KSG818EN/2248

SHIPMASTER®

Success story - West Alpha

The Kockumation Group company Kockum Sonics AB delivers Ballast Automation system SHIPMASTER and remote level gauging system Levelmaster H8 to Semisubmersible “West Alpha” owned by North Atlantic Drilling.

North Atlantic Drilling manages the semisubmersible drilling rig West Alpha that was built at Nippon Kokan KK back in 1986. Since then West Alpha has served many years at various locations around the world. As her design is highly specialised with a shallow draft the rig was awarded a contract for drilling in the Kara Sea but prior to commencing the project in the summer of 2014 she had to undertake some major system upgrades.

North Atlantic Drilling in Stavanger Norway undertook a comprehensive assessment of all her current systems in order to ensure safe operations on her forthcoming assignment. Amongst the systems that required upgrading was the remote level gauging system for ballast, brine, diesel and water tanks. Kockum Sonics was contacted as North Atlantic Drilling’s owner Seadrill had installed numerous remote gauging systems from Kockum Sonics previously.

Kockum Sonics consequently sent an engineer onboard to evaluate the condition and efficiency of the existing system. The intention was to retain as much as was possible to save time and money during both the procurement and installation phases. During our initial survey it was discovered that existing pump and valve remote control system also required an overhaul. The original system had operated since the rig was delivered from the yard but was showing severe signs of age. Many of the components were now obsolete and the system did not interface to today’s modern control platforms. The Kockum Sonics engineer returned to the main office in Sweden and presented the findings to the technical projects team. After a comprehensive technical analysis at Kockum Sonics is was clear that we were able to provide a cost-effective solution to what was a very challenging set of circumstances.

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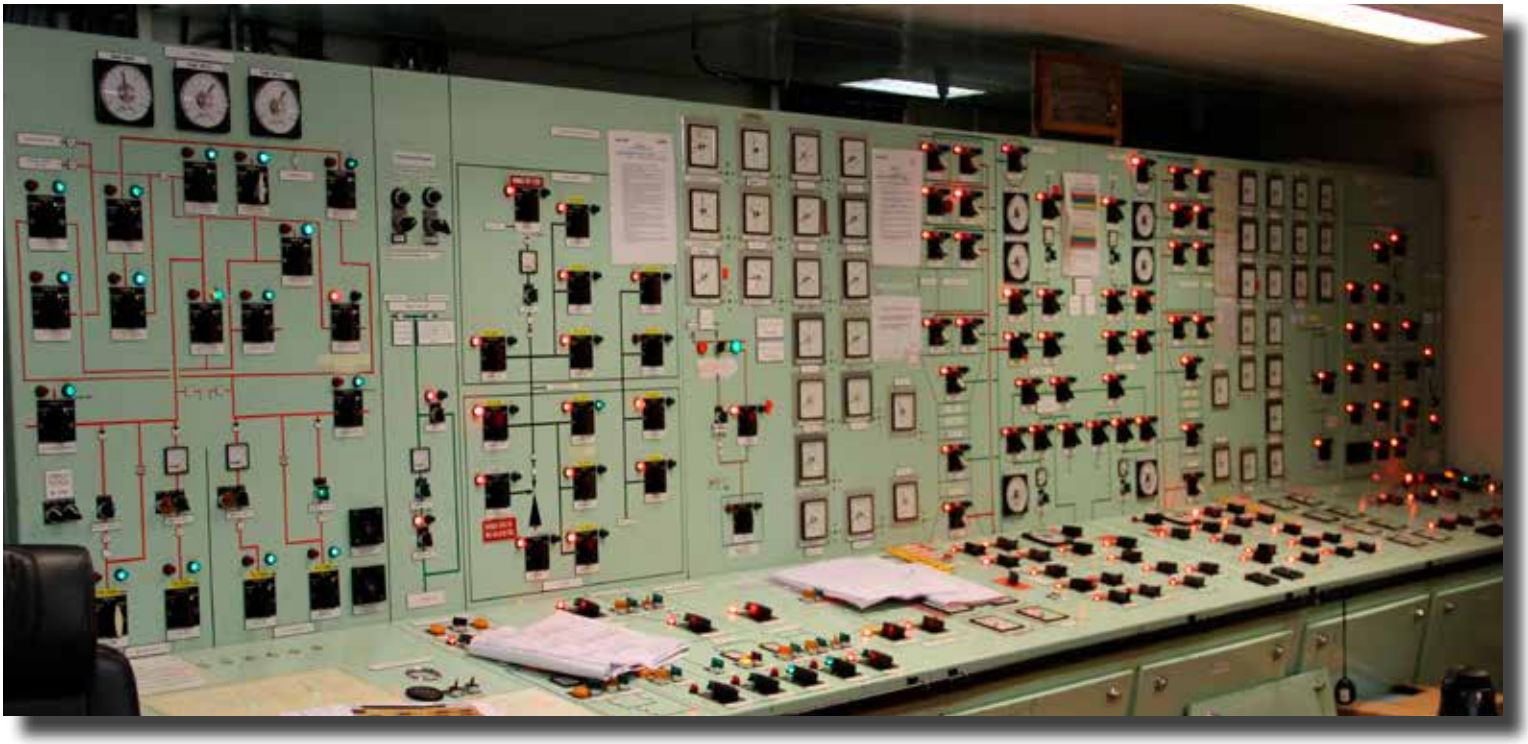


