WARRINGTON, UK, MARCH 2, 2012

Super yacht builder chooses PLC from ABB for monitoring and control systems

Super yacht builder, Sunseeker International, has specified a monitoring and control system using AC500 programmable logic controllers (PLCs) from ABB for its new luxury vessel, The 28 Metre Yacht, launched at the 2012 London Boat Show.

This system is used to collect information from equipment installed throughout the yacht. This data is then displayed on a 15" capacitive full-colour touch screen integrated into a glass panel at the helm and a separate display panel in the crew quarters.

There are two AC500 PLCs in the system, with the main controller - a PM573-ETH - located centrally in the vessel. The second PLC is a PM554-ETH and is located in the engine room. Both PLCs utilise the DC523 configurable IO modules.

The AC500 PLCs are used for controlling on-board systems such as bilge pumps, windscreen wipers, lighting and air conditioning. The use of the PLC allows for control via touch screens or conventional switches.

The PLCs also monitor all of the alarm and status signals on the yacht, ranging from water level switches in the bilges to exhaust temperature alarms or pressure monitoring of fire systems. The PLCs are used to monitor these signals directly or, where required, to provide simple delays to avoid nuisance alarms or to more complex logic functions for conditional alarms.

The other main function of the PLC system is to provide automatic control of the yacht's on-board power management system.

"Features can be provided which would not have been practical without a PLC control system," says Haydn Harper, electrical design engineer for Sunseeker. Other benefits include the fact that long cabling runs such as that from the engine room to the helm, are reduced. Furthermore, if an extra signal is needed, a long cable run does not have to be installed. Modern momentary action switches can be used to control any equipment and multiple control locations are easy to configure.

Configurable IO

"The ABB PLC was selected because the CPU can be chosen to suit the control application and this makes the system cost effective," adds Haydn. The CPU has many communication ports as standard and SD cards can be used to update software and firmware. "The configurable IO cards mean that the best possible use of the IO is made and we do not have systems with large numbers of spare IO which are unlikely to be used.

"The system is very easy to expand. Additional IO cards can be simply added to the system. We have had projects in the past where a specific boat needed more IO and we were able to easily add remote IO to the project to provide the extra signals."

MODBUS link

The engine room PLC is used to control all local equipment with a MODBUS link to the main controller (PM573) at the helm. The MODBUS link allows information and control signals to be passed between the two CPUs. The PLC also communicates with the power management system to gather voltage, current and frequency data via RS485.

The PM573 controls all of the equipment located in the forward half of the boat. The PM573 interfaces to all of the switches and controls which are located on the helm console. There is also a data link to the NMEA2000 communication network which is used to provide data such as tank levels and DC voltages and current.

The two touch screens are linked to both PLCs via MODBUS TCP so that control of equipment and data can be displayed simultaneously.

Conventional approach
With Sunseeker's conventional yacht designs of this size, all of the control systems are hardwired to dedicated rocker switches at the helm. This takes up more space, uses more wiring and is not very flexible. Furthermore, the monitoring of system information such as voltage is carried out using dedicated meters, gauges and LED indicators.

Yet on The 28 Metre Yacht, this is replaced using two central PLC controllers linked by Ethernet and two touch screen interfaces to display system information to the crew. The conventional rocker switches are replaced with smaller momentary action modern switches.

Programming flexibility
All of the PLC programming is carried out using the ABB Control Builder Plus software. The software allows Sunseeker to configure the system to operate exactly as required.

"The programming software has been easy to use from the initial configuration of IO and controllers right through to compiling and testing of the code," says Haydn. "The PLC system has approximately 200 discrete IO points per boat, all of the analogue signals used on the boat are connected to the PLC via data communication links.

"The AC500 range has a number of controllers available which vary in specification. This allows us to specify a lower spec controller where required which is much more cost effective than being forced to have a higher specification controller which is then under used.

"I have been very impressed with the number of communication ports which come as standard and the ability to add additional hardware when needed. The software is very flexible and allows code to be written in different ways such as function blocks or ladder logic.

"ABB has worked closely with us to develop our first project and provide software and support free of charge. This has since developed more recently with ABB's system integrator, Tycon Automation, now the supplier and provider of first line support of the PLC system. I am very happy with the excellent support provided by ABB both directly and via the detailed help files. Tycon has provided on-site training including the use of demo equipment and have been very helpful in assisting with telephone advice and troubleshooting."

Caption: Sunseeker International's, The 28 Metre Yacht, monitoring and control system uses ABB PLCs.

—

For more information please contact:
Layla Hewitt
Marketing Communications
Phone: 01925 741517
Email: layla.hewitt@gb.abb.com

ABB Ltd.
Daresbury Park
Daresbury
Warrington WA4 4BT

Emma Jenkinson
Armitage Communications
Phone 020 8667 2218
Email: emma.jenkinson@armitage-comms.co.uk