

Long Lake Oil Sands Project

awards \$35 million automation contract to Emerson

Emerson Process Management has announced that it has won a \$35 million contract to serve as general automation contractor (GAC) for a \$3.4 billion oil sands extraction project.

The Long Lake Oil Sands Extraction Project is a joint venture of two Canadian companies, OPTI Canada Inc. and Nexen Inc., 200 miles north of Edmonton. It will be the oil and gas industry's first project to combine a SAGD oil sands extraction facility

within three years.

The joint venture's adoption of Emerson's PlantWeb® digital architecture to deliver process automation and asset optimization was key in reducing the total Long Lake project automation budget to \$120 million from an original \$200 million estimate, which was based on traditional control and systems technology. Emerson's smart safety instrumented system (SIS) will enable the Long Lake Project to use digital intelligence to maximize plant and personnel safety.

Emerson and Spartan Controls Ltd., Emerson's local business partner in Alberta, will supply automation specific engineering, project management, commissioning, and ongoing maintenance and operations support.

By combining its automation and project management expertise with the front-end design and construction led by engineering and procurement contractors (EPC's), Emerson expects the digital solution will assist OPTI Canada Inc. in delivering annual operation and maintenance savings of \$5.5 million for the upgrader.

Finding ways to reduce the high cost of oil sands extraction and processing in this remote area has been a key objective of project planners, said George Cushon, project manager of automation for OPTI Canada Inc.

"Costs in the automation area will be controlled through the application of advanced technologies, and leveraging of Emerson's advanced control service capabilities and expertise. The all-digital plant utilizing Emerson's proven PlantWeb digital technologies with FOUNDATION fieldbus

and other digital communications is another important step in reducing capital and operational costs while improving plant safety, reliability and productivity," Cushon said.

The largely modular plant will be built and shipped pre-wired to the site to reduce construction costs. Cabling efficiencies of the fieldbus technology will play a key role in bringing together more than 300 plant modules economically.

"We are extremely pleased with this opportunity to serve as general automation contractor and implement our PlantWeb with FOUNDATION fieldbus automation technology to improve the efficiency and economics of oil sands processing," said John Berra, president of Emerson Process Management. "We're committed to helping the Long Lake Project achieve safety and operational excellence in the production of synthetic crude, while controlling costs."

Mike Begin, president of Spartan Controls added, "The Long Lake Project plan is innovative and forward-thinking. We are excited about working with the project team to help the Long Lake Project realize the full range of benefits available through the digital PlantWeb technologies."

Collaboration with OPTI and Nexen, Emerson, and EPC's will create the digital Long Lake Oil Sands plant. The PlantWeb architecture of digital intelligence will include Fisher valves and Fisher FIELDVUE digital valve controllers, Rosemount measurement instruments and analyzers, and Micro Motion Coriolis flowmeters, all communicating over the network to the DeltaV digital automation system, smart SIS system, and the AMS Suite: Intelligent Device Manager predictive maintenance software.

Process equipment status and diagnostic information will be delivered to those commissioning and operating the plant. Operations and maintenance guidance from PlantWeb will enable a predictive operating approach that enables local and remote personnel to anticipate and deal with issues before they impact operations. This approach is expected to improve plant safety, keep personnel secure, reduce cost, and increase plant up time.

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DeltaV SIS safety systems modules will be put to the test at Long Lake. Emerson Process Management introduced the company's PlantWeb Smart SIS architecture in June, promising to deliver "the industry's first integrated, intelligent safety management solution".

Photo courtesy Emerson Process Management

ty that recovers and dilutes bitumen, with a field upgrader that processes the bitumen into synthetic crude. The operation will result in the production of approximately 60,000 barrels per day of synthetic crude

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About Emerson's New Smart Safety Instrumented System

Billed as "the industry's first smart SIS" Emerson Process Management's extension of its PlantWeb digital plant architecture to include safety instrumented systems was introduced on June 8, 2004, during Calgary's Global Petroleum 2004 by the company's VP of Marketing Duncan Schleiss.

Emerson's smart SIS employs digital intelligence and diagnostics from sensor to logic solver to final control, and takes an integrated complete-safety-loop approach. It also offers automated safety loop testing and other features that increase system availability, while reducing life-cycle costs and easing regulatory compliance.

The new smart SIS solutions are built from proven PlantWeb technologies - including intelligent field devices, predictive diagnostics, and digital communications - that are already installed in thousands of mainstream process automation projects around the world. For safety applications, smart SIS solutions provide assurance of a SIL3 approach that includes transmitters and valve controllers certified to IEC 61508, and SIL3 ratified safety systems.

Emerson professional safety personnel and services organizations help customers plan and implement smart SIS solutions to comply with the new IEC 61511 safety standards. Expert services include assisting the customer with process hazard analysis and risk assessment, along with smart SIS design, implementation, and commissioning.

Facilitated by PlantWeb technologies, the smart SIS solutions are easily integrated with mainstream basic process control systems to enable facility-wide overview, while maintaining separation of safety-critical elements as required by IEC standards. Safety data

and alarms are presented on Emerson's DeltaV operator interfaces, stored in its historians, and passed to the AMS Suite: Intelligent Device Manager software for integrated documentation and management.

"Our smart SIS delivers the same ease of use and efficiencies for safety in process facilities as the proven PlantWeb architecture does for mainstream process automation," commented John Berra, president of Emerson Process Management.

"Emerson's smart SIS uses digital intelligence and automated proof testing, including partial valve stroking, to enable continuous and on-demand diagnosing of safety loop sensors, logic solvers and final control elements to ensure they perform on demand," continued Berra. "The resulting high reliability of safety systems reduces the risk of plant trips, which keeps our customers up and running. At the same time, the approach minimizes costly and risky practices of ongoing manual proof tests."

Intelligent components of the PlantWeb architecture that combine to deliver ease of use of Emerson's smart SIS solutions include the following:

- DeltaV SIS systems that communicate with SIS sensors and SIS final control elements.
- SIS sensors such as the Rosemount 3051S pressure and 3144P temperature transmitters, plus other flow and level measurement devices and analyzers.
- SIS final control elements with partial stroke testing, including SIL-PAC™ emergency shutdown valves.
- DeltaV SIS software that includes an exclusive palette of TÜV-certified smart function blocks.
- AMS Device Manager software that documents and archives system configuration and all changes.



**Rosemount 3051S and 3144P
SIS transmitters with safety tags.**
Photo courtesy Emerson Process Management