

Schneider Electric Merchant Marine Activity

Global specialist in energy management



Schneider
Electric



Schneider Electric Merchant Marine Activity

With over 90 years experience in Marine applications Schneider Electric optimize your Capex and Opex all along the lifecycle of your installations.

n°1

Worldwide marine
ED & Automation
with our solutions

Schneider Electric, a long-lasting partnership

Schneider Electric is a key-player in merchant marine. Its knowledge is fundamental, whenever safety and economical performance depend on the reliability of automation and electrical distribution systems. Present in 190 countries, Schneider Electric always remains very close to your needs and guarantees the high quality level of services it provides.

World-wide presence, local service

With Schneider Electric, you can rely on a world-wide presence, close to the main ports in Europe, North America, Southern Africa, Middle East and Asia. The expertise of our technical engineers relies on a continuous training. It ensures them thorough knowledge of every type of on-board system. In addition to their comprehensive experience of specific merchant marine constraints, our experts can be immediately operational and solve any kind of challenge, everywhere in the world.

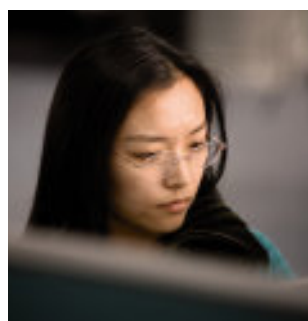
Innovative solutions and services, a unique set of competencies

Schneider Electric proposes comprehensive and consistent solutions for automation, control and electrical distribution to ensure the availability of safe energy on board.

Thanks to available resources in the field of R&D and engineering, Schneider Electric proposes all the competencies to design and implement relevant solutions to satisfy your specific requirements:

- > consulting
- > engineering and installation
- > maintenance
- > on-site operation
- > retrofit
- > spare parts
- > training.

From the early design stage, and throughout ship life, you are ensured of expert assistance to adapt our solutions to your specific needs: economical, logistical, implementation, maintenance and refurbishing.



Energy management

Focus on Medium Voltage

Thanks to the Schneider Electric offer, find consistent and efficient solutions for your shipboard electrical distribution needs. You can easily design, operate and maintain your electrical installation with complete peace of mind. Our entire product offer has been designed to be fully compatible in terms of electrical, mechanical and communication coherence. Our solutions (including tools such as software, training...) guarantees you optimized, reliable, evolving and compliant installations.



Example of MCset and Motorpact Marine switchboards

Main advantages

Breaking techniques/technologies

- > SF6 contactors and circuit breakers
- > vacuum contactors and circuit breakers.

MCset standard switchboard includes

- > ingoing and outgoing units with or without voltage transformer (VT)
- > bus-tie with or without voltage transformer (VT)
- > bus-riser with or without voltage transformer (VT)
- > motor unit.

Staff's safety

- > complete metallic insulation of the functional units
- > availability of an internal arc proof version according to IEC 62271 - 200.

MCset characteristics

Rated voltage	1 to 24 kV
Rated current of main busbar	3150 A under 17.5 kV
Short-time withstand current	31.5 kA per 3 sec
Access	rear
Degree of protection	IP3X
Standards	IEC 60298 (ISO 9001 and ISO 9002)
Regulations	LRS, RINA, BV, DNV, ABS

Ring Main Unit

The RM6 is a compact unit combining all MV functional units to enable connection, supply and protection of one or two transformers on an open ring network.



Main advantages

The HV loop configuration offers significant advantages

- > smaller main HV switchboard (only two cells to feed a HV loop)
- > reduced length of HV cables (shortening average ratio > 30% for the configuration)
- > improved maintainability and availability of the network.

RM6 characteristics

Rated voltage (IEC) kV rms	12
Rated current	A630
Rated short-time current KA rms	20
Degree of protection	enclosure IP67
Regulations	DACS compliant, DNV type-approved



Transformers and reactors

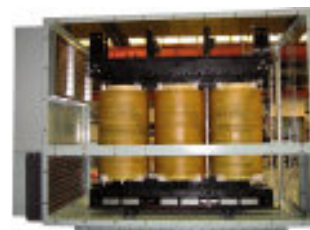
This equipment provides reduced temperature rise and suitable cooling systems :

Applications

- > General distribution
- > Freeze container
- > VSD
- > Propulsion (max 5MW)
- > MV converters

Main advantages

- > Choice between two technologies:
 - impregnated technology
 - cast resin technology
- > High quality magnetic core (grain oriented with step lap cut)
- > Design adapted to particular specification
- > Specially dimensioned for Marine application.



