SIEMENS

Ingenuity for life

Efficient automation for vessels of the future

Gain a competitive edge by maximizing availability of your fleet and increasing security
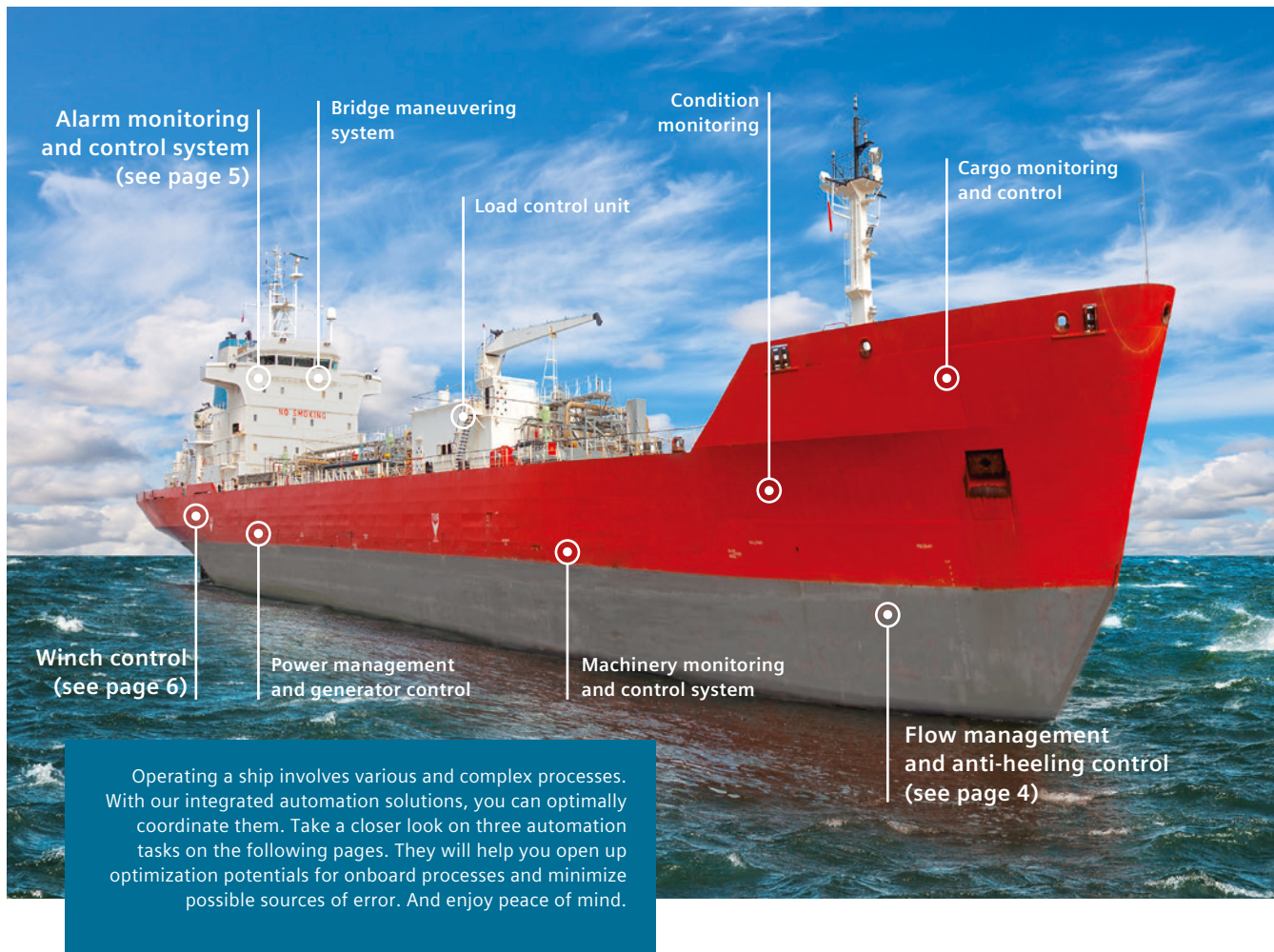
siemens.com/simatic

Shaping the digital future
of the marine industry

Global competition, rising operating expenses, and increasingly stringent environmental regulations imposed by the International Maritime Organization – these are just some of the challenges the shipping industry is facing today. Achieve more cost-efficient operation and continued compliance with evolving safety standards by advancing your maritime solution with high-performance emission monitoring and process instrumentation technology.

Backed by more than 130 years of experience in automation for marine and industry applications, we are leading in industry automation and your trusted partner over the entire life cycle of your fleet. Whatever your marine application, you can fully optimize it with our automation solutions – from bow to stern.

