. It has a modern graphical user interface that facilitates the operation of the ship.
- Built to the demands of the major classification standards.
- Smart features simplifies installation and give minimized maintenance and a high level of serviceability.

ADVANTAGES

- A high level of redundancy and condition monitoring will ensure long and reliable operation of the propulsion equipment.
- Good serviceability owing to intelligent design.
- Environment friendly by means of improved efficiency and non-polluting sealings.
- Modular design – proven technical solutions from our Tunnel Thrusters are applied to the Azimuth Thruster as well. This paves the way for smooth operation of the ship.

OPTIONS

- Turning system: electric or hydraulic.
- Propeller type: controllable or fixed pitch.
- Input speed: 600 to 2 000 rpm.
- Nozzle: with or without.

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