



Brochure

Products for marine applications Performance and reliability in demanding conditions

ABB's products, solutions and services for marine applications deliver high levels of performance and reliability in demanding conditions. Certification by leading classification societies ensures compliance with major international standards. ABB's global network means that support is quickly available whenever and wherever it is needed.



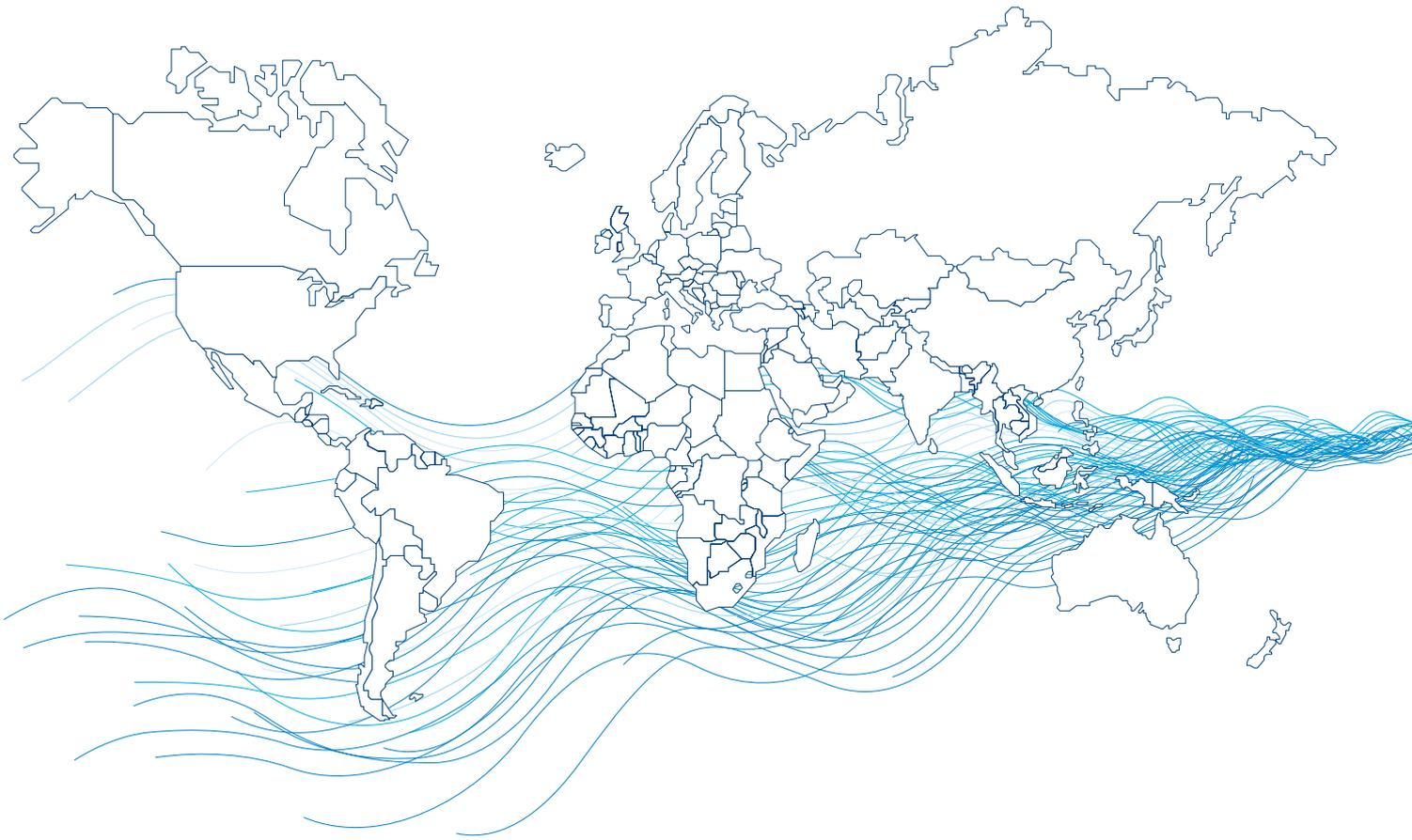
Your partner – whatever the application

ABB provides machinery suppliers (OEMs), panel builders and integrators with compatible products, allowing shipyards, ship owners and operators to harmonize electrical equipment onboard. This ensures that operation, maintenance and support can be optimized over the vessel's lifetime.

In addition to stand-alone products, ABB offers shipyards and ship owners system deliveries in areas such as power generation and distribution, electrical propulsion and total solutions. We also take responsibility for conceptual design, detail engineering, project management and commissioning of the system.