Energy management

Focus on Low Voltage

Main and emergency switchboards

Either **Okken** or **MB301** switchboards enable optimum and rational use of all Schneider Electric's low voltage products. The complete range satisfies all electrical distribution requirements, from generation to motor control and final distribution.

Moreover, several versions are available (front and rear access, fixed or withdrawable drawers, degree of protection up to IP44) to satisfy all the requirements and limitations as far as space and location are concerned, due to marine use. They have been used, with full satisfaction of the shipowner, in all types of applications, from oil-tankers to cruise ships.



Okken



Main characteristics

Rated insulation voltage	1000 V
Rated current of main busbar	up to 6300 A
Short-time withstand current	up to 150 kA per 1 sec
Access	front or rear
Cable inlets and outlets	top and bottom
Degree of protection	IP31/42 up to IP54
Standards	IEC 92, 439
Regulations	IACS compliant, DNV type-approved

MB301



Main characteristics

Rated insulation voltage	1000 Vac
Rated current of main busbar	up to 6300 A
Short-time withstand current	up to 100 kA per 1 sec
Access	front or rear
Cable inlets and outlets	top and bottom
Degree of protection	IP20-22-23-32
Standards	IEC 60439-1
Regulations	IACS compliant, DNV type-approved



Motor control centers



Main characteristics

Rated insulation voltage	750 Vac
Rated current of main busbar	up to 2000 A
Short-time withstand current	up to 70 kA per 1 sec
Access	front
Cable inlets and outlets	top and bottom
Degree of protection	from IP21 to IP44
Nb of modules for section	12
Dimensions of available drawer	1/2.1. 2.3.4 (in modules)
Standards	IEC 92, 439
Regulations	IACS compliant

Power and lighting panels



Main characteristics

Rated insulation voltage	up to 750 Vac
Rated current of main busbar	up to 600 A
Short-time withstand current	up to 50 kA per 1 sec
Access	front
Degree of protection	IP44
Standards	IEC 92, 439
Regulations	IACS compliant

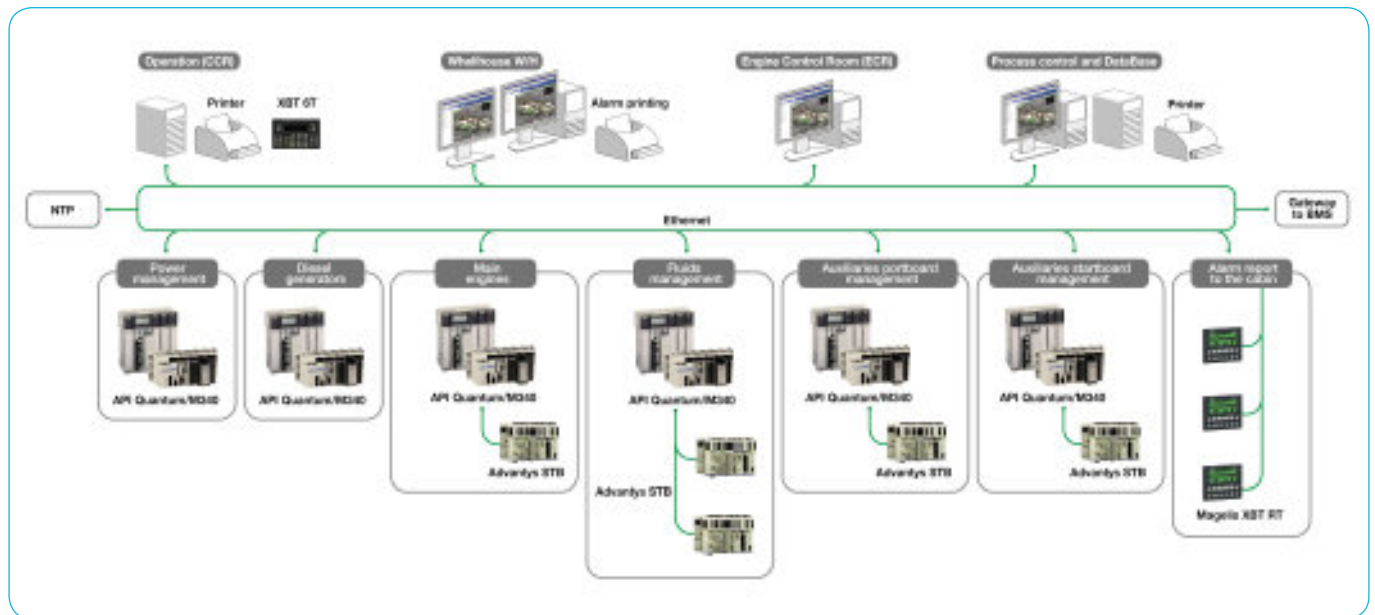
Busbar trunking



“Canalis”, busways from 20A to 5 000A, on low voltage have been type-approved by major classification societies: ABS, BV, DNV, GL...

