

Yokogawa Targets Upstream and Midstream Oil & Gas in North America

By Larry O'Brien

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Summary

Recently, several ARC Advisory Group analysts and management team members had a chance to sit down with the new Yokogawa President and COO, Mr. Takashi Nishijima, and several other top Yokogawa executives to discuss the company's burgeoning presence in the worldwide upstream and midstream oil & gas industry.

Yokogawa is expanding its presence in the upstream and midstream oil & gas business in North America and the rest of the world through new products, applications, and solutions expertise.

Here's what the senior management team at Yokogawa, led by new President and COO Mr. Takashi Nishijima, told us about the company's future plans.

Clearly, Yokogawa is taking the energy boom in North America and the rest of the world seriously. In fact, the company has been strengthening its North American operations by moving key positions from Tokyo to Houston. Yokogawa has been winning contracts in the oil & gas industry for many years in places like the Middle East, Europe, and Latin America. In the past couple of years, Yokogawa has won a half dozen or more major

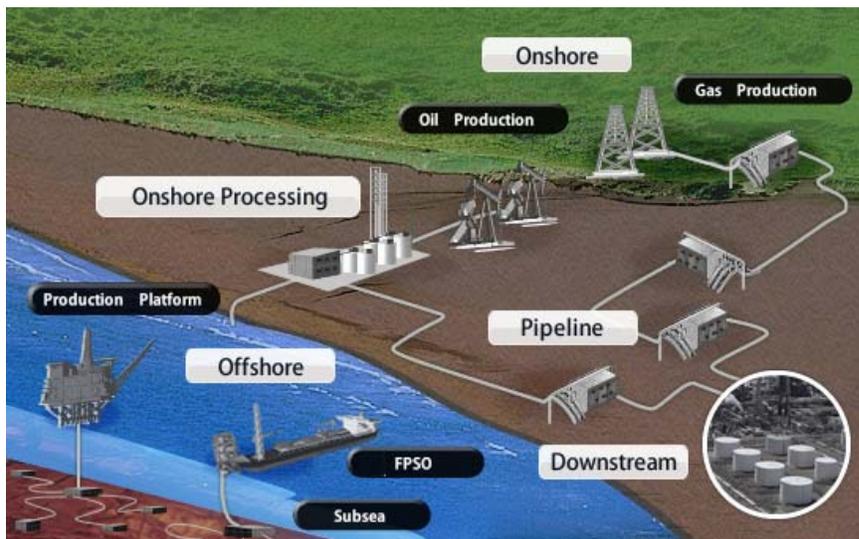
platform automation projects in the Gulf of Mexico and many more FPSO projects in the Americas region.

The company has several applications and products specifically designed to address some of the key requirements of the upstream and midstream oil & gas business for the coming decade. These include optical fiber sensing, flow computing, safety instrumented systems, and more. Here is a closer look at what Yokogawa is doing to address the business and automation requirements for the fastest growing segment of the process automation industry.



Business Value Perspective for Oil & Gas

Yokogawa's philosophy with process automation is to address the business and operational requirements of end users. This is the foundation of the VigilantPlant campaign, which revolves around the concepts of seeing clearly, knowing in advance, and acting with agility. This is a good starting point for the business challenges of upstream and midstream oil & gas. Much of what we discussed at the briefing revolved around giving end users greater visibility into their processes, improving the situational awareness of operators and technicians, using intelligent field devices to reduce downtime, providing tools for advanced decision support and procedural automation, remote operations management, project execution and supplier services, and more.



Application Focus for Upstream and Midstream Oil & Gas

remote operations management, project execution and supplier services, and more.

With these business challenges in mind, Yokogawa is using its application knowledge to solve specific problems in the industry instead of just selling technology. Examples include:

- New SCADA solutions, including the latest version of the FAST/TOOLS supervisory software and the latest version of the Star-dom intelligent RTU to help improve remote operations
- Fiber optic sensing technology to help reduce downtime, and
- Advancements in operator interface technology in the CENTUM system to help improve situational awareness

Supporting Remote Operations Requirements

The ability to control and monitor a large amount of geographically distributed assets is a key requirement for the oil & gas industry and will only become more important as experienced personnel become harder to find and owner-operators continue to look for resources in increasingly harsh

environments. At the same time, users have a requirement for integrated operations management applications that can provide an overall view into what is happening across all their production assets.

Yokogawa has a fully functional intelligent RTU/PLC in the form of STARDOM. STARDOM is used as a control and metering platform and is tightly integrated with the company's FAST/TOOLS supervisory software. Yokogawa has already been winning SCADA contracts in areas such as the Middle East, Asia, and Latin America and is now marketing both platforms in North America.

