

Syncrude Research Centre
Edmonton, Alberta, Canada

Testing Program Evaluates Benefits of FOUNDATION fieldbus system

"The Syncrude Research Facility not only develops new technology for the extraction and upgrading of oil sands, it also supports the plant in testing and improving on commercial technologies prior to implementation in the plant environment," according to John Clark, Syncrude's Manager of Research.

"Fieldbus is one of the breakthrough technologies that can have a significant impact on the operation.

"By hosting a fieldbus testing program, we hope to not only gain a better understanding of how this technology will help improve the control of our operation, but also how we will have to change our current operating practices and design procedures to ensure its successful implementation at the base plant operation," said Clark.

The scope of the testing program underway at Syncrude Research is to verify that FOUNDATION fieldbus devices will operate in a plant environment, including communication between each other, with a host, or with a distributed control system. The Fieldbus Foundation has developed a series of tests for the communication stack and interoperability testing between field devices.

Participants in the test program include:

- Honeywell Industrial Automation and Control
- Fisher-Rosemount
- Relcom
- SMAR International Corporation
- Flowserve (Valtek)
- Yokogawa Industrial Automation
- Endress + Hauser

The testing will be conducted at Syncrude's Research Centre <www.syncrude.com> located in Edmonton, Alberta. For more information on each participant click on the link through the company name.

The pilot plant installation will allow Syncrude and the other participants in the test to evaluate the operating requirements and economic benefits of a FOUNDATION fieldbus system.

The test includes different host systems and associated communications stacks. These host systems include a DeltaV system from Fisher-Rosemount as well as two Honeywellbased systems, one using the National Instruments configurator and the other Release 600 of the TotalPlant Solutions operating system. A SMAR System 302 is also presently being commissioned. This is the first installation to test host communications - the final link between the field and process or panel operator. All of the test participants have shown their eagerness to make this technology ready for market by 'pre-testing' their equipment in laboratory environments prior to bringing it to the Syncrude test facility.

"Now that the field devices are commissioned and communicating with the host systems, we have completed Phase 1 of the test program," explains Aris Espejo, Syncrude's Section Head, Extraction Process Control and Systems. "Our next steps are to confirm the operation of the PID algorithm and the Link Active Scheduler, including simulated sensor failures. These tests will confirm the robustness of the system, as well as the ability to migrate feedback, feedforward, and cascade control to the fieldbus devices. Once the tests are completed later this year, we will conclude the trial with a series of stress tests."

Espejo adds, "By taking an active role in the early implementation of FOUNDATION fieldbus, Syncrude hopes to gain vital strategic advantages, such as reduced infrastructure requirements, better asset management, improved diagnostics, and easier predictive maintenance. We also believe the system will improve safety and reliability. The resulting cost savings will significantly benefit the company's bottom line."

The first site-based application being proposed by Syncrude for fieldbus technology is an installation on a base extraction plant scheduled for completion in early 2000. This installation will be part of the process of preparing the operation for the expansion required to accommodate additional production from the new remote mining facility. An estimated 200 input/output points will be required for this migration.

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This picture shows two control valves, one from Flowserve (left) using the Honeywell approved stack, and the other (right) from Fisher-Rosemount. A Fisher-Rosemount vortex meter is installed between these devices. The devices are on a common segment containing a field device-based PID control loop.

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Three installed host systems (from left to right): Fisher-Rosemount DeltaV, Honeywell SCAN 3000, and Honeywell TPS Release 600 GUS Station.

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Collection of devices from multiple manufacturers with a DeltaV Fieldbus Interface and Controller subsystem in the background.