Refining the Crude Oil Process with Ignition

Fractionation Plant Boosts Efficiency with Cross-Platform SCADA

The Company

Every single day, gas, diesel, and petrol are used around the world to keep vehicles running. Through a process called "fractionation," crude, unprocessed oil is separated into these important fuels. An entire facility is needed to carry out the fractionation process. Enerchem International Inc., a leader in the production and distribution of hydrocarbon drilling and fracturing fluids, runs one such facility at Slave Lake in Alberta, Canada. To efficiently handle the daunting task of maintaining and controlling this facility, Enerchem uses a flexible HMI, SCADA, and MES software platform called Ignition by Inductive Automation.®

The fractionation process begins when raw crude oil comes into the facility from the tank trucks, and goes through a series of preheats into the big crude furnace. The crude oil is super-heated, then moved into the fractionation tower. In the tower, crude oil is separated out into three main byproducts – base oil, fracturing fluid, and wax solvents – which are then collected. All of the oil products are processed and maintained by very tight controls, provided by the Ignition system, that maximize the yield that the facility gains from the crude oil process.

The Challenge

Before using Ignition, Enerchem's Slave Lake fractionation plant was using an outmoded HMI system that required a lot of attention from the personnel. "With previous HMIs we've used in the past, we had to have two to three operators on each panel to be able to control it," says Kevin Bouchard, director of plants and terminals for Enerchem.

"The existing system that was in place had a lot of flaws," says Kyle Chase, CEO of Kymera Systems. With over 25 years of combined experience, Kymera Systems is a Canada-based systems integrator that primarily serves the oil and gas industries of Western Canada, and also works in the water, waste water, manufacturing, and asphalt industries in Alberta. "It was reporting using a different vendor's package, it was exporting to a very primitive database, and all the reports were made up in Excel. It wasn't very manageable or accessible," says Chase.

With just over 30,000 tags, the fractionation plant was in need of an HMI/SCADA system that could allow them to manage the entire facility with precise controls and with a far higher level of efficiency.

The old SCADA system at Enerchem's Slave Lake facility was not very manageable.

Kyle Chase found a cost-effective solution that increased the efficiency of Enerchem's processes.

The Strategy

Taking full advantage of Ignition and its built-in, cross-platform OPC-UA server, Chase and his Kymera Systems integration team helped Enerchem build a cost-effective system that has increased the efficiency of the plant's processes. The Kymera Systems team started out by taking Enerchem's old system, which lacked the accessibility and manageability that the plant needed, and introducing Ignition. With Ignition's flexible Java-based platform, Kymera Systems was able to customize Enerchem's system to fit their needs. They implemented a database, which boosted the ease of use for all of the operators and allowed easy access to years and years of data produced by the facility.

Through the use of an OPC-UA server, Ignition is able to easily connect with multiple control networks, such as Ethernet/IP and Modbus. Ignition also acts as an OPC-UA client, connecting to many PLCs at the plant which have an embedded OPC-UA server. All of Enerchem's facilities are connected through OPC-UA, sharing live plant information between them.
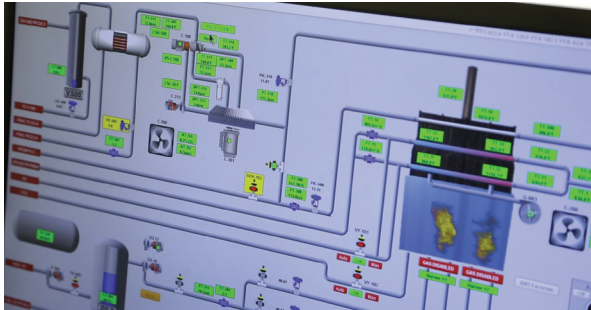
Enerchem's Slave Lake facility takes full advantage of Ignition & its cross-platform OPC-UA server.

Kymera Systems also set up remote access, as well as individual user accounts. All of these helped to organize the plant and increase the efficiency of the operators. By providing greater access to data, the plant could get more done using a smaller number of people.

The Results

The Enerchem Slave Lake facility has now used Ignition for five years. The software has increased efficiency at the plant and helps the operators accomplish more. One operator can control 10 to 15 different processes at a time, instead of having two to three operators on an HMI panel, reducing labor costs and boosting work output.

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– Kevin Bouchard
  Director of Plants and Terminals for Enerchem

Ignition has also helped the plant become more successful by giving operators more power to reduce waste and manage the fractionation process. Bouchard says, "With real-time remote access and trending capabilities, the overall efficiency of the yield of the product as compared to the crude we consume is much better. Ignition has been an economical and profitable system for us."

With their use of Ignition, Enerchem has remained at the forefront of technology and is respected as a leader in its industry.

Kymera Systems, with over 25 years of combined experience in the software development and process control industries, is a systems integrator based in Alberta, Canada. The Kymera team is equipped with a diverse background of skills and strengths; their extensive instrumentation, engineering, and software development expertise helps them to develop custom solutions for any integration challenge. Kymera Systems is also an Inductive Automation Certified Premier Integrator.
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