Controllers in STARDOM family



**Low-Power Consumption Model
for Wellhead Control**
FCN-RTU



**Redundant Model for Pipeline,
Compressor, and Valve Station Control**
FCN

Autonomous controllers in the STARDOM family support a wide variety of wired and wireless backhaul networks and are well suited for use in harsh environments. Redundant models are available for pipeline, compressor, and valve station control.

FAST/TOOLS is a true "system of systems," providing web-based supervisory functionality and advanced visualization tools for operations management. Combined with STARDOM, FAST/TOOLS creates a full-scale SCADA solution that can be scaled from very small to very large geographically distributed applications. Yokogawa recently released version R10.01 of FAST/TOOLS, which includes enhancements for operator efficiency and usability.

Integrated Flow Rate Calculation and WellProducer

STARDOM supports both liquid and gas calculations that comply with API and AGA standards. STARDOM FCN-RTUs can support up to eight gas meters and eight liquid flow run calculations. Liquid calculation is currently available in the US only. STARDOM also features an application called WellProducer that allows users to configure multiple wells per pad and

automate the well pad for optimized plunger lift control, pressure and flow monitoring and control, bath heater control, gas metering, liquid metering, emergency shutdown, and remote monitoring. WellProducer features browser-based configuration and can greatly reduce the effort required to design and commission new well pads. The user selects the devices and flow calculations and STARDOM corrects for gas, water, and oil to deliver corrected metering for gas and oil along with reporting produced water and water cut.

There is a trend in the oil & gas industry to incorporate the flow rate calculation functions traditionally found in dedicated flow computers into RTUs and process controllers. Yokogawa is taking steps to address this. STARDOM autonomous controllers have recently been certified by Measurement Canada for use as a flow computer. The company also offers its own line of flow computers.

Reducing Downtime through Fiber Optic Sensing

Yokogawa has a long history of innovating sensor technology with the introduction of the DP HARP digital pressure sensor and more. The company's new fiber-optic temperature sensing device can provide a distributed temperature measurement over a long distance, which is ideal for applications such as downhole measurement. The DTSX200 fiber optic sensing package includes the fiber optic temperature sensor along with a



DTSX Fiber Optic Sensing Package

processor that can be integrated with FAST/TOOLS and applied in a wide range of upstream applications, from downhole to LNG to pipeline and leak detection applications.

DTSX can provide large numbers of temperature measurements over a distributed area along the fiber optic sensor to allow creation of three-dimensional temperature models. With

DTSX, temperature for each point along the fiber is measured at each sample interval and then returned as block data. The package also features an advanced trend component that can display distance vs. temperature or time vs. temperature. It also includes data-buffering capabilities and automatic recovery in case of network interruption.

Advanced Decision Support Boosts Operator Awareness

Control room operators and technicians are being increasingly bombarded by the huge amount of data available from today's systems and intelligent devices. At the same time, it is becoming quite difficult to find qualified and trained personnel, requiring future operator interfaces to be more intuitive and self-guiding. To address this trend, Yokogawa is providing operators with advanced decision support consisting of advanced alarm management functionality, effective operator graphics, and modular procedural automation – all based on industry standards.

The company is applying a more human centered-approach to its own HMI and can even help users improve the design of their existing HMI. Yokogawa has done many HMI continuous improvement projects in which its own engineers review and analyze the practices of a plant's best operators, the specific tasks and procedures executed in the plant, and the data and displays required to operate optimally. Based on all this information, the company can help the end user redesign their displays for maximum effectiveness. These same design principles have been driven into the latest release of CENTUM VP process automation system operator interface software, which features many predesigned displays.

Conclusions

ARC believes that Yokogawa is well positioned to take advantage of the growth opportunities in the North American oil & gas business and is responding to the US boom with people and solutions. The company already has substantial expertise in these industry segments from its many projects in other areas of the world and is a key supplier on the upstream side for many of the larger integrated oil & gas companies. Yokogawa's new management team views the upstream and midstream sectors as strategically vital to the company's process automation business and will continue to develop more industry-specific solutions and apply specific vertical industry expertise.

One of Yokogawa's key strengths has always been instrumentation and its willingness to invest in the development of new sensing technologies. The new DTSX fiber optic temperature transmitter appears to be continuing this tradition. In addition to the solutions referenced here, the company offers a wide variety of other products and services for this industry sector, includ-

ing the CENTUM VP process automation system, ProSafe RS process safety system, exaquantum production management software, modular procedural automation, process instrumentation, and more. In fact, Yokogawa has many solutions that are not always well publicized, from terminal automation systems to oil movement and storage applications and truck and railcar unloading/loading metering systems.

Yokogawa also publishes detailed technical reports on its products and the company's applications can be accessed from www.yokogawa.com/us/ under the technical library section, with many project references accessible under the "industries" section. ARC will continue to track Yokogawa's progress in this important industry sector worldwide.

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