

Grupa Lotos Refinery Improves Efficiency and Quality with Honeywell's Advanced Process Control Solution



“Honeywell’s well integrated advanced process control system has made our plant and processes more efficient, enabling us to increase throughput, continue using the heater until replacing it at the turnaround period, and use Profit Controller to create a better quality end product. Instead of relying on testing the products after fractionation and making adjustments to variables, we can now make informed decisions in real time to keep the yield quality high.”

Krzysztof Wrzesien, Plant Manager, Grupa Lotos

Benefits

Grupa Lotos implemented Honeywell’s advanced process control solution to improve operational efficiencies at its Gdansk refinery’s crude and vacuum distillation complex to maximize processing capacity of crude oil.

The benefits realized from Honeywell’s advanced control solution include:

- Improved processes and plant operation, enabling increased throughput
- Changes to products can now be made in real time, thus keeping yield quality high
- Terminals can change send-outs between minimal and maximum flow with no field intervention
- Significant per-barrel savings relating to the plant’s production of crude oil by upgrading lower value products
- Reduced atmospheric residue production by 1.3 percent
- Increased plant profitability through savings of over 1.56 million Euros annually on furfural extraction



Background

Grupa Lotos S.A. is one of the largest companies in Poland. The company’s interests include processing petroleum as well as the distribution and sale of a wide range of petroleum products. A joint-stock company, Grupa Lotos manages the second largest refinery in Poland, refining crude oil and processing it into finished products. The company is involved in various commercial activities throughout Poland and abroad, including buying crude oil and importing components.

Challenges

Oil refineries today must keep up with the latest technology in order to stay profitable while also abiding by the increasing compliance regulations regarding safety, the environment and product quality. Grupa Lotos understands that to compete on the world petroleum stage requires minimizing costs while increasing throughput.

To achieve this, Grupa Lotos had to improve efficiencies and capabilities at its oil refinery in Gdansk without the risk of any downtime to its operations. To make the upgrade possible would require the cooperation of a trusted partner with global expertise.

Solution

Upon reviewing the possibilities, Grupa Lotos enlisted Honeywell to assist in implementing its advanced process control solution, using Profit® Controller technology in both its crude and vacuum distillation operations. Honeywell used a layered optimization approach ensuring that Grupa Lotos could maximize its current investment in technology while building on it to achieve a series of process improvements.

It was decided the task of upgrading would be accomplished in two phases. Honeywell started by enabling Grupa Lotos to push furnace heat duty to its hardware constraints and allow an increase in daily throughput until the next turnaround—a period that lasted more than two years.

At that time the objective of the Profit Controller implementation on the refinery's naphtha splitter was to maintain the benzene of the gasoline pool. The splitter produces light naphtha, which is sent to an isomerization unit, while the heavy naphtha is processed in the continuous catalyst regeneration (CCR) unit to produce high octane gasoline. Profit Controller implemented with controlled variables as a pressure compensated top and bottom temperatures helped to minimize benzene precursors into light naphtha. So when heavy naphtha is processed in CCR, the high octane gasoline should have minimum benzene content.

After revamping the crude distillation unit furnace, the first part of the undertaking was completed on time and on budget. Then Honeywell and Grupa Lotos started the second phase by commissioning the new furnace. Completion of this part of the plan made it possible to shift feed maximization constraints from the crude unit to the vacuum unit. The introduction of Honeywell's advanced process control solution began restructuring Grupa Lotos' business processes, improving the procedures and results needed for a higher level of daily operational function.

"Honeywell's solution keeps the number of communications between different applications to a minimum and decreases substantially typical intersystem communication failures," said Mariusz Zienkiewicz, Operations Lead, Grupa Lotos. "This aspect is fundamental to the plant's reliability which is one of our main concerns when you have a continuous operation. The system that was designed by Honeywell for the plant represents a state-of-the-art level of automation."

Honeywell's advanced process control technology has helped the Gdansk refinery significantly improve its overall process operations. Said Krzysztof Wrzesien, Plant Manager, Grupa Lotos, "With the support of Honeywell, the refinery has been able to significantly improve process operations, increase throughput, product quality and overall plant profitability. The Profit Controller applications with inferentials were able to reduce atmospheric residue production by 1.3 percent and the application of Honeywell's advanced control technology to the crude unit has resulted in significant savings of crude only by upgrading lower value products – a savings of over 1.56 million Euros annually."

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More Information

For more information on Honeywell's advanced process control solutions, visit www.honeywell.com/ps or contact your Honeywell account manager.

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