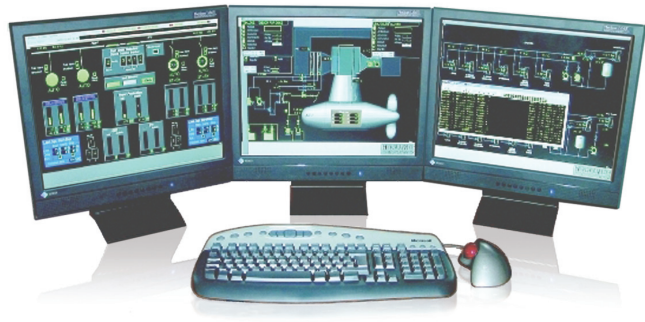
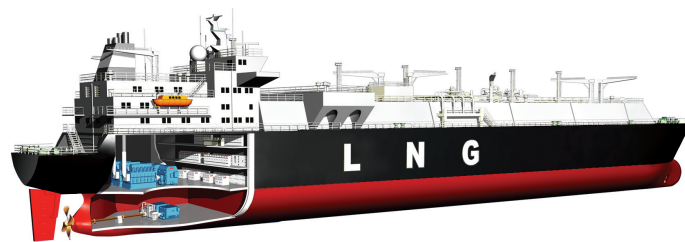




The user-friendly operator station supports up to 6 screens.



Screen shot of a typical Power Management screen.



To modern LNG carriers, ABB delivers complete electric power and propulsion solutions including Propulsion Control and Power Management Systems.

For more information please contact

ABB AS
Marine and Turbocharging
Bergerveien 12
P.O. Box 94
NO-1375 Billingstad
Norway
Phone: +47 03 500
Fax: +47 22 35 36 80

ABB AS
Marine and Turbocharging
Stålhaugen 5
NO-6065 Ulsteinvik
Norway
Phone: +47 03 500
Fax: +47 70 01 71 90

www.abb.com/marine

www.sundheim-madison.no 11-2009 Photos courtesy of ABB

Marine Automation

IAS and PMS for marine applications An integrated automation and power management solution

ABB is a leading supplier of electric power and automation and has long experience and extensive expertise in the marine industry. For marine automation applications, ABB provides an Integrated Automation System (IAS) based on the industry-leading Compact Products 800 technology platform.

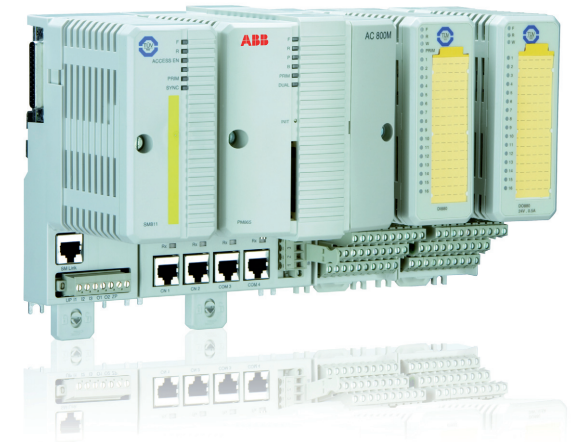


ABB automation technology for marine applications

The ABB IAS is a total integrated marine automation solution that provides a wide range of vessel-specific functions within a standard ABB Compact Products 800 control, software and communication platform. Comprehensive system monitoring, alarming and operator interface functionality is available through an advanced, fully integrated multi-screen operator station.

The IAS takes an all-in-one approach to vessel automation, encompassing all control and monitoring functions onboard a ship – including those that are normally handled by separate dedicated systems. IAS functions include:

- Cargo Control
- Alarm and Monitoring
- Ballast Handling
- Information Management
- HVAC Control and Monitoring

The coast guard vessel *KV Svalbard* is equipped with an ABB Integrated Automation System.



PMS - Power Management System

A Power Management System can be delivered as an integrated function in the IAS or as a stand-alone system. The PMS is essential to provide optimal and safe operation of the electric power plant and diesel engines.

Main PMS functions include:

- Load dependent start/stop
- Standby start, pre-warning
- Standby start, shutdown
- Alarm handling/status indication
- Mode handling (keeps a mode-defined # of DGs connected)
- Partial/total blackout handling
- Volt/frequency alarm handling
- Reconnection of breakers after blackout
- Load control of propulsion drives

The multi-purpose offshore vessel *Island Frontier* relies on the ABB Integrated Automation System for efficient offshore operations.