Wide range of products for all applications

ABB's comprehensive product portfolio encompasses all the equipment and components typically required for machinery onboard the vessel. The power and voltage ranges meet all marine requirements with high efficiency ratings to minimize energy consumption. We also provide a wide range of components for hazardous onboard environments which meet the respective regulatory requirements.



The ABB product platform ensures high quality design, optimum compatibility and extensive product lifetime services. Typical application areas for ABB products include all kinds of pumps, compressors, air conditioning and ventilation systems, cranes, thrusters, winches, steering gear, generators, main and distribution switchboards, panels, protection, control systems and power quality equipment.

Life cycle services

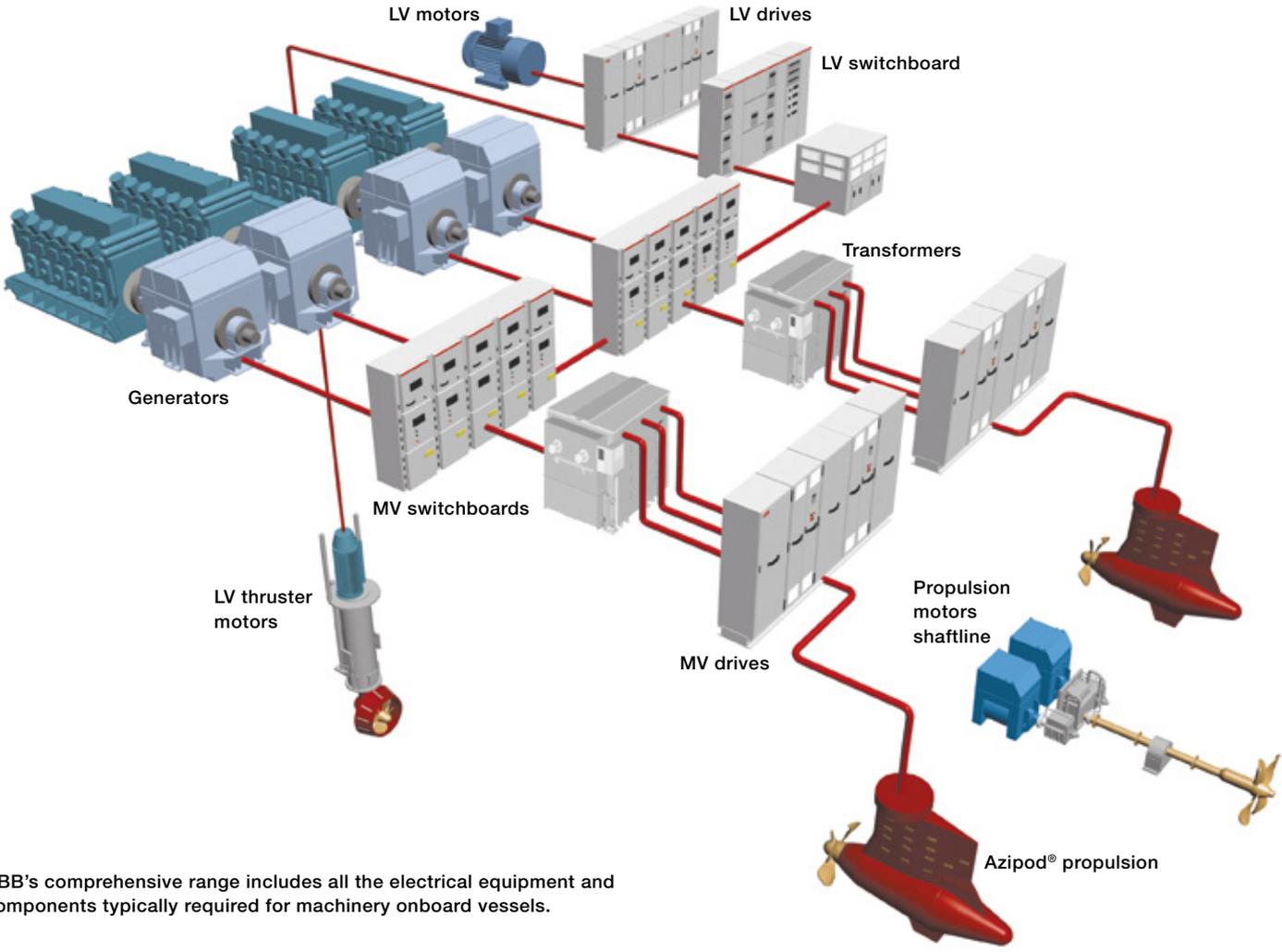
Whatever the location, ABB provides fast deliveries of parts and services for marine applications through the worldwide network of ABB offices and authorized partners.

