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# Global specialist in energy management

Navy solutions

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Life Is On

**Schneider**  
Electric



# One century of experience in Navy application

Provide efficient, safe, reliable and seamless solutions for electrical distribution, automation and safety systems

## Expertise in energy management solutions

Schneider Electric proposes all the competencies to design and implement relevant solutions to satisfy your requirements: engineering and installation, maintenance, on-site operation, retrofit, spare parts and training.

## Innovation

We offer and supply systems based on well proven technologies to guarantee service continuity and best in class performance from a world wide company.

## Through life support services

Our service is tailored to your requirements to increase the installed base reliability, to check, repair and refurbish all safety-critical equipment on your ship. We send experts, wherever and whenever they are needed.

## World wide presence

To match with customers requirements, Schneider Electric proposes know-how transfers, local contents and interventions through its own facilities or local partners.



## Consulting

Involved right from the design stage of your project, we intervene according to your technical and economic requirements and constraints while working on differentiating and innovative axes.



- Conventional and nuclear submarines, combatant and support surface ships
- Medium and low voltage electrical distribution, automation and safety applications

References for **18 navies**

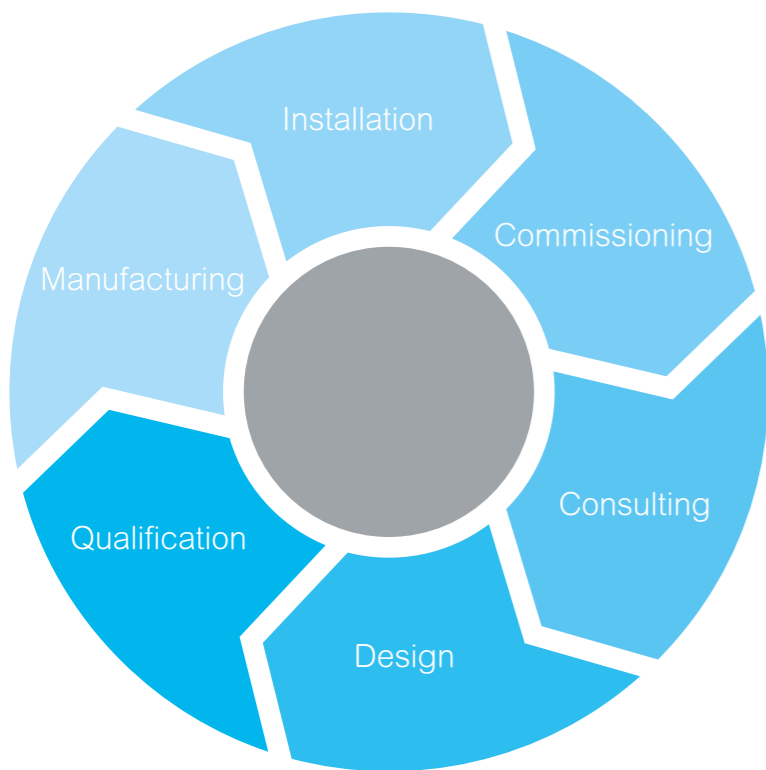
# Electrical distribution and automation compliant with harsh environment

Right from design phase to ship life extension in line with most stringent requirements

- Dedicated offer customized for your fleet
- Total cost optimization guaranteeing high performances, reliability and quality during life cycle
- Shocks, cyber security, vibrations, EMC, short circuit withstand
- Expert embedded in your design
- Efficient fleet operation
- Extend life of your installation
- Local facilities and services

## Design

According high constraints (shocks and vibration, thermal, EMC, high current, compactness,..)



## Some references

### Conventional submarines

- Scorpene class (Chile, Malaysia)
- A19 Gotland class (Sweden)
- A17 VDG Class, A14 Naek (Norway)
- Agosta class (Pakistan)
- Collins class (Australia)

### Nuclear submarines

- Barracuda class (SNA/SSN)
- Triumphant class (SNG/SSBN)
- Inflexible class (SNLE/SSBN)
- Rubis class (SNA/SSN)

