Product note
Synchronous propulsion motors

ABB's low and medium speed synchronous propulsion motors are designed for demanding VSD (variable speed drive) propulsion applications in different types of marine vessels.

Dedicated low and medium speed synchronous propulsion motors

Diesel-electric propulsion systems incorporating ABB synchronous motors deliver significantly better efficiency and flexibility than conventional systems. This is a key factor in meeting new environmental regulations such as the IMO's MARPOL 73/78 rules and the EU's Sulfur Directive.

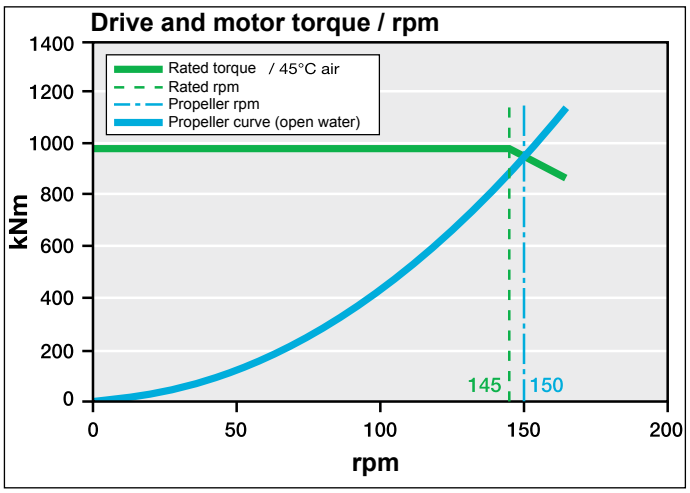
In many cases the vessel's operational profile has to be adjusted to ensure compliance with regulations – which may demand speed limits, increase the time taken for harbor access or require a change of fuel type, for example. This can involve frequent speed changes, a situation where diesel-electric propulsion systems are much more efficient than conventional solutions. Running the engines with an optimized load at constant speed close to their maximum efficiency level produces better fuel economy, reduced emissions and lower maintenance costs.

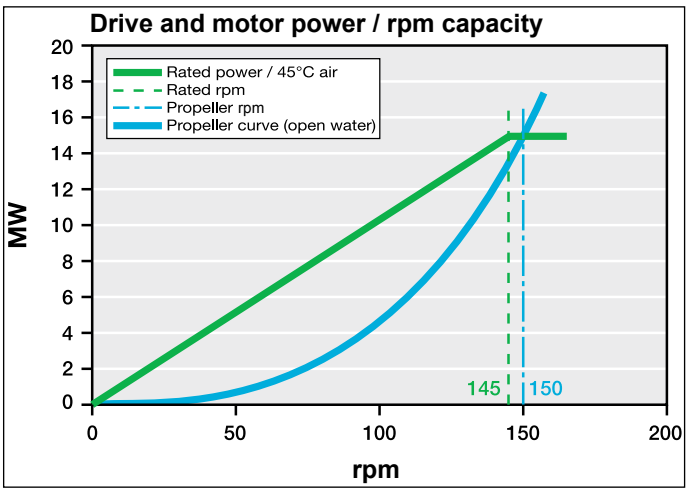
High reliability and precise control

The motors are based on ABB's extensive experience and built for reliability. The proven, totally enclosed design, with air-to-water heat exchangers incorporating cooling motors with fans, ensures safe operation throughout the speed range. The internal cabling is halogen-free and flame-retardant, and sufficient space is provided for easy maintenance.

Precise torque control with ABB frequency converters makes zero-speed, starting and even the most demanding ice-going conditions easy to handle.

Close attention is paid to the requirements of the classification societies as well as customer needs. These include special bearings to handle the inclination of the vessel.





Typical characteristics of an electric propulsion motor (cruiser application).