One of ABB's key objectives is to maximize the uptime of its customers' equipment by ensuring reliable operation and optimum lifetime of all ABB products in a predictable, safe and low cost manner.

ABB's preventive maintenance programs have a significant impact in minimizing equipment downtime and lowering operational costs.



Wide range of products



ABB's comprehensive range includes all the electrical equipment and components typically required for machinery onboard vessels.





Low voltage motors

ABB offers a complete range of low voltage motors, ensuring that the right motor can be found for every need, including special and hazardous environments. Low voltage motors are available in aluminum, steel and cast iron frames with an output range of 0.09–1200 kW.

Applications:

In the marine industry low voltage motors are used, both on and under deck, in applications such as engine room pumps, steering pumps, cargo pumps, ventilation fans, deck cranes, thrusters, winches, hydraulic power packs, and compressors.

Synchronous motors and generators

High efficiency and robust construction make our synchronous motors and generators ideal for the marine industry. Motors range up to 50 000 kW and generators – now with a low voltage range – from 11 to 50 000 kVA. A high degree of standardization enables shorter delivery times and greater versatility in all applications. Reliability and high efficiency result in considerable savings over the lifetime of the motor or generator. Precise torque control with ABB frequency converters makes zero-speed starting and even the most demanding ice-going conditions easy to handle in propulsion drives.

Applications:

ABB synchronous machines are mainly used as propulsion motors, and as main, auxiliary and shaft generators, in a range of vessel types.



High voltage induction motors

ABB offers a comprehensive range (up to 18 000 kW) of reliable and high efficiency induction motors. Built around modular and cast iron platforms, the motors are designed for demanding environments. As they are based on straight-forward platforms, the motors can be perfectly engineered according to each individual customer's requirements for marine use, including special and hazardous environments. The motors are certified to major classification standards, are frequency converter compatible and thoroughly tested. ABB has built considerable experience in supplying quality high voltage induction motors, delivering no fewer than 3000 over the past 50 years.

Applications:

Induction motors are used in applications such as compressors, pumps, winches, fans, blowers, propulsion systems and ship thrusters.



More information at www.abb.com/motors&generators



Low voltage drives

ABB low voltage variable speed drives offer powerful and accurate performance for any application in the power range 0.55 to 5600 kW. ABB's AC drives, with asynchronous or permanent magnet synchronous motors, combine environmental benefits with reduced operating cost. The drives fulfill marine and offshore requirements, with design and operation tested in line with approval requirements. Compact, approved ABB drives ensure reliable and economic operation in all conditions.

Applications:

Low voltage drives are used in main propulsion, steering, thrusters, compressors, pumps, fans, winches, and a number of other onboard systems.

Medium voltage drives

ABB medium voltage drives with their modularity, energy efficiency and superior performance are the perfect solution for modern marine requirements in the power range up to 28 000 kW. ABB's multi-level topology results in an intrinsically less complex, more efficient and highly reliable medium voltage converter. The compact construction produces a small footprint and lightweight design, giving greater flexibility to ship designers and making more space available for other purposes.

Applications:

The modular platform is extremely versatile, providing a basis for marine certified standard single drives, transformerless solutions, multi-motor-drives and systems with built-in redundancy. ABB medium voltage drives are used in advanced propulsion systems and auxiliary applications in all types of vessels and floating structures.

More information at www.abb.com/drives



Frequency converter for Onshore Power Supply (OPS)

The PCS 6000 OPS frequency converters are an economic and efficient solution for converting grid electricity to the appropriate frequency needed onboard, thereby allowing ships to be connected to the public grid. The majority of ships operate with a 60 Hz supply while the local grid in many parts of the world operates at 50 Hz. The PCS 6000 OPS is particularly competitive in terms of installation time and space requirements. High efficiency and low maintenance ensure low operational costs. Additional benefits are grid stabilization through voltage control and optional harmonics filtering and reactive power compensation (Statcom).

Application:

Onshore Power Supply (also known as 'Cold Ironing' or 'Shore to Ship') enables ships to be connected to the harbor grid. With Onshore Power Supply (OPS) ships may turn off their fossil fuel based power generation unit while at berth. This results in improved air quality and reduced noise in ports.

More information: www.abb.com/powerelectronics



Dry transformers for marine propulsion

ABB is a leading manufacturer with almost 20 years of experience in marine transformers. Its unique RESIBLOC® technology produces transformers that are ideal for a wide range of variable speed marine drives. Marine propulsion transformers are usually 3-winding or multiple-winding RESIBLOC® designs with ratings up to 30 MVA or even more, often with special phase shifting to limit network harmonic distortion. Air-to-water cooled transformers make possible high protection classes and more compact construction. Special cooling systems including fan motor redundancy of up to 100% are provided, which helps to further increase availability and reliability.