Ship automation

Thanks to the Schneider Electric offer, find efficient solutions for your shipboard automation and electrical needs. Simple to use, our products and software make it easy for you to develop and maintain your applications with complete peace of mind. Our high performance offer guarantees optimum ship installation availability and efficiency. The return on your investment is maximized over the long term.



Main characteristics

Main engines and diesel generators monitoring and control

To check the required starting conditions, to guarantee the process carrying out and to monitor the main parameters related to engine safety.

Power management

To optimize the number of working generator sets, to distribute active power, to control the frequency set point, to perform load sharing and to adapt system configuration to the different navigation phases. Handling of coupled alternators.

Fluids management

To carry out ballast operations, fuel transfer (fuel-oil and diesel-oil), automatic fuel management (FO-DO and DO-FO transfers), filling and draining operations.

Load operation

Heel control enables the ship to be held stable, automatically or manually, during the loading and unloading phases:

- > liquid with density adjustment
- > fuel oil, diesel oil, water
- > freight.

Real-time management

- > based on an Ethernet TCP/IP architecture
- > distributed architecture (several servers and users)
- > real-time database.

Auxiliaries management

For automation and handling of operational pumps and compressors sequences, of cooling and aeration systems, particularly in the equipment preparation stage before setting sail.



Wheelhouse

For monitoring, the whole system is reachable from the wheelhouse. Some sub-systems are set for viewing.

Using some restricted areas, access to the specific ship information screens and the set screens.

Alarm and measurement system

To display, record (log) and process all the analog (with threshold management) and digital alarms.

Event current printing.

Curves and ship's performance

Displays the real and historical time values curves.

Engine control room

Engine starting in accordance with the start-up conditions starting:

- > security mechanisms on
- > correct fuel supplying
- > low-speed turning sequence performed correctly

Engine stopping:

- > normal stop
- > stop due to fault or security stop.

The system allows access to the following features:

- > two types of fuel management
- > monitoring and processing of exhaust temperatures
- > display on engine parameters.

Measurement processing

Speed, draft, power, fuel consumption, etc.

Enables comparison between the ship's real and theoretical performances.

Energy Efficiency applications

Building Management System, Ship Machinery

Schneider Electric as the Global Specialist in Energy Management enables you with its complete solution in Building Management System to:

- > Optimize your Business Performance applying Energy Efficiency to your ships
- > Secure the operation of the vessels with Access Control and Security features.

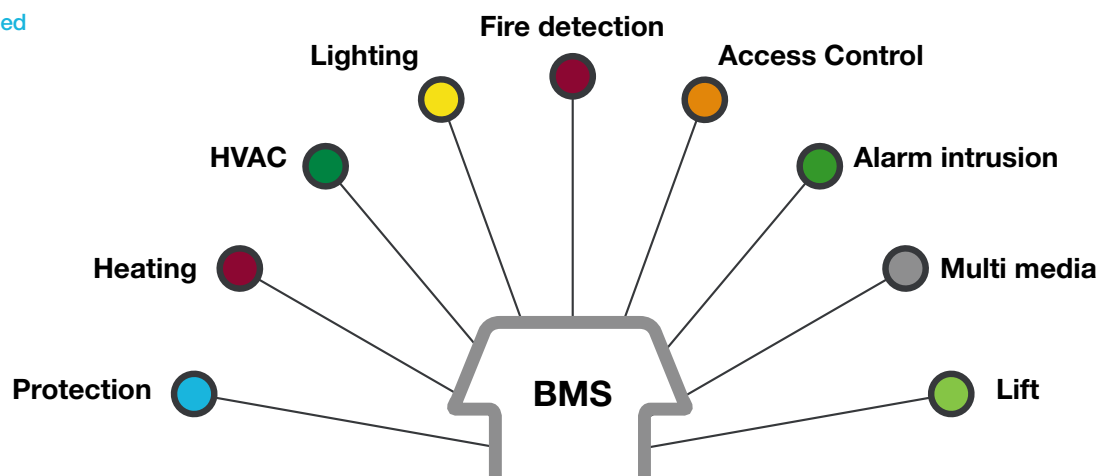
This solution guarantees that you can supply Energy saving, Green, Safe, Comfortable ships for your cutting edge strategy.