Original Console

Within a timely manner Kockum Sonics provided North Atlantic Drilling with a comprehensive offer for the remote level gauging upgrade. A proposal for the upgrade of the pump and ballast control system was also presented as an addition to the original package. The response from the rig management team was positive and we were invited to carry out a further onboard survey for the control system. Consequently two Kockum Sonics' engineers completed an exhaustive appraisal of both systems during a 15 hour visit onboard.

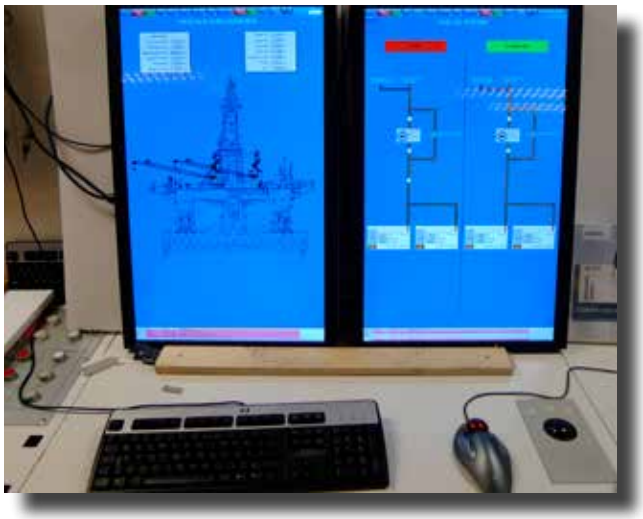
All signals were identified and traced and the present installation was documented. Owing to her age some of the original drawings were unavailable and some modifications had been implemented over her lifetime without the appropriate revisions to the original data as is quite common.
With a complete survey now accomplished Kockum Sonics produced a thorough quotation with a time plan for the production and a work scope for the installation of the new equipment onboard the West Alpha. In late December 2013 Kockum Sonics was successfully awarded the contract for the upgrade that should commence installation in Norway just four months after the award.

The original pump and valve control system utilised analogue solenoids for valve operation. Feedback from the valves was obtained via limit switches and the pumps were controlled via pushbuttons linked to the local starter cabinets beside the pumps. All controls were installed in a 6m long 'piano' type console.

Kockum Sonics provided a bespoke new system whereby the entire console was removed and replaced with a state of the art PLC based system. The original analogue solenoid valves were replaced with two Kockum Sonics produced solenoid cabinets that were connected back to the existing hydraulic power pack.

In order to minimize the cabling during the original installation there were four field cabinets in the control room where I/Os were terminated. Furthermore the Main I/O cabinet had very limited space for modification resulting in Kockum Sonics designing and installing a tailor made cabinet as the optimum solution.

In late February 2014 Kockum Sonics held a successful Factory Acceptance Test (FAT) in Malmö Sweden that was attended by the rig's technical management and DNV-GL. North Atlantic also dictated the Human Machinery Interface (HMI) to their own specific requirements before all equipment was sent to Westcon Shipyard in Norway for installation and Kockum Sonics provided a supervising engineer during the installation phase.

