Success Story

Honeywell

Honeywell Helps Hellenic Petroleum Optimize Process Performance

"Process knowledge is the key to the success of this project. The Honeywell team was able to understand the complex process and provide just the right solution."

Pavlos Ioakimidis, Advanced Process Control Engineer, Hellenic Petroleum

Benefits

Hellenic Petroleum experienced several benefits as a result of implementing Honeywell's control and optimization solutions, including:

- Improved gasoline complex performance through closer adherence to the plant schedule
- Simplification of the gasoline complex blend scheduling task
- Improved constraint handling by the units through debottlenecking
- Optimized cutpoints of the naphtha, reformate splitters and light naphtha stabilizers
- Optimized naphtha feed rate to the complex
- Improved control of total reformate benzene content resulting in lower operating costs
- Reduced steam usage for debutanizers and splitters

Background

Hellenic Petroleum S.A. is the largest oil refining company in Greece. It is a consortium of nine subsidiaries and several additional companies. The company's main activities are refining of crude oil, marketing of petroleum products, and exploration and production of hydrocarbons. It operates three refineries in Thessaloniki, Skopje and Aspropyrgos in Greece, and about 1,400 gas stations in that country, covering 73 percent of domestic consumption. It also has about 300 gas stations in Albania, Georgia and the Republic of Macedonia.

Challenges

Faced with stringent environmental regulations and declining refining margins, Hellenic needed to find new ways to meet its production goals and overall financial objectives at the Aspropyrgos refinery. The company identified that the best way to keep margins up would be by optimizing performance and finding the best combination of feed and processes to produce valuable products.

The challenge was the sheer number of processing units that needed to optimize performance. The refinery has a reformer, isomerization unit, benzene saturation unit and two naphtha hydrotreaters. All are large-scale, multivariable applications with various controlled variables, manipulated variables and disturbance variables to be accounted for and optimized.

Solution

Hellenic entrusted the task of optimization to Honeywell. “Honeywell is a well-known name in the business, and we wanted someone with whom we could trust our assets,” said Pavlos Ioakimidis, Advanced Process Control Engineer, Hellenic Petroleum.

The Honeywell team studied the processes at the Aspropyrgos refinery and identified the areas that could yield maximum benefits with little investment. Maximizing the MON-barrels of the reformate and isomerate pool, maintaining the LSR-HSR balance, controlling benzene and optimizing the cutpoints of the naphtha splitters and stabilizers emerged as some of the key optimization objectives.

The solution involved implementing Profit® Controller and Profit Optimizer from Honeywell’s Profit Suite™ product line for advanced control and optimization of these critical processes.

Honeywell’s Profit Optimizer is a dynamic optimizer which allows optimization to continue even when the process is not steady. It is unique in its ability to span multiple process units or entire process plants to deliver improved plant profitability and overall plant control. The software integrates with Profit Controller applications to deliver cost-effective and user-friendly solutions to real-time optimization (RTO) problems. Rather than steady state, Profit Optimizer relies on measured process relationships and fully leverages dynamic process information that resides in the underlying Profit Controller applications. Using this approach, Profit Optimizer is able to deliver the economic benefits of traditional steady-state RTO with a dramatic reduction in engineering effort.

One drawback in conventional MPC technology is that it requires specification of CV reference trajectories. Profit Controller removes this requirement. It uses Honeywell's patented Robust Multivariable Predictive Control Technology (RMPCT) and its patented funnel design to enable a simultaneous determination of both the MV moves and the CV trajectories.

The Honeywell team installed 10 Profit Controllers under the Profit Optimizer application at the Hellenic refinery to control operations of the different units. Four console operators were installed across two control rooms.

“The one-knob tuning option of Profit Controllers definitely makes life easier,“ said Ioakimidis.

With Profit Controller, a single performance ratio is available for each controlled variable to adjust the desired control response independently from the other controlled variables. This approach is more intuitive than setting interactive weighting factors on application variables as is typically necessary in competing multivariable control products.

Increased economic results in a user-friendly environment and project payback periods of less than a year were some of the important benefits of the Honeywell Profit Suite installation. By using Profit Controller and Profit Optimizer, the Hellenic refinery was able to significantly reduce benzene content, translating into an increase in cost savings and overall refinery profitability – the result of more efficient production.

“The implementation of Profit Controller and Profit Optimizer has made our process very robust and reduced the load on operators besides improving our profitability,” noted Ioakimidis.

More Information

For more information on any of Honeywell’s Products, Services, or Solutions, visit our website www.honeywell.com/ps, or contact your Honeywell account manager.

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