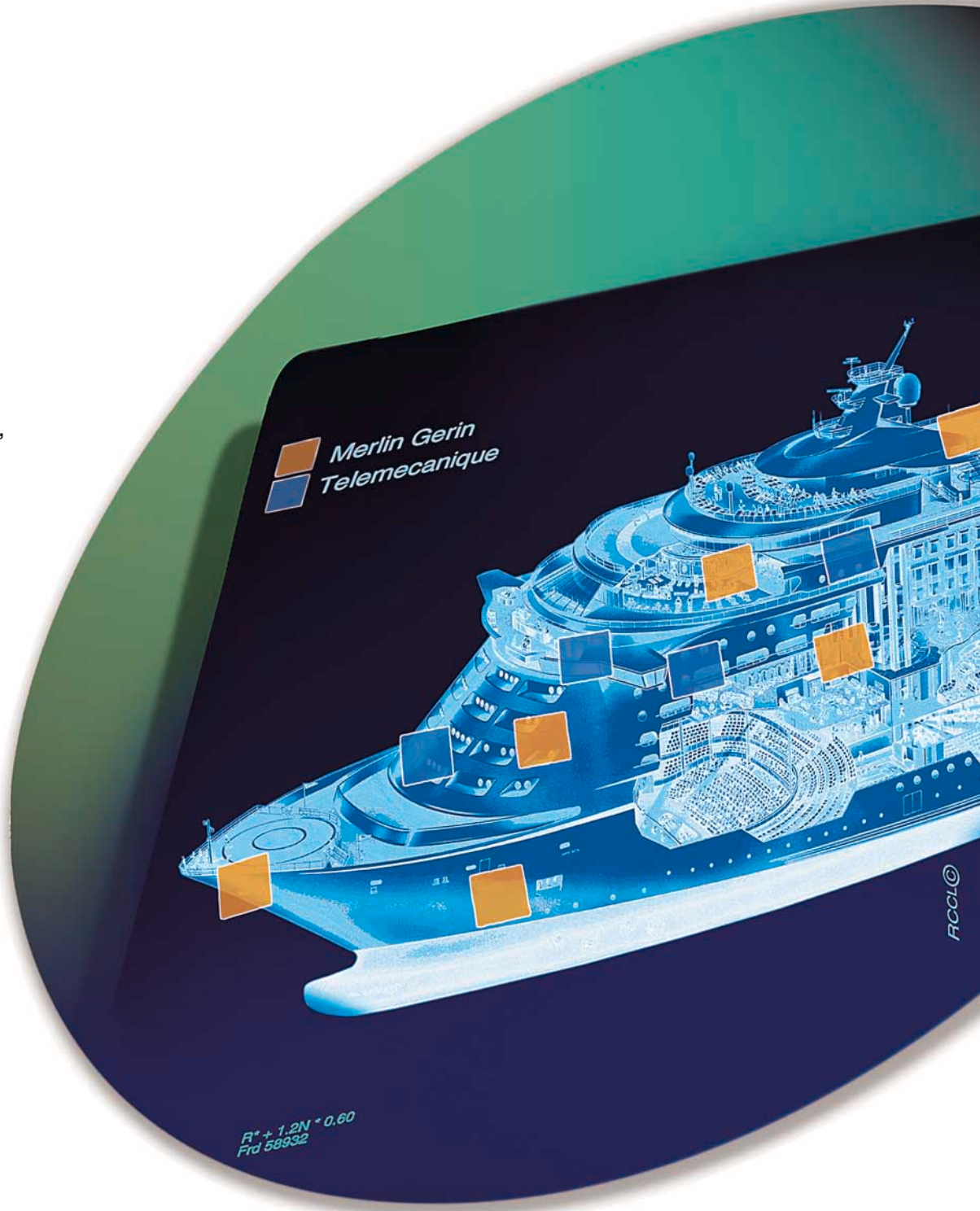


Merchant marine

Benefit from an expert on board



Solutions for ships
automation and control,
electrical distribution,
from design to retrofit



Benefit from an expert on



*Schneider Electric,
world-wide references
in the field of on-board
automation and control,
electrical distribution,
gathers the competencies
acquired over 80 years
by Telemecanique
and Merlin Gerin.*

*It proposes a global
and consistent offer of type
approved products,
systems and services
dedicated to merchant marine
shipbuilding and operation.*



board...