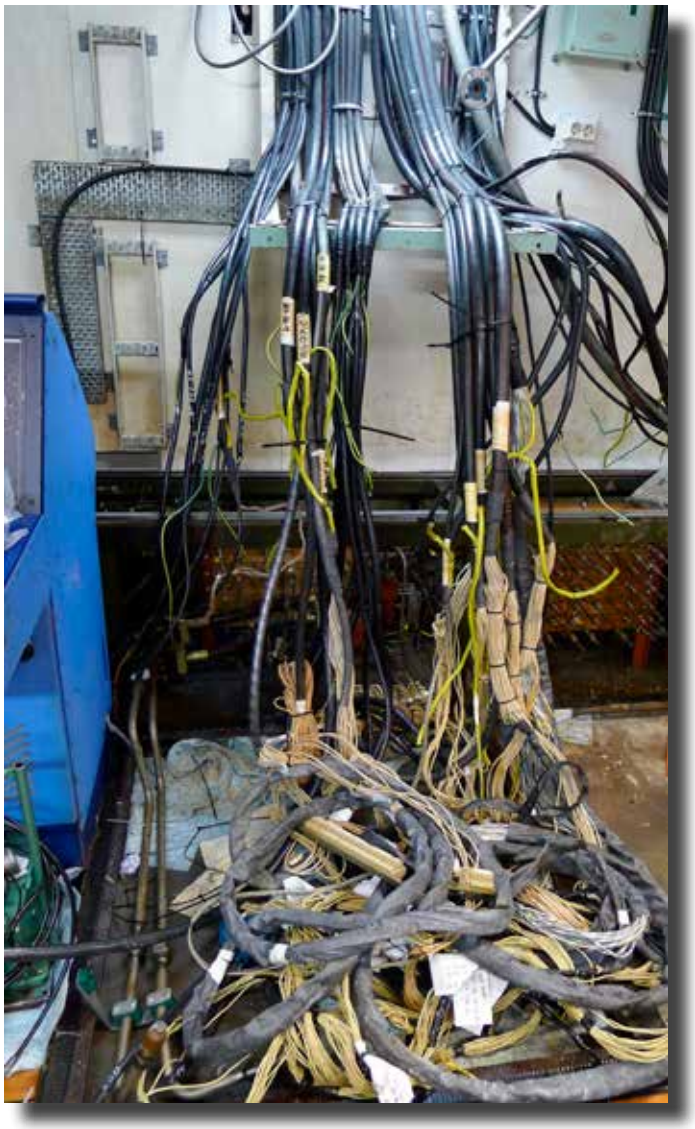


HMI tests during FAT

Owing to the rig's age some "new" information was unearthed during the removal of the existing system and having our engineer on-site facilitated some smooth modifications without delay.

Multi competence engineers from Kockum Sonics ensured the installation time stayed within target by transferring their flexible skills to other areas during the inevitable unforced delays, a valuable and efficient service asset that was appreciated by the customer.

Field cabinet for I/O installed



Wiring work in progress

The Kockum Sonics team provided great flexibility in it's attendance. During peak periods we also provided additional personnel as required by the plan and removed them back to Sweden when not required, thus minimizing the labor cost.
In late April 2014 the yard, North Atlantic Drilling and Kockum Sonics finished the installation and DNV-GL were duly invited for a Site Acceptance Test (SAT). The complete system was successfully tested and in early May the rig left the yard and was put into operation again.

SHIPMASTER® system capabilities

SHIPMASTER Ballast Automation provides a complete overview and control of the loading and discharging of tanks. Pumps, valves and other equipment are easily controlled and monitored on screen from a SHIPMASTER PC and the dedicated operator keyboard. Graphical process views provide the operators with a full picture of gauging sensors, temperature sensors and more.

SHIPMASTER is of course compatible with other KOCKUM SONICS' products such as LOADMASTER® and LEVELMASTER®.

Operational benefits

The following benefits can be derived from SHIPMASTER:

- Minimum change of technology to secure end of lifetime maintenance.
- Modern software platform easily maintained by service engineers.
- No change in instrumentation.
- Minimal change in I/O modules.
- Transfer of major functionality
- Several workstations available
- Unlimited display units available

Project Management

The entire system was developed and produced in Malmö, Sweden. During the entire development phase the team were in close contact with North Atlantic Drilling to ensure a system that meet the high demands set by the system users.
The new system is fully modularized and made for easy service and maintenance with readily available spares on a global basis.

We wish West Alpha good luck on her future assignments.

Always ready to support you!

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