Your partner for all automation tasks

Alarm monitoring
and control system
(see page 5)

Bridge maneuvering
system

Condition
monitoring

Load control unit

Cargo monitoring
and control

Winch control
(see page 6)

Power management
and generator control

Machinery monitoring
and control system

Flow management
and anti-heeling control
(see page 4)

Operating a ship involves various and complex processes. With our integrated automation solutions, you can optimally coordinate them. Take a closer look on three automation tasks on the following pages. They will help you open up optimization potentials for onboard processes and minimize possible sources of error. And enjoy peace of mind.

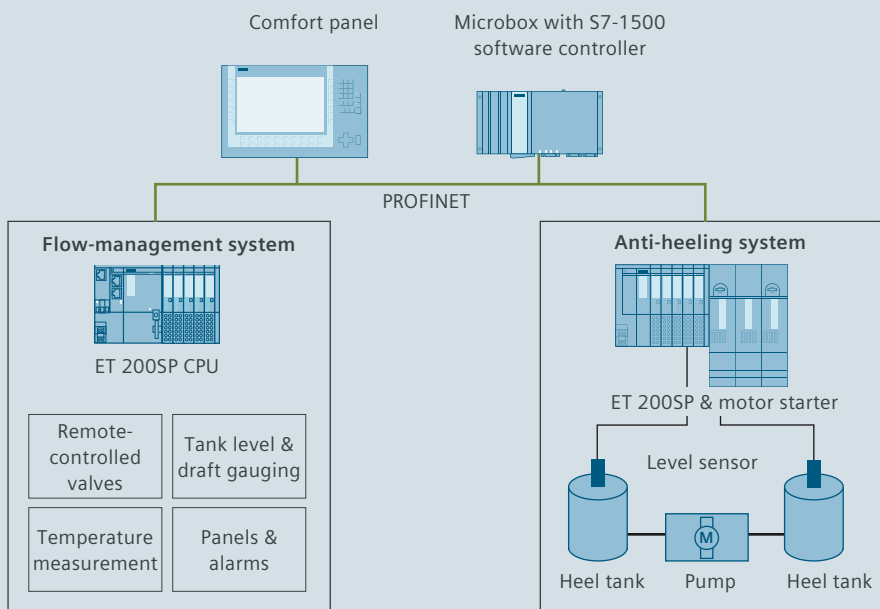# Optimizing marine applications with industry standards

Comprehensive communication via PROFINET
- The leading Ethernet standard for automation tasks
- Fast data exchange with high security at all levels – control systems for bilge pumps, winches, etc. through to overall vessel management systems
- Flexible and open – maximum freedom to implement various network topologies and innovative concepts
- Robust industry standard – including communication via industrial WLAN or fiber optics

High security with Defense in Depth
- Multilayered concept to fully protect your ship – based on plant security, network security, and system integrity and complying with ISA 99/IEC 62443
- Segmentation of subnetworks – to further increase security
- Reliable protection against unauthorized access – user authentication and allocation of access rights

Flow management and anti-heeling control

Comfort panel   Microbox with S7-1500 software controller

PROFINET

Flow-management system

ET 200SP CPU

Remote-controlled valves	Tank level & draft gauging
Temperature measurement	Panels & alarms

Anti-heeling system

ET 200SP & motor starter

Level sensor

Heel tank   Pump   Heel tank

Highlights

- Compact control solution with PC integration – for measurement and control tasks like measuring and recording the water level and controlling the pumps
- Decentral, modular, and compact solution with SIMATIC ET 200
- Space-saving solution – thanks to motor starters integrated in the ET 200SP system
- Open system and one bus for all requirements – PROFINET

Stability in all weathers and sea conditions is vital for cargo ships.
A reliable tank ballast system prevents wrong trims, heel, and draft.
Automate work steps with the anti-heeling control system.