**Schneider Electric:
a long haul
partnership**

experience

Gathering under a unique flag the expertise of leaders such as Telemecanique or Merlin Gerin, 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 all over the world, Schneider Electric always remains very close to your needs and guarantees the impeccable quality of the services it provides.

**Solutions and
services:
a unique set of
competencies**

solutions

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

Owing to outstanding 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:

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

performance

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.

**World-wide
presence, local
service**

quality

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

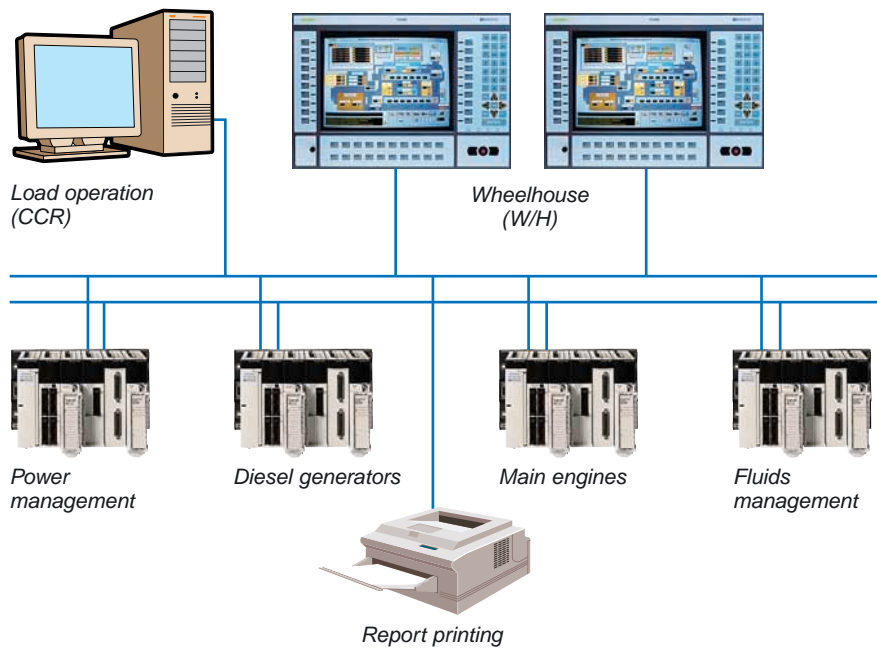
service

Thanks to the Telemecanique offer, find efficient solutions for your shipboard automation and electrical needs.

Simply Smart* 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.

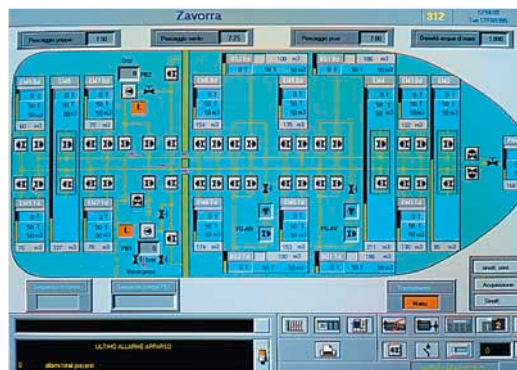
The return on your investment is maximized over the long term.