Applications:

RESIBLOC® transformers are used in electrical propulsion systems and auxiliary applications in all types of vessels and floating structures.



Dry transformers for marine distribution

In general 2-winding AN-cooled transformers are used for auxiliary load distribution, with RESIBLOC® and Vacuum Cast Coil technologies being used for marine distribution. The transformers feature very robust mechanical design to withstand the constant vibrations onboard ships and are also shock resistant for use on icebreakers. Furthermore the transformers are almost maintenance-free and non-explosive.

ABB's special marine optimized designs offer the ideal solution for all kinds of marine applications. In addition to state-of-the-art technology, customers also benefit from ABB's smooth project management, broad experience with classification societies, and problem-free commissioning.

Applications:

The transformers are used in pumps, fans, winches and a number of other onboard systems.

More information: www.abb.com/transformers





Medium voltage switchgear

Medium voltage switchgear is one of the most important links in the power distribution chain, and ABB's UniGear ZS1 meets all requirements. Based on ABB's innovative technology, UniGear ZS1 switchgear is arc proof, extremely safe and very reliable. Double-level solutions produce compact units to ensure efficient use of space. Vacuum and gas circuit breakers delivering high performance, proven reliability and safety are used in UniGear ZS1 switchgear to withstand high DC components (up to 100% at 40 kA and up to 50% at 50 kA) and high levels of peak current up to 150 kA. The design has been tested according to the most demanding international standards and marine certifications.

Applications:

UniGear ZS1 is used as the main switchgear and motor control center in marine and oil and gas installations.

More information at www.abb.com/mediumvoltage



Power Quality solutions

ABB's Dynacomp Power Quality Solutions and PQC active Power Quality Filters are the ideal solutions to ensure good power quality in the onboard supply system. They not only guarantee compliance with the toughest power quality specifications required by the classification societies but also ensure efficient and trouble-free operation in both new and retrofit applications. This can help to reduce running costs and possibly cut CO₂ emissions.

Applications:

ABB Dynacomp thyristor switched capacitor banks allow extremely fast and accurate power factor correction, significantly offloading supply cables, transformers and generators in installations with low power factor. They also contribute to stabilizing the supply voltage when there are highly varying load demands. They are mainly used in applications incorporating a lot of motors and/or DC converters.

ABB PQC active filters ensure compliance with harmonic regulations up to the 50th harmonic order. They therefore eliminate the risk of equipment breakdown due to harmonic pollution and can thus reduce system running costs. Further, they ensure compliance with harmonic regulations and can be used for stepless reactive power compensation of both inductive and capacitive loads, and for load balancing. They are mainly used in applications employing a lot of harmonic producing loads, both in main and auxiliary systems.

ABB Power Quality solutions are used in both new and retrofit applications.

More information: www.abb.com/lowvoltage

Low voltage switchgear

ABB's low voltage switchgear MNS is a reliable and safe solution, type tested according to IEC 60439-1 and arc-proof according to IEC 61641. The design is flexible and compact with ratings up to 5200 A – 690 V.

Applications:

MNS is used for generator switchgear, main switchgear and MCC in marine and oil and gas installations. MNS switchgear can be tailored according to the specific needs of marine and offshore applications, where the reliability and fault integrity of the distribution system are essential for the availability of the electric power system.

Low voltage breakers and switches

ABB's molded case and air circuit breakers provide the optimal solution for applications up to 6300 A with voltages up to 1150 V in AC and DC. In addition to their protection capability they include communication features, particularly suitable for automation, measurements, network analyses and energy saving. In fusable electrification systems the switch fuse provides superior short circuit protection up to 1250 A for voltages up to 690 V. Switch disconnectors are available up to 3150 A, in 1- to 4-pole versions.

Applications:

Breakers and switches are widely used for protection, isolation, breaking and making for all marine applications.

Low voltage control products

With the most extensive range in the marine market, ABB provides softstarters (3 – 1810 A), contactors and motor protection products (6 – 2000 A), electronic products and relays, arc guard (TVOC) and pilot devices, terminal blocks and automation devices. Flexible components for customized automation solutions for operating, control, networking and switching are also available with a multitude of standard fieldbuses and networks.

Applications:

With reliability and performance built into every item of equipment, these products are used in demanding marine industry applications by switchboard, panel and console builders.

More information at www.abb.com/lowvoltage



Contact us

www.abb.com