Building Management System

A single interface dedicated to all our systems

- > Installation cost reduction
- > Lighting cost saves
- > Video monitoring
- > Multi zone regulation



solutions



Your partner in Electrical distribution and Automation Solutions

Pumping, waste and water treatment systems

- > full solutions offer
- > dedicated soft starters and drives
- > partnering with key Players.

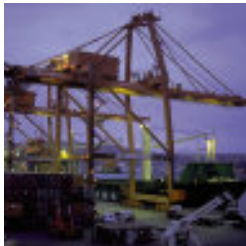
Winches, thrusters, Electrical propulsion

- > new solutions development capabilities
- > complete package offer in partnership with OEM'S
- > service support or global ship processes and functions.

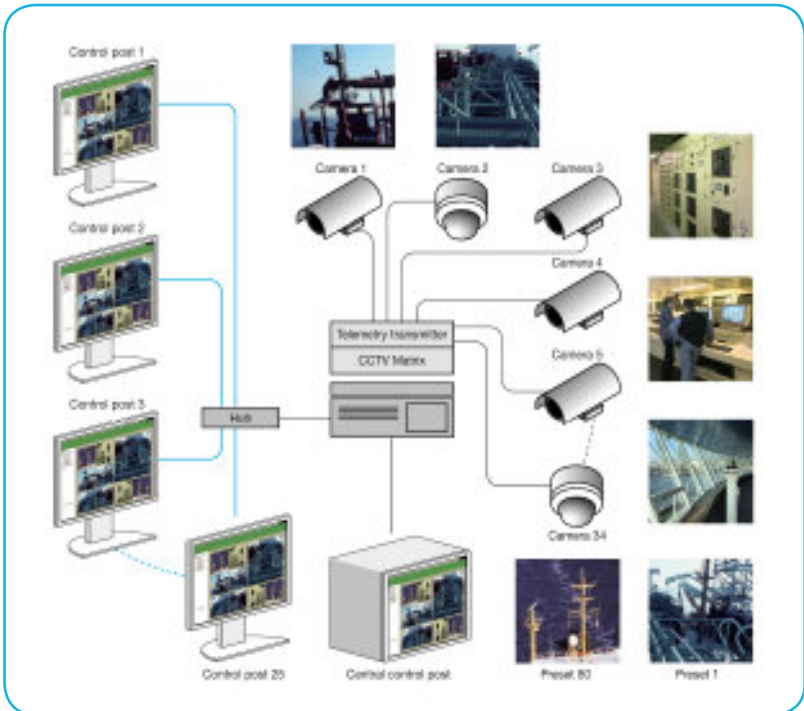


Handling systems, Deck cranes

- > 50 years long Schneider Electric Expertise
- > high power drives range
- > strong service support.



Scheme of integrated CCTV and security system





Ship automation and energy management

All Schneider Electric standard products are developed in compliance with European and international standards, and regulations of the main worldwide classification companies such as ABS, BV, CCS, DNV, GL, KRS, LRS, NKK, RINA, and RS.

Programmable logic controllers

A wide range of specialized platforms, ideal for ship automation applications.



Modicon M340

Human Machine Interface

Graphic terminals with high visibility screen.



Magelis XBT 6T

Intelligent remote terminal blocks

The perfect digital and analog I/O integration solution.



Advantys STB distributed I/O

Speed drives

Soft starters and variable speed driver for synchronous or asynchronous motors.



Altivar 71



Altivar 38

Open-type circuit breakers

- > Masterpact NT from 800 to 1600 A, the smallest open-type circuit breaker in the world.
- > Masterpact NW from 800 to 6300 A, same dimensions up to 4000 A, auxiliaries common to the whole range, simplified maintenance.



Moulded case circuit breakers

Compact NS series from 11 to 1250 A, four dimensions for 23 types of equipment, auxiliaries common to the whole range, high degree of discrimination and limitation.



Ultra Rapid CB

5 000 and 6 000 A for high installed power on board and busbar coupling.



