

One day all craft will operate like this

Henry Neeter looks at the latest in ship control systems. Already in use on Superyachts, the next step will see similar systems on everyday recreational craft

THE FIRST THING HE DID WHEN HE BOARDED THE SHIP THAT MORNING WAS TO SWITCH ON THE MANTA COMPUTER SYSTEM. HE THEN TALKED TO THE FIRST MATE ABOUT THE PASSENGER WHO HAD suffered a heart attack during last night's crossing and had to be lifted off by a rescue helicopter.

In the meantime, 240 sensors that were coupled to the network collected all possible technical information on equipment, safety and fire alarm systems and passed it on to the central management information system.

The last chart data were automatically collected via satellite to update the electronic charts, the most recent meteorological data, measured wave heights and tidal patterns were fed into the chart plotter in front of him. On the screen at his right he could follow the busy harbour traffic on the colour radar and on the monitor far right all important data of the idling diesel engine plus the two generator sets were graphically displayed. The oil pressure and temperature of the cooling

local area network. The server uses special hard disks capable of absorbing shocks of 100G, normally used by the aerospace industry in jet fighters. A PC hard disk is only foolproof under 7G, equal to the forces a human being can endure before losing consciousness, but on a ship at high seas this is not sufficient.

RAID (Remote Annunciation & Interrogation Display) units give indication of alarms and channel values for all system inputs. WinMon™ monitoring software for 32 bits Windows® systems was specially developed to display all outputs in graphical form. Information from other sources is passed through Gateways that adapt a/o NMEA or RS232 signals for throughput to the Arcnet software. All technical units are built into 19" standard rack type units with standard universal connection busses. This makes repair, replacement and upgrading easy and fast and it can be done by the ship's own technical staff or even local people.

Simple or extensive



Designer Jon Bannenberg specified flat screen LCD monitors that could be tiled vertically and horizontally to give a head-on view from anywhere on the bridge



system, as well as the outflow of diesel from the tanks, looked normal.

With all this information at his disposal he determined what would be the best route for that morning and clicked on the code name of the pre-programmed list of waypoints that they were to follow. On the screen furthest to the left diagrams displayed telling him all navigation lights were switched on and working and on the fifth monitor he could follow, through the inboard video cameras, the movement of the cars and trucks that were driving over the ramp and of the passengers walking the gangway.

Via the VHF he informed traffic control that he was ready to leave at the planned time. He only had to wait now for the signal of the second mate that all was ready to cast off for the next crossing.

Modular system

Such a system is no longer the dream of the future but can at present be built into the bridge of any superyacht or commercial vessel, using existing components in electronics and measuring instruments. Kelvin Hughes' engineering department, a Smiths Industries Aerospace division, has used the experience of Servo Watch, a British firm whose system has been incorporated in many a superyacht and fast ferry already, to build this state of the art system.

Named Manta (Management Automation Navigation Telecommunication Array) the system has a flexible modular configuration that can be suited to the owner's wishes. The technical monitoring starts with installation of around 240 sensors throughout the vessel that are connected to DAU's (Data Acquisition Units), each one capable of handling the information of 32 analogue or digital sensor inputs. In 99% of the cases the need for additional signal conditioning of the sensor or transducer data is not needed.

Sensor values and alarm status are available to the system via a dual Arcnet

When a simple system on a small ship is installed the available information displayed will cover the main engine, generator set, AC/DC electrical system, tank levels, bilge water level and fuel alarm. For this information 64 sensors have to be coupled with 2 DAU's, while the information can be displayed on a monitor on the bridge and



Taktik has rapidly earned itself a reputation for innovative electronics. The company's Race Master, Nav Master and speed Master have all won awards or, as recently, have been cited for an Honourable Mention in the 1999 METS DAME Awards.

The three products are all targeted at small keelboats and offshore racers. The Race Master combines heading with a header/lift display that makes it very easy for the helm and crew to judge windshifts.

Speed Master is not just a log; it also offers an acceleration display that shows the crew the results of that last sail trim in no uncertain terms.

Finally, Nav Master offers speed, heading and depth, complete with an audible alarm.

The units are designed for mast mounting and feature twin displays so they are easy to read from the rails. All units are actually submersible and will never, they tell us, mist up.

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