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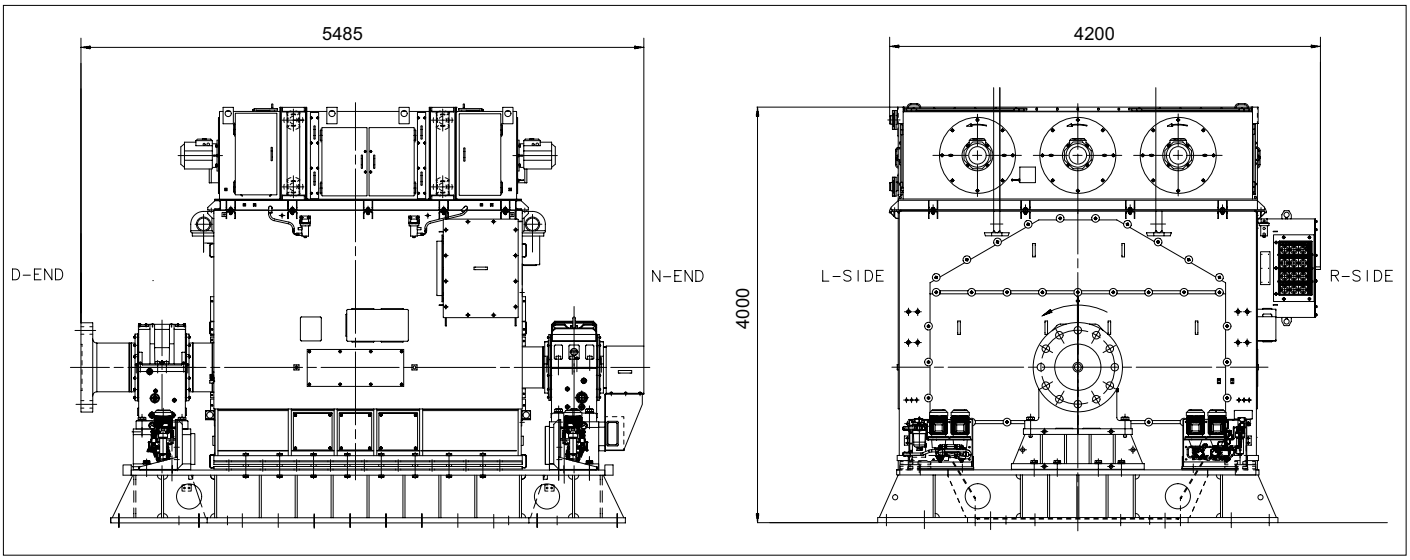

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Example of the main dimensions of a synchronous propulsion motor, type AMZ 1600.

Technical features

- Power range up to 50 MW
- Frame size up to 2500 (IEC)
- Rated speeds: low speed 0 - 250 rpm,
  medium speed 250 - 700 rpm
- 4 - 20 poles
- Protection classes IP44 (standard, higher classes on request)
- Temperature rise class F or B / insulation class F
- Brushless excitation (excitation by brushes with slip rings also available)
- Fully compatible with ABB's ACS converter products with DTCTM (direct torque control). Also available for cyclo-converter and LCI drives
- Designed according to applicable IEC regulations
- Available with classification according to: LRS, DNV, GL, BV, NK, CCS, KRS, Russian Maritime, CS, ABS, RINA

Main benefits

- Diesel-electric propulsion systems provide more freedom in spatial arrangements, better tolerance for malfunctions and better fuel efficiency than mechanical systems
- ABB synchronous propulsion motors deliver efficiency, reliability and superior control dynamics while having low maintenance requirements
- Powering a wide range of vessel types since the 1930s (DC motors) / 1970s (AC motors), including cruisers, car and train ferries, ice breakers, multi-purpose tankers, LNG tankers, ice-going vessels, heavy lift vessels and seismic vessels
- Wide range of optional, application specific accessories
- After sales service through ABB's worldwide organization and network of carefully selected partners.
- Active support for customers at every stage of their project and beyond
- Synchronous propulsion motors are a future-proof choice in a changing regulatory environment

For more information please contact:
www.abb.com/motors&generators

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