Masterpact UR

Motor starter

- > Contactors
- > thermal and electronic protection relay
- > circuit breaker for motor protection
- > automatic contactor circuit breakers.



Tesys

Vigilohm system

Isolation devices and overall insulation monitoring for detection and indication of insulation faults.



High performance Modular circuit

Breakers up to 125A.



NG 125

LV Uninterruptible Power Supply

The MGE™ Galaxy™ range from 10 to 800 kVA.



MGE™ Galaxy™

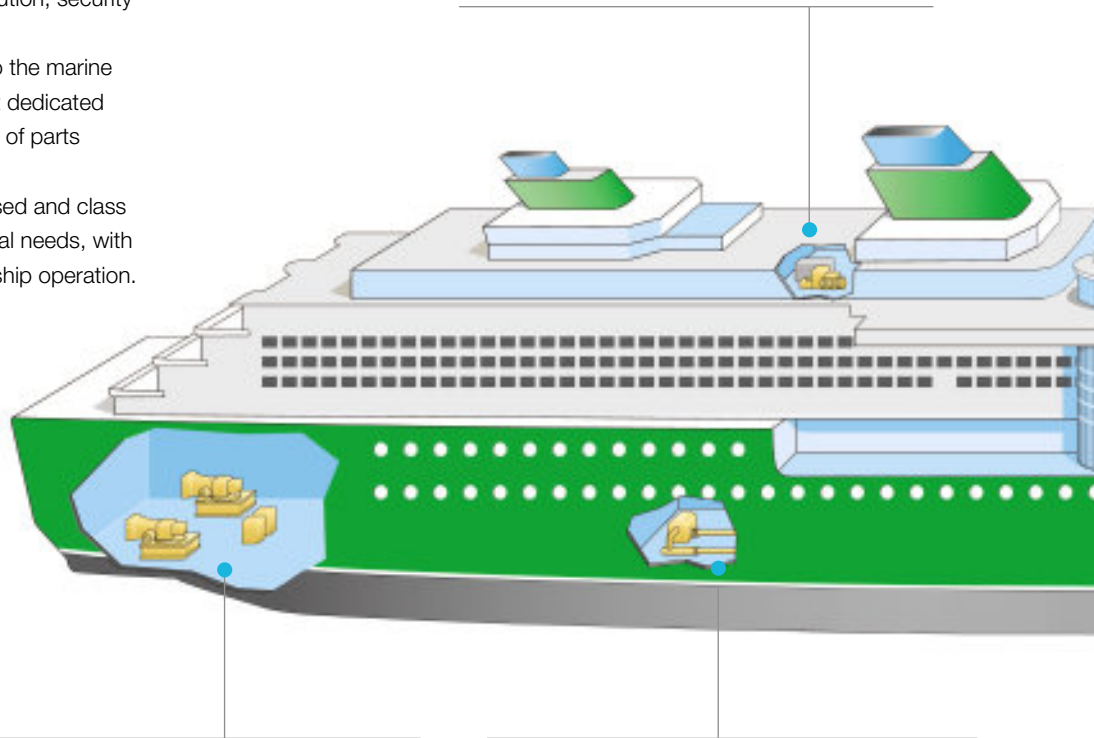
Critical Power Solutions for Marine

When you choose Schneider Electric Critical Power and Cooling Services, you get...

- > A “one-stop shop” for all your power protection needs, from the most extensive line of UPS systems on the market to cooling, power distribution, security and monitoring.
- > A technical support team assigned to the marine environment, with spare parts stored at dedicated global call centers and express delivery of parts worldwide.
- > The ability to have products customised and class approved for your specific environmental needs, with services that rang from ship design to ship operation.

Transitional sources and emergency lighting

- > Passenger ships
- > UPS in dedicated room, or in the emergency genset room
- > 3 ph 80 - 400 kVA UPS, 30 min: MGE™ Galaxy™ 5000 & 7000



Propulsion systems and automation

- > All types of merchant and Navy ships
- > UPS located in the control room/engine room/main switchboard room
- > 1 ph 5 - 20 kVA UPS: Smart UPS & Smart UPS RT

“On-shore”