SIMATIC IPC – S7-1500 software controller
- PC-based control, independent of operating system
- Complete engineering in TIA Portal, no Windows setting required
- Easy realization of interfaces to PC applications and integration of real-time high-level language code
- Broad range of hardware platforms with SIMATIC IPCs
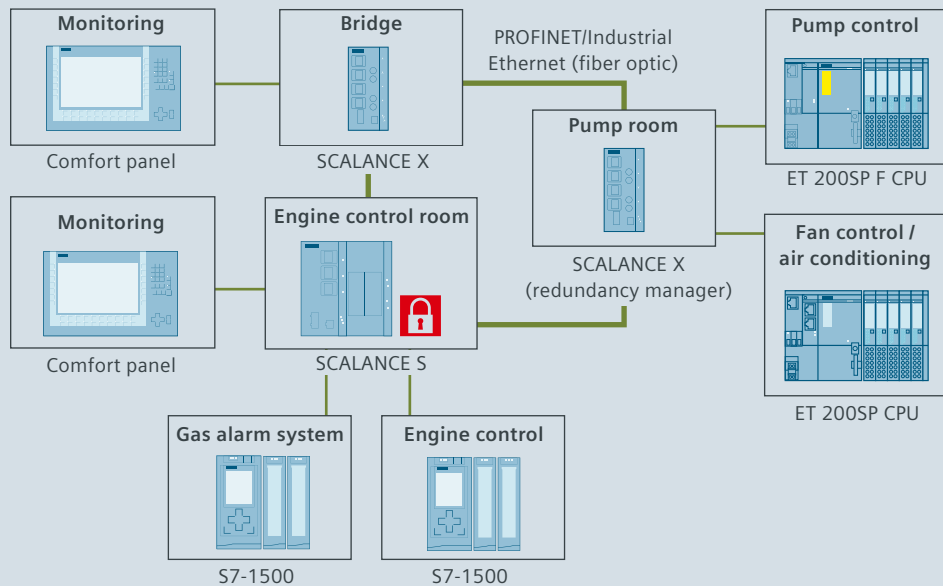
SIMATIC HMI – comfort panels
- Highest usability for easy operation of the machine
- Ranging from 4" to 22", with touch screen and/or operating keys
- Brilliant displays in wides-creen format
- Multiple interfaces for process communication, integrated PROFINET switch for 7" and up

SIMATIC ET 200
- Decentral periphery system for hazardous environments to reduce wiring effort
- Modular and easy-to-expand system
- Highly compact design and easy handling with push-in or screw terminals

Alarm monitoring and control

Monitoring	Bridge	PROFINET/Industrial Ethernet (fiber optic)	Pump control
Comfort panel	SCALANCE X		ET 200SP F CPU

Pump room

SCALANCE X
(redundancy manager)

Engine control room

SCALANCE S

Comfort panel

Monitoring

Fan control /
air conditioning

ET 200SP CPU

Gas alarm system

Engine control

S7-1500

S7-1500

Highlights

- Faults are quickly located and fixed – no special tools or additional engineering effort needed
- Clear display of engine's current state – as numeric values or bar graphs
- High system availability and low cabling effort – thanks to optical ring main with redundancy manager
- Defense in Depth – consistent security concept from the integration of the security function into the products to security services for entire ships

Safeguard people and systems with a holistic alarm and monitoring system that includes automation components from Siemens.

SIMATIC S7-1500
- The controller with advanced system functions and high performance
- System-integrated diagnostics without additional engineering effort
- Maximum user friendliness to minimize service efforts

Industrial Security
- Integrated security functionality in automation products to implement Defense in Depth concept
- Network security with cell protection concept using SCALANCE S or the security communication processors for SIMATIC
- System integrity with know-how protection and authentication of users and their access rights

TIA Portal
- One engineering framework for all products
- Maximum user friendliness and low engineering effort
- Shared database and smart library concept enable usage of overlapping functions