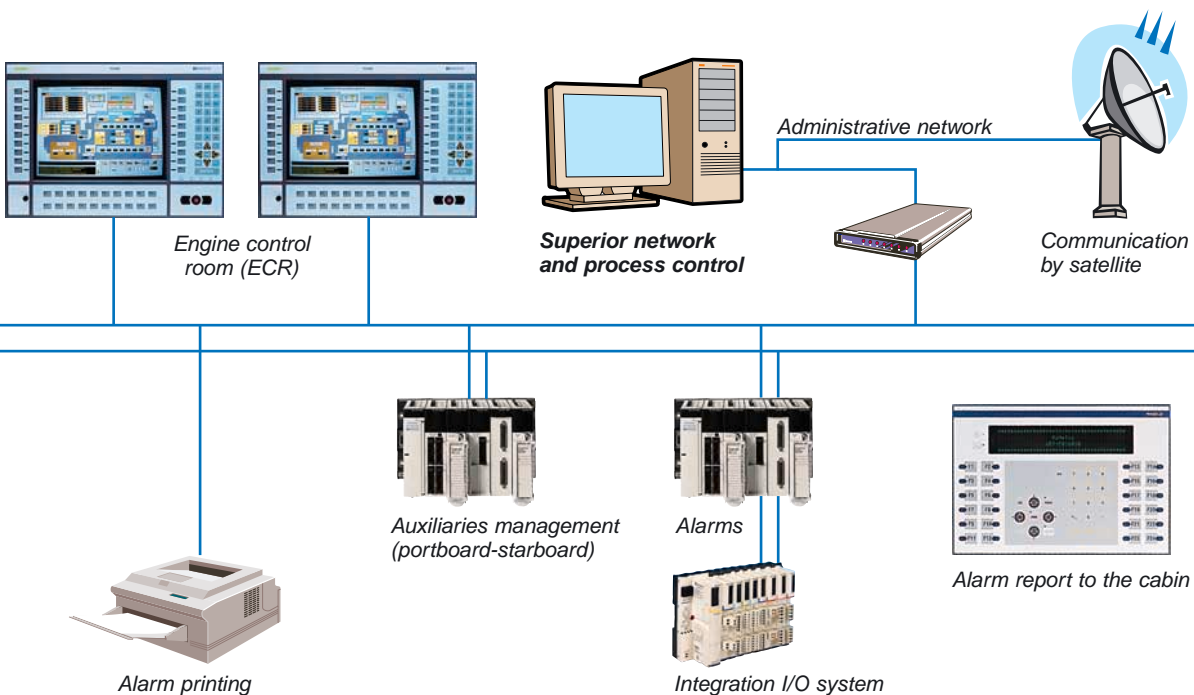
Main characteristics

Main engines and diesel generators monitoring and control

In order to verify the conditions necessary for starting, to guarantee the carrying out of the automated process and to monitor the main parameters related to engine safety.



* Simply Smart: more ingenuity on intelligence for continually improving its easy of use.



Power management

In order to optimise 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.

Auxiliaries management

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

Fluids management

In order to carry out ballast operations, fuel transfer (fuel oil and diesel oil), automatic fuel management (FO-DO transfer and vice versa), filling and draining operations.

Alarm and measurement system

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

Measurement processing

Speed, draft, power, fuel consumption, etc. This enables comparison between the ship's real performance and its theoretical performance.

Curves and ship's performance

Displays the real and historical time values curves.

Electrical distribution

Focus on medium voltage switch

Thanks to the Merlin Gerin offer, find coherent and efficient solutions for your shipboard electrical distribution needs.

The Guiding System makes it easy for you to 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.

The Guiding System (also including tools such as software, training...) guarantees you optimized, reliable, evolving and compliant installations.



Main characteristics

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

Breaking techniques/technologies:

- SF6 contactors and circuit breakers
- vacuum contactors and circuit breakers

Staff's safety:

- availability of an internal arc proof version according to IEC 298
- simple and reliable interlocks for the prevention of non-safe actions
- earthing switches with making capacity
- authorisation for the handling of the circuit breaker only with the door closed
- complete metallic insulation of the functional units
- all the controls on the front of the unit

Installation:

- easy installation of low and medium voltage cables thanks to front access
- main busbars assembling, performed on site, without specific instruments
- bolting to the floor placement against the wall
- easy circuit breaker handling
- no need of rear access

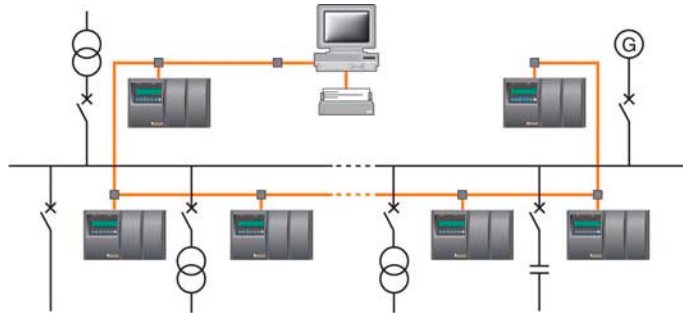
Quality assurance

Qualified quality system in compliance with standard EN 29001 (ISO 9001 standard), applied from product design to the after-sales service.

hboards



Switchboards control and monitoring



Sepam is designed to manage control and operation of medium voltage units through the following range of integrated functions:

- protection
- measurement
- disturbance recording
- communications (optional)

The internal structure of the Sepam unit is made up of four microprocessors dedicated to the following functions:

- sampling and conversion of analog signals
- performance of functions of protection, measurement and control of automated devices
- display management
- communications management

The flexibility of the automated device function.

