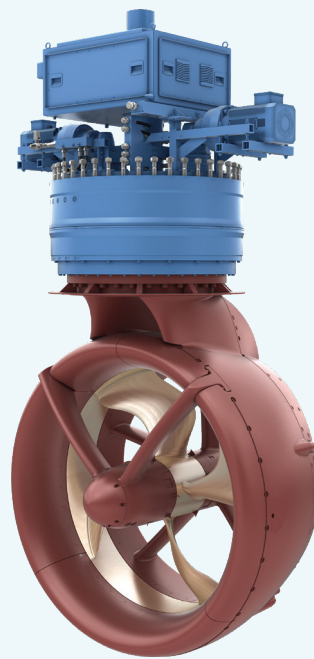


AZIMUTH THRUSTER AZ-PM 1900



KONGSBERG



KONGSBERG AZIMUTH THRUSTERS

AZ-PM 1900

The Permanent Magnet Azimuth thruster is a new addition to the Kongsberg Maritime family of thrusters, building on a completely new approach to thruster design and motor integration. The AZ-PM meets operational requirements with focus on performance and reliability.

The AZ-PM has been engineered with high reliability and low lifecycle cost in focus. Using permanent magnet motor technology increases efficiency and makes the installation more compact, only the variable frequency drive unit is located in the thruster room, freeing up space on board.

The AZ-PM meets very strict requirements for performance, noise and vibration, and will be an excellent choice for operations where low noise and high performance is required.

The AZ-PM has a fully integrated permanent magnet motor and a propeller running on roller bearings, supported by a fixed central shaft. The central shaft is supported by stays. These stays recover some of the swirl energy created by the propeller, providing additional thrust. The Kongsberg Maritime thruster has been developed following strict requirements on quality.

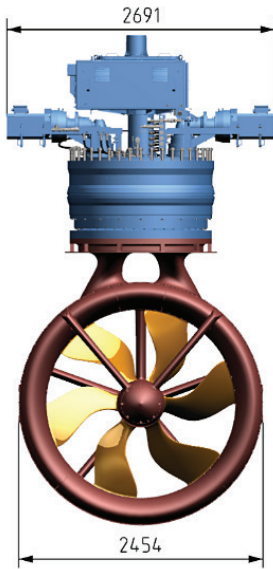
The thruster contains only one moving part compared to mechanical thrusters, and thus has fewer components subject to wear and tear. The thruster is approved for EAL (Environmentally Approved Lubricant) and the lubrication oil volume in the thruster is significantly reduced compared to conventional azimuth thrusters.

The AZ-PM consist of:

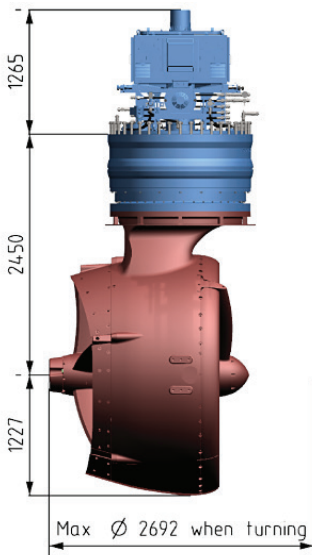
- Nozzle with Permanent magnet motor
- Monoblock fixed pitch propeller
- Lubrication system
- Inboard part with steering gear

TYPICAL APPLICATIONS

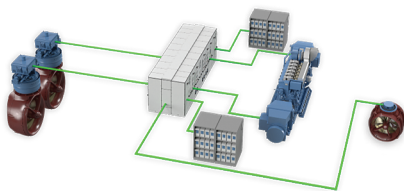
Vessels requiring manoeuvrability, small installation space, high efficiency and low noise.



Thruster seen from forward side



Thruster unit seen from side



AZ-PM propulsion system solution

AZ-PM Azimuth thruster benefits:

- Highly efficient electric Azimuth Thruster with integrated Permanent Magnet Synchronous Motor (PMSM).
- Efficient and space saving PM technology with high torque density.
- Designed for integration to a variety of drive make/supplier.
- Easy installation system mechanical and electrical
- Optimised propulsion and system efficiency utilising excellent hydrodynamic performance in combination with a high torque density PM-motor.
- Fast response times to full power give improved manoeuvrability and operability and anti-roll function capability (approx. 2 sec to 75% thrust).
- Excellent noise and vibration level, structural and underwater radiated noise (URN).
- Optimal nozzle design with integrated PM-motor ensures highly efficient propulsion system in all operation conditions (designed for low drag up to 16 knot). Flexible design with tilted thruster as option.
- Environmentally friendly – Green propulsion with limited oil volume (EAL-oil approved).
- Robust and reliable design with few rotating parts and reduced failure modes. Robust center shaft carries all propeller loads.
- Simplified system design with limited equipment and reduced installation time of unit.
- Reduced footprint, no additional cooling required, thruster unit cooled by surrounding seawater.
- Reduced maintenance and lifecycle cost.
- Long service intervals (main overhaul 15 years).
- Prepared for easy adaption of EHM-system.
- Well suited to be delivered in a full KONGSBERG sustainable electric propulsion solution.
- Strong operational support with KONGSBERG global service network.

TECHNICAL DATA

AZ-PM 1900

Propeller diameter (mm)	1900
Power range (continuous rating)(kW)	500-1100
Nominal speed (rpm)	0-252
Max. output thrust (kN)	191*
Oil volume (dm ³)	705*
Total dry weight (kg)	18 500*
Propeller type	Propeller, Fixed Pitch
Direction of rotation	CW/CCW
Drive	AFE or 12-pulse drive*

*Approximate values provided for information only. Actual thrust may vary for given applications. All data is subject to change without prior notice.