- > Frequency converter for berthed ships and harbour

Single Phase UPS

- > Smart UPS & Smart UPS RT



Centralized Three Phase UPS

- > MGE™ Galaxy™ PW
- > MGE™ Galaxy™ 5000, 7000, 9000



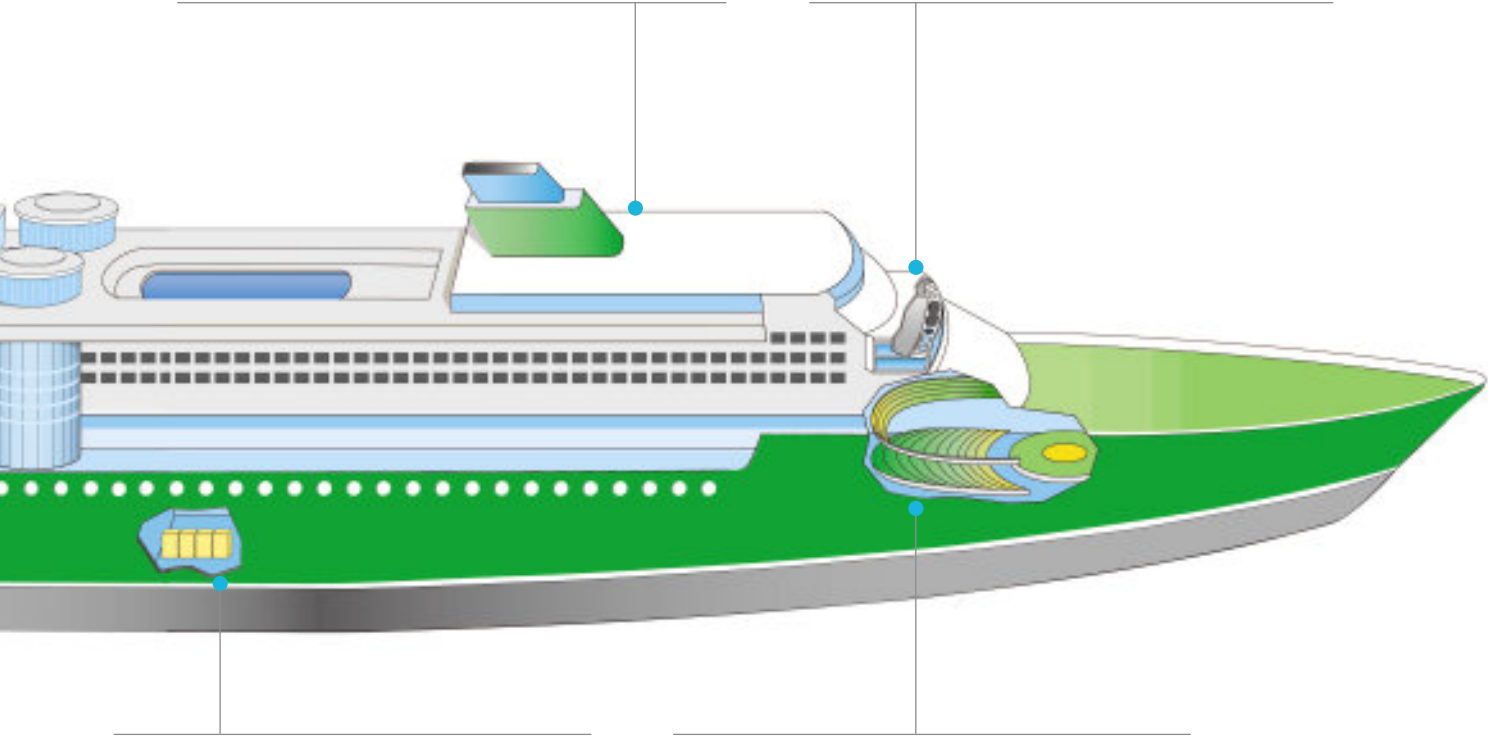
& Offshore environments

SOLAS applications (emergency transitional lighting, 3 public address, watertight bulkhead, fire doors, VDR...)

- > All types of merchant and Navy ships
- > UPSs spread up in small technical rooms within the ship
- > 1 & 3 ph UPS from 10 to 400 kVA: MGE™ Galaxy™ 5000 & 7000, 1000 PW; APC smart UPS; APC AIS 3000

Navigation and transmission systems

- > All types of merchant and Navy ships
- > UPS located in the wheel house
- > 1 ph & 3 ph 5 - 60 kVA UPS: APC Smart UPS RT; MGE™ Galaxy™ 1000 PW & 5000



Low voltage active filter against harmonic

- > MGE Sinewave range: 20-120 A

Sound and light systems - Management computing

- > Passengers ships
- > UPS located near the Theater or Broadcast room or Casino
- > 1 ph or 3 ph 10 - 80 kVA UPS: MGE™ Galaxy™ 5000 & MGE™ Galaxy™ 1000 PW