### Land simulator

- PCRS (Propulsion Control and Reference System) T471 programm



Cyber security certified



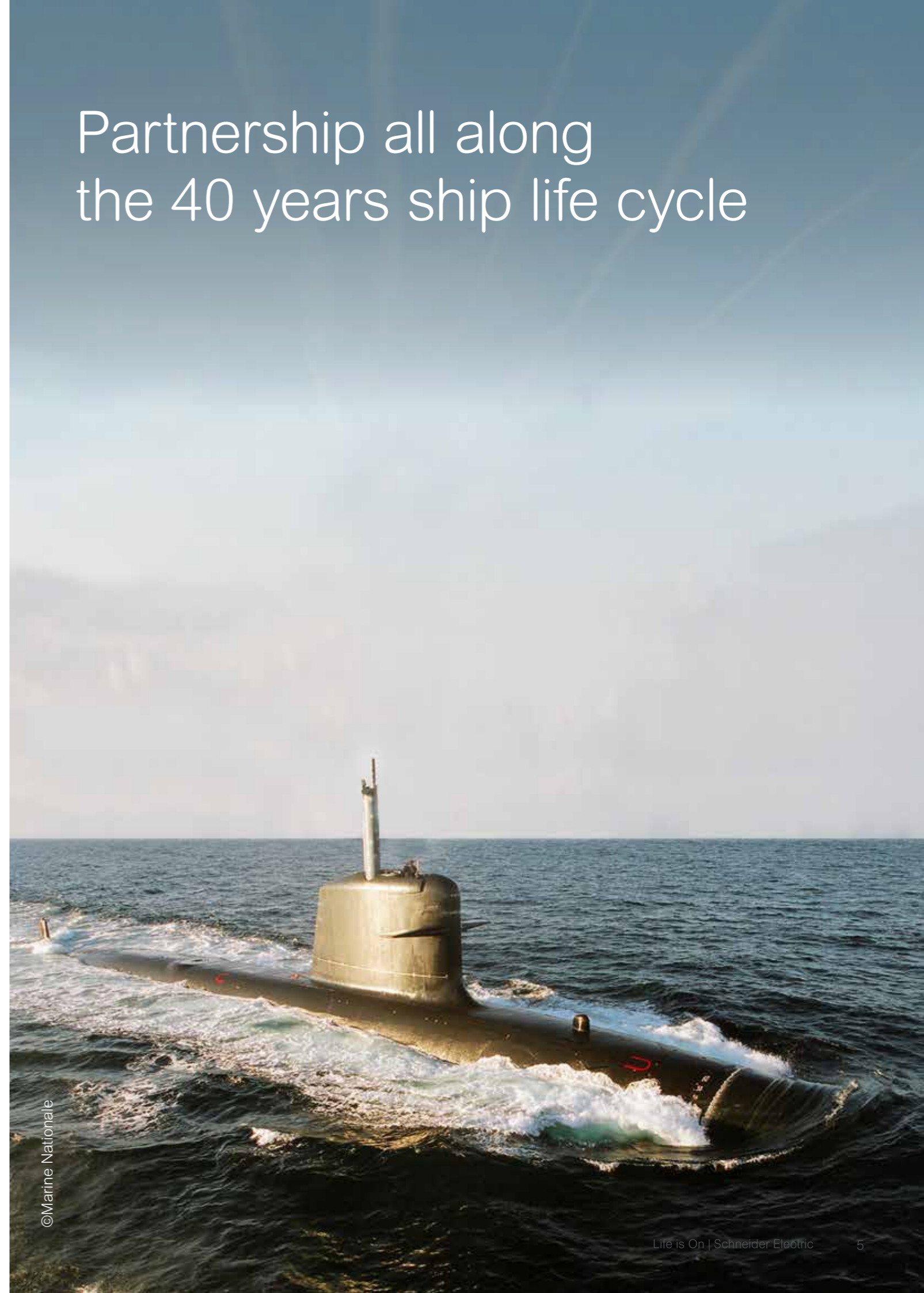
### Software & Hardware automation offer

- Port & standard redundant networks
- Redundant control & supervision processes

### Electrical Distribution with :

High performance DC breakers and cabinets

# Partnership all along the 40 years ship life cycle



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# Consistent energy management solutions

## Secured fleet operation

Adapted solutions from well proven technologies with worldwide installed base

- Optimized solutions and architectures
- Peace of mind contracts from a manufacturer with type approved and adapted solutions
- Through life support provided by a reliable and secured power offer
- Local facilities and services

## Some references

### Frigates

- FREMM, Horizon class, La Fayette class (France)
- Sawari (Saudi Arabia)
- City class CPF (Canada)

### Corvettes

- Formidable class frigate (Singapore)
- C58 class (Algeria)

### Littoral combat ship

- LCS (US Navy)

### Patrol vessels

- Kingston class (Canada)
- Patrol vessels (US Navy)

### Aircraft carriers

- Charles de Gaulle (France)

### Troop landing ships

- Siroco, Foudre, Ouragan, Orage (France)

### Surface ship weapon systems

- Sylver (France)

### LHD

- Dixmude (France)
- Nasser, Sadat (Egypt)



Combatant ship equipped with MV and LV distribution according high constraints, shocks, vibrations...