Power and productivity
for a better world™



Power and productivity
for a better world™



ABB Compact Products 800

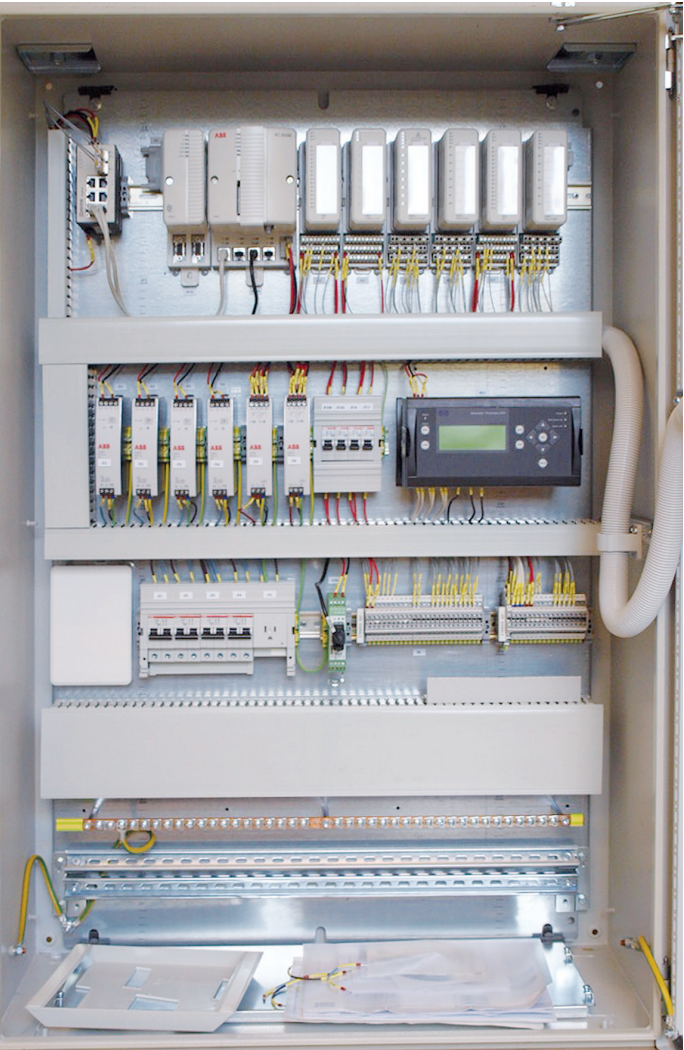
A powerful tool for ship automation and power management

ABB's Integrated Automation System for marine applications is a cost-effective total automation solution that is modular and highly adaptable to meet the unique requirements and configurations of each ship. Based on the Compact Products 800 process control series, the system is scalable in both size and performance and offers a high level of redundancy and open communication for simple integration with other existing and third-party systems.

A user-friendly control concept

A main benefit of the Compact Products 800 automation concept is its overall user-friendliness. The system hardware including controller, I/O panels and operator interface is easy to configure, set-up and program. Usual vessel functions are typically implemented through standard software modules. Vessel- and customer-specific requirements are handled through advanced programming and engineering tools.

Shown below is a Compact Products 800 installation with AC 800M process controllers and the S800 I/O system.



The AC 800M process controller can simplify programming by utilizing relevant previously delivered logic blocks and a library of ready-to-use functions generated automatically from the customer database. Project-specific programming is done in ABB Compact Control Builder software, which uses standard programming languages and graphical user interfaces.

A wide range of benefits

Based on state-of-the-art ABB automation technology, the Compact Products 800 system offers a wide range of benefits, such as:

- Well-proven standard hardware with global support
- High-speed redundant communication network based on IP standard technology
- Compact and lightweight
- Low power requirements
- Short application generation time - from database to running system in minutes
- Open database access for all process values to third-party software on the information network
- Integrated logging system and playback facilities – local/remote on-line/off-line

The AC 800M Process Controller

The modular AC 800M controller offers high flexibility and scalability to fit any system size. With a full set of communication functions as well as full redundancy and support for a broad range of I/O configurations, the AC 800M can be installed to meet today's requirements and expanded in the future to meet new control needs as they arise.