Sinewave Active Harmonic Conditioning

- > Sinewave

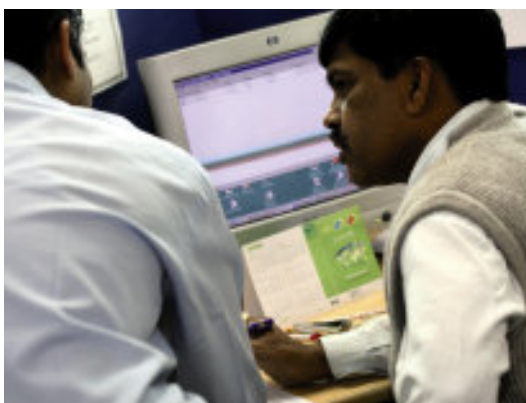


World Wide Marine Services performed by passionate people

Promoted by an international sales organization & operated by Schneider Electric Service Centres, able to provide 24/7 emergency line and on board support at major Sea Ports, for the satisfaction of our customers.

European and Asian competency Centers to provide:

- > consulting for customer system performance optimization
- > expertise in energy management
- > new solution development
- > project quotation and execution
- > commissioning
- > training.





Schneider Electric global marine service support program:

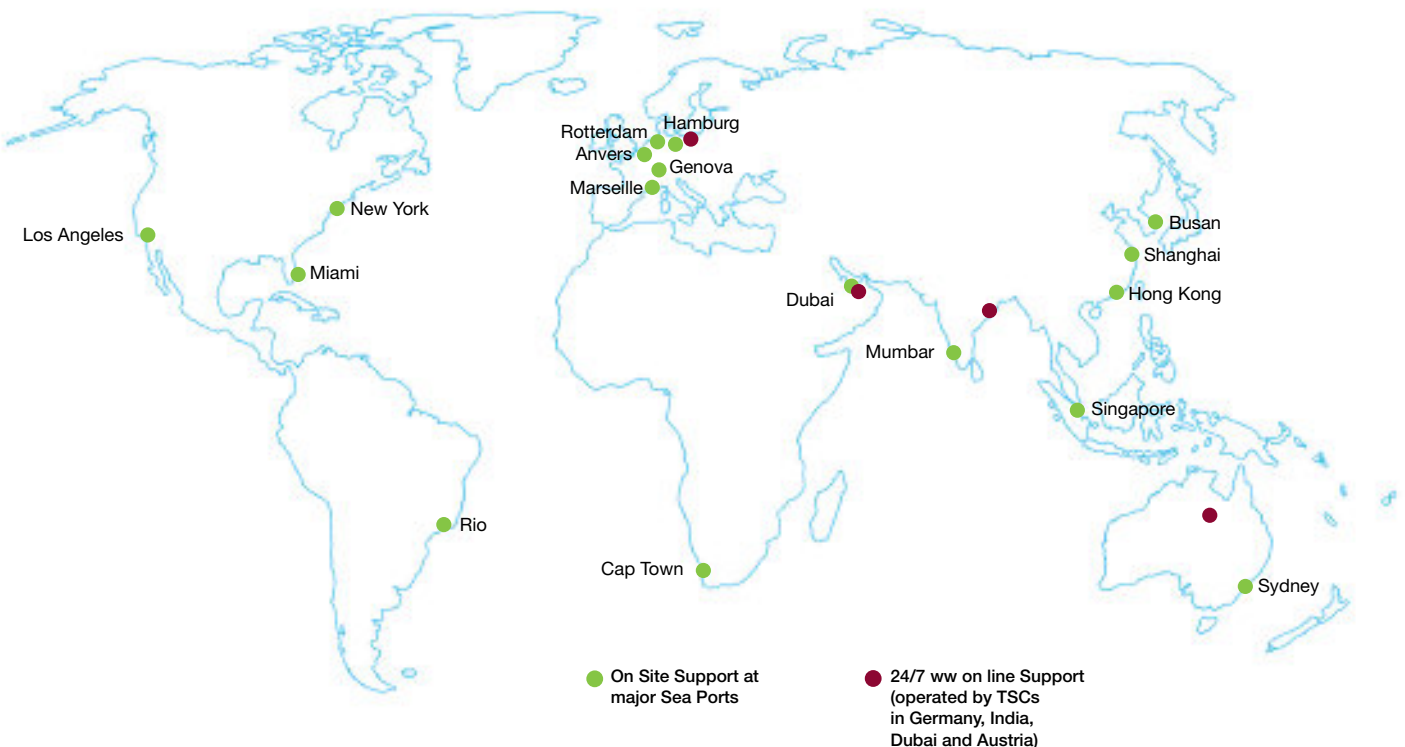
- > provides a 24/7 on line support
- > offers to dedicated customers on board capabilities and spares at key Sea Ports
- > improves fleets operation efficiency on all shipping routes
- > reduces drastically Customer's number of services providers.