### Solution offer

#### Electrical distribution

- MV & LV distribution
- Transformers
- Busways
- Ultra secured power
- Variable Speed Drives & Softstarters
- ...

#### & Automation

- Power management system
- Alarm monitoring System
- EcoStruxure / Asset Management
- Generator control
- ....



Power management system for ship with electrical propulsion



## A total life cycle solution with worldwide services offer

Our challenges begin with the initial design and continue throughout the life of each vessel to ensure efficient fleet operation and service continuity.

All over the world, a specific logistic support based on an organisational structure dedicated to navy, guarantees maximum availability of Schneider Electric's installations.



### Propulsion Control & Reference System for Australia

The Propulsion Control & Reference System (P.C.R.S) is an ashore simulator used for equipment embarked aboard 6 submarines of the Commonwealth Of Australia.

It allows the crews and maintenance teams trainings, the validation of the spare parts, the simulation of incidents and modification's tests if necessary.



## Services for a long duration programme

### Integrated Logistic Support

#### Logistic engineering

- Maintainability studies
- Reliability studies
- Availability studies
- Detailed design
- Cost management
- Configuration management

#### Through life support

- Documentation
- Training
- Spare parts
- Tools
- Technical assistance
- Maintenance
- Obsolescence management

#### Revamping

- Upgrading performances
- Conformity to new standards (environmental,...)
- Studies for renovation, ageing
- Complete equipment renovation

Customer requirements

A partner  
you can trust on



## Expertise in customized electrical distribution and automation solutions in partnership with french or foreign navies and shipyards

### Australia

- Collins type submarines: Collins, Farncomb, Waller, Dechaineux, Sheean Rankin
- Land simulator: PCRS (Propulsion control and reference system) T471 programme

### Argentina

- Avisos corvettes: A69 type

### Brazil

- SBR submarine

### Canada

- City type corvette: Halifax, Vancouver, Toronto, Quebec city
- Patrol vessels: Kingston, Glace Bay, Nanaimon, Edmonton

### Chile

- Scorpène type submarines: Liberator O'Higgins, General Carrera

### Egypt

- FREMM Tahya Misr
- BPC Nasser, Sadat

### France

- SNLE NG submarines: Le Terrible, le Triomphant, Le Téméraire, le Vigilant
- Nuclear attack submarines: Barracuda, Rubis, Saphir, Casabianca
- SNLE submarines: l'Inflexible, le Redoutable, le Foudroyant
- Anti-aircraft frigates: FREMM, Horizon class, Cassart, Jean Bart
- Light frigates: La Fayette, Surcouf, Courbet
- Missile launcher frigates: Suffren, - Duquesne, De Grasse, Tourville
- Troop landing ships: Siroco, Foudre, Ouragan, Orage
- LHD: Dixmude
- Nuclear drive aircraft carrier: Charles de Gaulle
- Helicopter carrier: Jeanne d'Arc
- SNG immunisation: SEA network
- Les Landes test centre: ETNA remote neutralisation system
- Neutralisation system on MONGE type test and measurement vessel

- M4, M45, M51 missile launcher tube control and monitoring Sylver anti-missiles
- Adaptation to the Meteor missile of the flight termination system
- Flight termination system for Ariane 5 launcher

### India

- Scorpene type submarine

### Italy

- Sauro type submarines: S. Pelosi, G. Prini, P. Longobardo, etc.

### Malaysia

- Scorpène type submarine

### Morocco

- FREMM Mohammed VI

### Netherlands

- Walrus type submarines: Walrus, Zeeleeuw, Dofjin, Bruinvis

### Pakistan

- Agosta type submarines: Hasmat, Hurmat
- Agosta B type submarines: Khalid, Saad, Hamza

### Saudi Arabia

- Sawari frigates: Al Riyadh, Makkah, AL Damman

### Singapore

- Corvettes: Formidable class frigate

### Spain

- Agosta type submarines: Galerna, Siroco, Mistral, Tramontana
- LHD: BPE

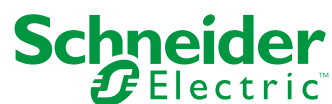
### Sweden

- A19 Gotland class submarine
- A17 VGD class
- A14 Naök

### USA

- Littoral combat ship: LCS
- LHD: LPD17

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To learn more, visit:  
[www.schneider-electric.com/marine](http://www.schneider-electric.com/marine)

Schneider Electric France  
Projects Engineering Center  
F-38050 Grenoble Cedex 9  
Tél. : 33 (0)4 76 57 60 60  
<http://www.schneider-electric.com>

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