

SISHIP^{CIS} POWER MV is a Siemens solution for medium-voltage supply and distribution systems for ships networks. It achieves best operational performance and low maintenance efforts for best economics. It is based on a highly standardized design along with optimized foot print, can provide great design freedom and allows an easy integration into all merchant ship designs. The use of vacuum switching technology with high MTBF rates leads to best system availability.

SISHIP^{CIS} POWER MV – a powerful and reliable solution

Where low voltage installations are at their limits a medium-voltage system steps in with its higher fault level breaking capacity along with its superior personal safety standard.

Cargo vessels with large energy consumption widespread networks and high short circuit load such as PostPanamax container ships and all vessels with large scale electric propulsion systems do require a medium-voltage supply system today.

SISHIP^{CIS} POWER MV – our solution in detail

Siemens Medium-Voltage Generators and Switchgear and Supply Transformers are state of the art designed and do comply with all relevant IEC and IACS EII requirements as well as individual class rules and have special adaptations for marine conditions. Siemens Power Management is designed for highest availability, best integration with a ships IAS system. It ensures a save energy management on board for best economics under all operation regimes.



Five good reasons for SISHIP^{CIS} POWER MV

- **Reliable power** supply through a total design approach from Siemens
- **Enforced marine** type-tested and standardized components
- **High level of operational safety**
- **Environmentally friendly** use of vacuum technology
- **Established references** on large cruise, container ships and many special purpose vessels

SISHIP^{CIS} POWER MV

Completely Integrated Solutions for Merchant Vessels

Medium-Voltage Generators, Medium-Voltage Switchgear, Distribution Transformers and Power Management System

Medium-Voltage Generators

Siemens Medium-Voltage Generators are self-excited synchronous generators with brushless exciter for continuous parallel operation. Its winding insulation systems are of VPI (Vacuum Impregnated Insulation). The cooling facility has an air-to-water heat exchanger with double-tubes. Degree of protection is 1P44/IP55.

Bearings are flanged sleeve type. The generator's lubrication system are covered by oil rings and forced lub oil pumps. The AVR's (Automatic Voltage Regulators) are capable of starting from black out without external power.

All machines are protected against any overload by its protection systems and monitored by sensors in their windings, bearings and have leakages detectors. In an emergency generators are able to operate at 85% of their nominal load without re-cooling.

Medium-Voltage Switchgear NXAIR

Siemens Medium-Voltage Switchgear NXAIR is an air-insulated, type-tested, metal-clad switchgear for marine application meeting latest IEC 62271-200 and all class rules. The draw-out type circuit breakers and contactors are vacuum type (VCB) to ensure highest reliability and personal safety.

Vacuum technology as the dominating switching principle achieves lowest MTBF values and ensures highest personal and operational safety. VCB's are maintenance-free. The modular design of the NXAIR allows replacements of any devices or compartment. The design is for free-standing or bulkhead installation.

The enclosure and partitions between individual compartments are metallic and pressure-resistant. In case of internal arcing hot gases will be led into the pres-

sure relief ducts on top. Bushing-type transformers and pressure sensors allow a selective shut-down.

SIPROTEC

Siemens bay controller SIPROTEC covers all ANSI and class requirements for overload and protection and communicates via PROFIBUS DP protocol with the ship's IAS system.

The rating of NXAIR covers 15 kV as operational voltage, short circuit levels of up to 50kA. The degree of protection is IP32 or higher. All voltages for control, protection and monitoring are fed from redundant UPS supplies.

Medium-Voltage Distribution

Siemens GEAFOL Medium-Voltage Distribution Transformers are of cast resin type and have been introduced in the market 1965. More than 80.000 units are delivered world-wide and have outstanding physical properties. High voltage windings are made of aluminium foils with extremely low electrical stressing. The encapsulation of the HV Winding is made under vacuum with cast resin which serves as electrical insulation and mechanical protection. The LV sheet winding is moisture-proofed and provides compensation of all asymmetrical and non-uniform currents. 35 years of experience led to extremely low failure rates.

Power Management System

Siemens Power Management System with its redundant system topology achieves best availability and operational safety of a ships power supply system. It shares the same hard- and software platform with Siemens IMAC55 automation system for a real integrated IAS solution for modern vessels.



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