Several AC 800M CPU modules are available that vary in terms of processing power, memory size, and redundancy support. Each CPU module is equipped with built in Ethernet port(s) for communication with other controllers and for interaction with operators. It is also equipped with two RS-232C ports that can be used for point-to-point communication with programming/debugging tools and with third-party systems and devices.

The S800 I/O system

The S800 I/O modules are compact and easy to install and expand. The S800 I/O system may be built up from remote and local modules to handle any combination of signal types.

The operator station (OS)

The operator station supports up to six screens connected to the operator station unit. The user may move the pointing device to any of the screens and the requested display, object, table or utility will pop up on the screen selected or on a pre-defined screen.

Process displays may be scaled or zoomed and can be added at any time. The OS engine will automatically install new displays stored in the Process Display folder. All displays may be built and modified by the user from the OS Designer display builder tool.

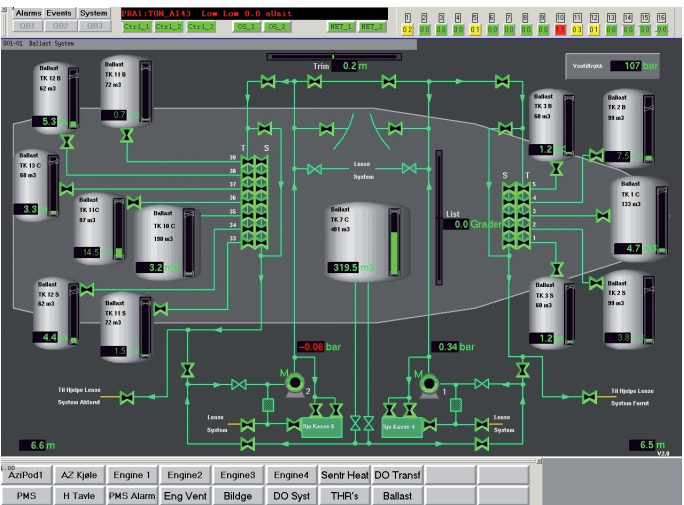
Data logging and playback

In the IAS, all signals in the system are logged every second and written to a in-built data logging hard disk. Historical data including alarms and events is saved in a database on the data logging PC. The database may be copied, compressed and sent for analysis or external storage. Data can also be exported to Microsoft Excel for analysis and trending.

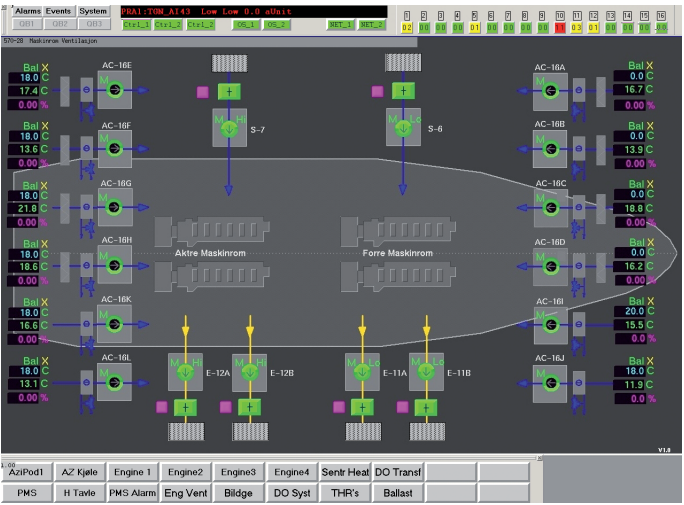
The operator interface has two selectable modes; normal mode and replay mode. In normal mode, current system data is displayed. In replay mode, historical data from a particular point in the past is displayed.

This point of time can be input directly or a particular event can be located by scrolling backwards and forwards in time. This flexible control allows an operator to identify the sequence of events leading to an incident, thereby identifying the fault so that it can be avoided in the future.

The ABB Integrated Automation System includes an in-built data logger that provides storage and playback functionality so that data can be replayed to help understand past events and optimize future operations.



Screen shot of a typical Ballast Control screen.



Screen shot of a typical Engine Ventilation screen.