The new Sepam range includes multifunctional units designed to fully satisfy the protection and control requirements of electrical distribution networks.

The considerable experience acquired by Schneider Electric in the manufacturing of electrical systems and the development of units incorporating numerous protection functions, has enabled creation of a standard network management logic:

- logic discrimination
- self-reset cycles
- motor backing off and reacceleration
- automatic commutation functions measurement, control fault detection and removing, which are specifically designed for applications concerning:
 - fire zone substations
 - distribution busbars
 - transformers
 - motors
 - generators

MCset characteristics

Rated voltage	1 to 24 kV
Rated current of main busbar	31580 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

Electrical distribution

Focus on low voltage switchboards

Main and emergency switchboards

Okken or **Masterbloc** 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



Masterbloc



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	LRS, RINA, BV, DNV, ABS

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	from IP21 to IP44
Segregation	from 2 to 4
Standards	IEC 92, 439
Regulations	LRS, RINA, BV, DNV, ABS

boards

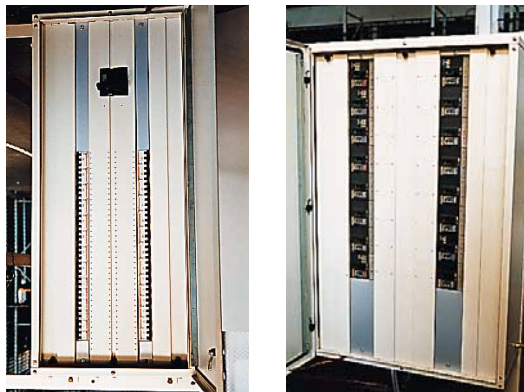
Motor control centers



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 front
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	LRS, RINA, BV, DNV, ABS

Power and light panels



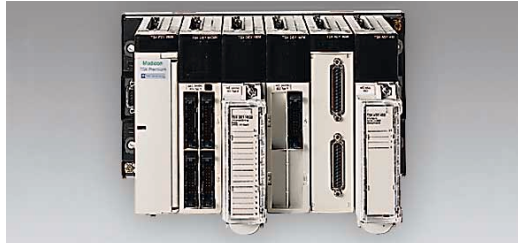
Main characteristics

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 front
Access	front
Degree of protection	IP44
Standards	IEC 92, 439
Regulations	LRS, RINA, BV, DNV, ABS

Ship automation and ele

Key components

All Telemecanique and Merlin Gerin 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, RINA, and RS.



Programmable logic controllers

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



Intelligent remote terminal blocks

The perfect digital and analog I/O integration solution.



Speed drives

Static starters and variable speed drives for non-synchronous motors.



Pressure switches

A comprehensive range of pressure switches for auxiliary circuits, with fixed and adjustable differential, suitable to control pneumatic and hydraulic pressure from -1 bar to 500 bar.



Push-buttons signal lamps

Series Harmony.



Dialogue terminals:

- alphanumerical
- keyboard matrix graphic
- touch screen
- touch 'n click

critical distribution



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.



Control units

The Micrologic series is the evolution of the trip unit for a total control of the equipment; new functions for protection, integrated measurement and management.



Motor starter:

- contactors from 6 to 2750 A
- thermal and electronic protection relay
- circuit breaker for motor protection
- automatic contactor circuit breakers



Miniature circuit breakers

From 1 to 125 A from 4.5 to 50 kA common auxiliaries and accessories for all the range.



Permanent insulation controllers

Vigloh series for networks up to 1000 Vac and 1200 Vdc, automatic location of the faulty feeders.



LV Uninterruptible Power Supply

The Galaxy range from 10 to 800 kVA.



Busbar trunking

Canalis, from 20 A to 5000 A, for transport and distribution of power and lighting on low voltage.