Winch control
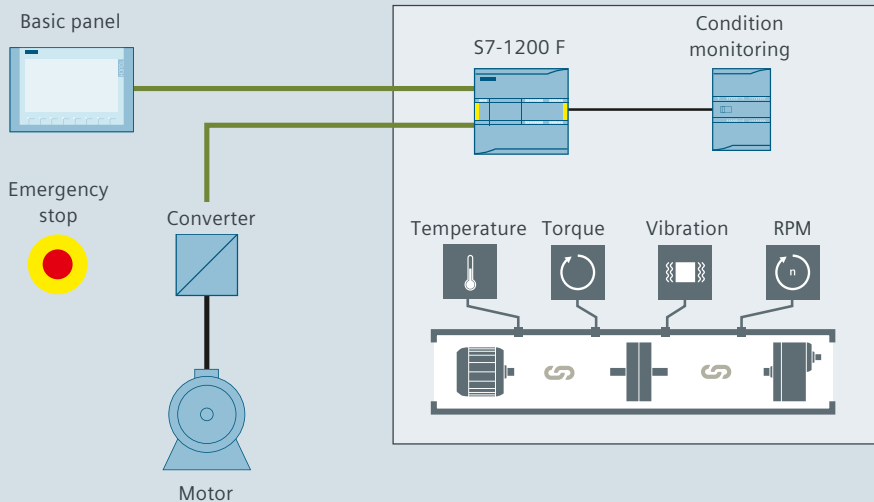
Basic panel

Emergency stop

Converter

Motor

S7-1200 F

Condition monitoring

Temperature Torque Vibration RPM

Whether towing, anchor or mooring winches – winches are one of the most frequently used applications in the shipbuilding industry. They have to function reliably and smoothly at all times.
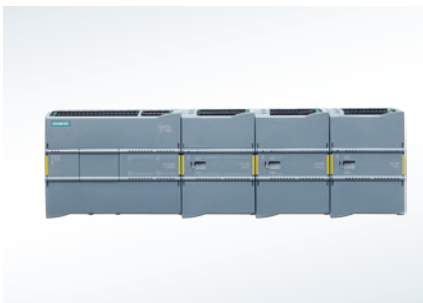
SIMATIC S7-1200
- Compact controller with integrated IOs, technology and communication functions
- Networking options via various communication standards (PROFINET, Modbus, IO-Link, AS-i, etc.)
- Flexible design and modular expansion

SIMATIC HMI – basic panels
- Clear display and user interface with wide-screen displays ranging from 4" to 12"
- Basic configuration and functionality with optimal price-performance ratio
- Perfect interplay with SIMATIC S7-1200

Safety integrated
- One controller for standard and safety applications
- Easy integration of safety function-ality into existing applications from basic to advanced automation
- Integration translates into a reduced wiring effort and an efficient fault diagnosis

Complying with all shipbuilding approvals

	Shipbuilding approvals					
	ABS	**BV**	**DNV**	**GL**	**LRS**	**NK**
SIMATIC controller Advanced controller (S7-1500)	✓	✓	✓	✓	✓	✓
Basic controller (S7-1200 / LOGO!)	✓	✓	✓	✓	✓	✓
Distributed / Open controller (ET 200SP)	✓ / –*	✓ / –*	✓ / –*	✓ / –*	✓ / –*	✓ / –*
Software controller	depends on IPC hardware					
SIMATIC HMI Basic panels	✓	✓	✓	✓	✓	✓
Comfort panels	✓	✓	✓	✓	✓	✓
Mobile panels	–	–	–	–	–	–
Outdoor panels	✓	✓	✓	✓	✓	✓
SIMATIC IPC Box PC (IPC227, IPC427, IPC627, IPC827)	✓	✓	✓	✓	✓	✓
Panel PC (IPC277, IPC477, panel PC Ex)	✓	✓	✓	✓	✓	✓
Rack PC (IPC647)	✓	✓	✓	✓	✓	✓
Monitors and thin clients (IFP and ITC (Ex))	✓	✓	✓	✓	✓	✓
SIMATIC ET 200 (IOs) SIMATIC ET 200SP (IP20)	✓	✓	✓	✓	✓	✓
SIMATIC ET 200MP (IP20)	✓	✓	✓	✓	✓	✓
SIMATIC ET 200ecoPN / ET 200AL (IP65/67)	✓ / –*	✓ / –*	✓ / –*	✓ / –*	✓ / –*	✓ / –*
SIMATIC ET 200pro (IP65/67)	✓	✓	✓	✓	✓	✓
Net Components SCALANCE X (Industrial Ethernet Switches)	✓	✓	✓	✓	✓	✓
SCALANCE S (Industrial Security)	✓	✓	✓	✓	✓	✓
SCALANCE W (Industrial Wireless LAN)	✓	✓	✓	✓	✓	✓

* Planned

Reference: MS Ostfriesland, Germany

The MS Ostfriesland is the first environmentally friendly ferry powered by Liquefied Natural Gas (LNG). During its retrofit, the ferry also received a state-of-the-art alarm and monitoring system from MWB Elektrotechnik Service GmbH. It is based on the product line S7-1500 from Siemens and includes components of the ET 200MP and ET 200S series. The system excels through high availability thanks to its ring topology and the redundancy manager integrated into the network components. Alarms are shown on the display and operating unit in the engine control room. The integrated system diagnosis enables fast error localization and troubleshooting without additional engineering – thanks to the TIA Portal.

Siemens offers automation and drives products. With
industrial security functions that support safe operation
of the plant or machine. They are an important compo-
nent in a holistic industrial security concept. With this
in mind, our products undergo continuous development.
We therefore recommend that you keep yourself
informed with respect to our product updates, and
that you only use the latest versions in each case.

You can find information on this at:
http://support.automation.siemens.com.

There you can also register for a newsletter specifically
about these products. To ensure the secure operation
of a plant or machine, it is also necessary to take suitable
preventive action (e.g. cell protection concept) and to
integrate the automation and drive components into
a state-of-the-art, holistic industrial security policy for
the entire plant or machine. Products used from other
manufacturers should also be taken into account here.

For more information, go to
www.siemens.com/industrialsecurity

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