Operation

- > capabilities adapted to your needs
- > "on line" or "on site" support
- > extended warranty, maintenance contracts
- > all necessary spare parts to fit your equipment.

Retrofit

- > adaptation and upgrading solution.



More than “90 years”
at the service of the
merchant marine industry



Schneider Electric offers more than 2 700 references in the field of automation and control, electrical distribution in the merchant marine sector.

Some references from the shipping companies we service



Passenger ships and cruise liners

- > Aida Cruise: Germany
- > Carnival Cruise Line: United States
- > Color Line: Norway
- > Costa Crociere: Italy
- > Mediterranean Shipping Company: Italy
- > Nowegian Cruise Line: USA
- > Radisson: United States
- > RCCL: USA
- > Tropic Charterers Pte Ltd: Singapore
- > Viking Line: Finland



Ferries

- > BC Ferries: Canada
- > Brittany Ferries: France
- > CMN: France
- > EuroFerry: Spain
- > Hawaii Superferry: USA
- > New World First ferry Services: Hong Kong
- > P & O Ferries: Great Britain/Netherlands
- > Sea France: France
- > SNCM: France
- > TESO: Netherlands
- > TT Line: Germany



FPSO

- > Conoco Philips: USA
- > Elf Nigeria: Nigeria
- > Golar: Norway
- > Petropod: Norway
- > SBM: Monaco
- > Tanker Pacific offshore terminals: Singapore
- > Total upstream Nigeria: Nigeria

LPG carriers

- > Gaz de France: France
- > NYK: Japan
- > Zhejiang shipyard China: China

Bulk carriers

- > Arcklow: Netherlands
- > China Yuedian Shipping: China
- > Cosco Tianjin: China
- > Craig Ship Management: UK
- > Damen Hoogezand: Netherlands
- > Hongkong Parakou Shipping: Hong Kong
- > HOSCO: China
- > Navarone SA: Greece
- > STC: Switzerland
- > Vega: Germany
- > Zhejiang Offshore shipping: China

Cargo ships

- > Cosco: China
- > Stena Lines: Sweden
- > Sussex shipping: Panama
- > Viking car carriers: Norway



LNG carriers

- > British Gas: UK
- > Daewo Shipyard: Korea
- > Sovcomflot: Russia
- > TMT: Taiwan

Container ships

- > China Shipping: China
- > CMA CGM: France
- > Cosco: China
- > CSBC: China
- > Delphis NV: Belgium
- > Maersk: Denmark
- > MSC: Italy
- > Neptune Orient Lines: Singapore
- > Norilsk Nickel: Russia
- > Norwest Management: Singapore
- > Peter Doehle: Germany
- > PIL of Singapore: Singapore
- > Rickmens: China
- > Rickmers: Germany
- > Van Ommersen: Netherlands
- > Vega Reederei: Germany
- > Wanhai: Taiwan
- > Yang Ming: Taiwan

Off-shore platforms

- > British Petroleum: Great Britain
- > Carigali-PTTEPI: Malaysia
- > CPOC: Malaysia
- > ELF: France/Gabon/Norway
- > Maersk Contractor: Denmark
- > Shell: Netherlands
- > Total: France/Indonesia
- > Vietxopetro: Vietnam



Chemical carriers

- > Jacob Stolt Nielsen: Norway
- > Kil: Denmark
- > Marnavi: Italy
- > Stolt Nielsen: United States

Oil tankers

- > British Petroleum: Great Britain
- > Cosco: China
- > Elf: France
- > Fermar: Italy
- > Nanjing Oil transportation China: China
- > Samsung Heavy Industrie Korea: Korea
- > Shell: Netherlands/ Great Britain

RO RO Cargo

- > EE Shipping: Sweden
- > U.N Ro-Ro: Turkey





Make the most of your energy*

* Tirez le meilleur parti de votre énergie

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