More than “80 years” at th



Some references from the shipping companies we service:

Passenger ships and cruise liners

Carnival Cruise Line	United States
HAL Holland America Line	United States
P&O Princess Cruises	United States
Cunard	Great Britain
Diamond Cruise Ltd	Finland
Homelines/Windstar	United States
Kloster	Norway
Royal Caribbean Cruise Line	Norway
Disney Cruise Line	United States
Costa	Italy
VSHIPS	Monaco
Radisson	United States



Ferries

CMN	France
SNCM	France
P & O Ferries	Great Britain/Netherlands
Seabourn Cruise Lines	Germany
SNCF	France
Tirrenia	Italy
Stena Lines	Sweden
TESO	Netherlands
Visentini	Italy
Tor Line	Sweden

Reefers

CGM	France
Chiquita Brands	United States
Cool Carriers	United States
Creest PLC	Great Britain
Danish Lauritzen	Denmark
Peczon	Netherlands
Salen	Sweden

LNG carriers

NSU	Netherlands
Petronas	Malaysia
Shell	Netherlands

LPG carriers

Sigva Bergesen	Norway
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Cargo ships

Cosco	China
Bottiglieri	Italy

Schneider Electric
offers more than
4000 references
in the field
of automation
and control,
electrical
distribution
in the merchant
marine sector.

The service of the merchant marine industry



Container ships

Delmas	France
Cosco	China
TMM	Mexico
Van Ommersen	Netherlands

Off-shore platforms

ADNOC	Abu Dhabi
Amoco	United States
British Petroleum	Great Britain
Britoil	Great Britain
Coniafe	Norway
ELF	France/Gabon/Norway
Hamilton	Great Britain
Shell	Netherlands
Smeduig	Norway
Statoil	Norway
Total	France/Indonesia

Chemical carriers

Jacob Stolt Nielsen	Norway
Kil	Denmark
Stolt Nielsen	United States
Marnavi	Italy

Oil tankers

British Petroleum	Great Britain
Cosco	China
Elf	France
Shell	Netherlands/Great Britain
Fermar	Italy
Finnaval	Italy

Cable-layers and pipe-layers

Saipem	Italy
Italmare	Italy
Telecom	Italy

FSO/FPSO

Girassol	France
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Your faithful marine service

Schneider Electric offers you a complete range of services to support you worldwide, throughout the ship's lifecycle.



Design engineering

- feasibility studies
- Concept designing
- installation, commissioning until the acceptance of your equipment by classification companies

Installation and commissioning

- handling equipment installation
- testing
- commissioning
- technical assistance during harbour and sea trials
- operator training



es partner worldwide



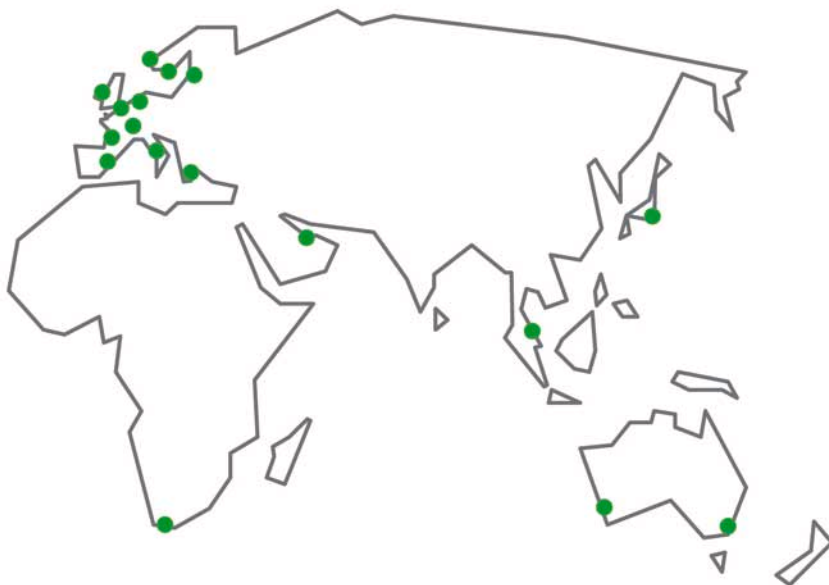
Operation

- warranty adapted to your needs
- assistance over the phone, on site
- extended warranty, maintenance contracts
- all necessary spare parts to fit your equipment

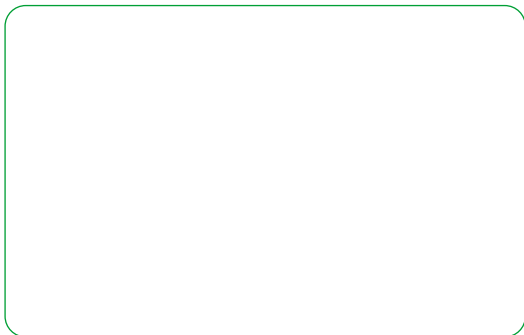


Retrofit

Adaptation and upgrading.



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