

## Taking gauging to a higher level

### A roundup of the latest developments among suppliers of tank gauging equipment shows that system integration is the key driver

#### Skarpenord Mark II

During 2002 Scana Skarpenord Langesund (SSL) launched BM70MP, a new second generation radar-based tank level gauge which the manufacturer claims is capable of providing ullage measurements to within 0.01 per cent.

BM70MP is an upgraded version of BM70/50 which was introduced in 1992. The new gauge is the outcome of a two-year collaboration with Germany-based Krohne and provides an accuracy tolerance which is 10 times better than that of its predecessor. "The previous ullage accuracy was  $\pm 20$ mm, whereas BM70MP is  $\pm 2$ mm, or  $\pm 0.01$  per cent," says Hasse Hogner, sales manager at SSL. "In addition, the availability a higher resolution A/D board coupled with a new microprocessor and firmware increases BM70MP's total measurement range by 15 metres, from 20 to 35 metres." Fed from a single power source, BM70MP is a stand-alone system which allows ullage measurements to be continually displayed, even when the central computer fails. The system's components - electronics, antenna and coupler - can be serviced or replaced without any gas pressure being released from the tank, while the radar's  $\pm 6$  degree beam is an optimal angle which accommodates both low free space (footprint) and high ship trim/list angles.

The new radar utilises a high-precision microwave board and a linear sweep controller. The unit is compliant with the latest relevant marine standards, including EEx de IIC T1-T6, and is approved by all major classification societies.

BM70MP comes with a new software package to assist shipyards in compiling a detailed presentation of the total tank picture. Elements affecting correct microwave measurement, such as stringers or large pipes, are identified and accommodated in the calculations.

#### Good year at Auxitrol

Auxitrol of France supplies a range of marine tank gauging equipment, from simple pneumatic indicators to microwave-based level measurement systems, and also has a second generation radar-based unit, the TA 3840 microwave level measurement system, available for tankers.

In addition to ullage measurements the TA3840 radar can process up to four parameters from amongst the following: main line inert gas pressure, cargo temperature with up to three probes, ballast level, redundant cargo level, cargo inert gas pressure, manifold pressure and gas return line pressure.

By using a loop, tree or star network between the radar and the central monitoring system, the TA3840 can be integrated into any type of control system. Loop networks, with the minimum of wiring and installation costs, are particularly suited to tanker retrofit projects where the working life of the installed system will be less than if it was fitted onboard a newbuilding.

"As a result of increased marketing efforts, our sales of marine gauging systems in 2002 were 50 per cent ahead of levels for the previous year," reports Hidalgo Laurence of Auxitrol's Systems and Sensors Division. "Notable recent orders include the supply of radar gauges for a series of product tankers building at the Guangzhou shipyard in China for A P Møller. We have also been working with Thales, a company at the forefront of developments in high-frequency microwave technology, on a number of new projects."

### **Saab three-in-one**

For Saab Rosemount Marine, the inventor of radar-based tank level gauging back in the 1970s, the most important development in 2002 was the introduction of Saab TankRadar STaR that provides integrated level gauging, a high level alarm and an overfill alarm in a single unit. Saab points out that this is the first time that the radar technique has been utilised to handle all three functions.

"Saab TankRadar STaR takes advantage of a new sensor technology to provide a package designed to save shipowners and shipyards money," explains Anders Roos, chief executive officer of Saab Rosemount Marine.

"Ready-processed signals from the intelligent radar tank unit are transmitted. More frequent gauging intervals allow rapid response to level changes, making it easy to act and react during high-speed cargo-handling processes for safer, more reliable loading and discharge. The result is a cost-effective system that ensures maximum uptime, productivity and profitability."

The Saab TankRadar STaR system was introduced in May 2002 and was christened through its fitting onboard two newbuilding product tankers for Broström, Bro Jupiter and Bro Juno. Since then, orders have been placed for over 30 shipsets of this gauge.

Although radar-based level gauges are now available from several marine equipment suppliers, Saab remains the market leader in terms of sales. Saab TankRadar gauges represent the dominant product line at Saab Rosemount Marine, with over 50 per cent of total turnover. Other products offered by the group include Saab TankRadar MaC cargo and control systems, tank cleaning equipment, automatic identification system (AIS) transponders and ballast measuring devices.

### **Martek adds radars**

Martek Marine Ltd, a supplier of cargo monitoring and measurement systems for tankers, reports that both turnover and profits increased by 45 per cent in 2002 compared to the previous year as a result of gaining market share.

The company supplies Centurion high-level/overfill alarms, Levelmaster and Sentry 300 tank gauging systems, VecSafe oxygen and pressure-monitoring devices for vapour emission control systems, Sentry cargo tank pressure monitors, Sentinel pumproom gas detection systems, and TempSafe temperature monitors for cargo pump bearings.

Typical of recent integrated equipment orders for Martek was the supply of a full package for the tanker Magn comprising high level and overfill cargo tank alarms, cargo tank pressure monitoring, cargo pump temperature monitoring and pumproom gas detection system. The ship is serving the Faroe Islands on behalf of Shell.

"Currently, our strongest product lines are our tank gauging and gas detection systems," states Steve Coulson, marketing manager at Martek. "In this respect we were pleased to add the CargoSafe radar-based tank level gauge to our product range over the past year."

### **KMSS in Korea**

Kongsberg Maritime Ship Systems (KMSS), the world's largest supplier of ship automation and control systems, and ship simulators, markets the Autronica GL-100 radar-based cargo level gauging system as part of its AutoCargo integrated, radar-based cargo monitoring package for tankers.

The Horten, Norway-based company has been particularly active in marketing its products in Korea in 2002, as part of an initiative to build up an already strong presence in this leading shipbuilding nation. A measure of the success achieved is given by the fact that orders were taken for KMSS equipment for 35 ships under construction in Korean shipyards this past December alone. The orders were placed through the group's Korean subsidiary, Hanguk Kongsberg Maritime (HKM).

Many of the orders were for AutoCargo systems for tankers, adding to the large number of sales of this equipment for this type of ship in Korea earlier in 2002. As an example, KMSS is supplying AutoCargo cargo monitoring systems to the Hyundai Mipo Dockyard for four product tankers building for Sovcomflot and a product tanker under construction at Daewoo Shipbuilding & Marine Engineering for Unique Shipping.

### **Unified automation**

The AutoCargo packages feature the GL-100 radar-based cargo level gauging system. The GL-100 gauge consists of the GLA100 level sensing unit which is located in the tank and connected to a GLK-100 signal processing unit in the cargo control room. Dedicated signal processing ensures normal operation of the rest of the system if a malfunction occurs in one of the units.

AutoCargo measures cargo tank ullage, cargo tank inert gas pressure, vapour line pressure, cargo tank temperature, cargo line/manifold/pump pressure and temperature, ship draft, trim and list, ballast and service tank level, and ballast pump and line pressure.

Backing up the measurements are a cargo tank high level alarm system, and valve and pump control. Load calculators with online connections to the AutoCargo system can be provided. The load calculator meets class requirements for ship hull strength, intact stability and damage stability calculations.

The Korean marketing initiative is part of a greater Asia-wide push outlined by KMSS at the SMM event in Hamburg in September 2002. Another key focus is China which has emerged rapidly as a shipbuilding nation and is now unchallenged as the world No 3 in ship construction.

Here again, the targeted efforts of KMSS are reaping rewards. In November 2002 alone, for example, KMSS won orders worth \$1m for the fitting of its AutoChief propulsion control system onboard 22 ships currently in production in China and Korea.