

Sasol Improves Efficiency and Reduces Costs with Profit Loop



Benefits

Honeywell implemented Profit[®] Loop on the naphtha hydrotreater unit at the Sasol Synfuels facility in Secunda, South Africa to help improve the process control and stability of the unit.

Profit Loop is Honeywell's patented regulatory control algorithm that functions as a single input/single output (SISO) model predictive controller, specifically designed with the operating simplicity and computational efficiency of a standard PID controller. The technology is based on Honeywell's patented Robust Multivariable Predictive Control Technology (RMPCT).

With Profit Loop, Sasol was able to:

- Improve loop operation and significantly reduce energy costs
- Start using the tool without any training
- Improve plant efficiency and product quality
- Eliminate PID-related control tuning, software and services
- Reduce maintenance costs
- Use a more powerful algorithm without any CPU upgrade

Background

Sasol is an integrated oil and gas company with substantial chemical interests. The company has developed world-leading technology for the commercial production of synthetic fuels and chemicals from low-grade coal as well as the conversion of natural gas to environment-friendly fuels.

Sasol operates in more than 20 countries and is one of the top five publicly listed companies in South Africa.



Sasol relied on Honeywell's Profit Loop to reduce energy costs at its naphtha hydrotreater in Secunda.

Challenge

Sasol faced the challenge of improving process operations and reducing costs of its naphtha hydrotreater unit. The Synfuels facility operated a cascade loop between the inter-bed temperature transmitter and a hydrogen quench flow controller at its naphtha hydrotreater unit in manual as a result of the inability of standard PID control to handle the process dead time.

Sasol needed an effective method to maintain the temperature as it was a key parameter for the process to run close to the specification on final naphtha nitrogen and phenol content.

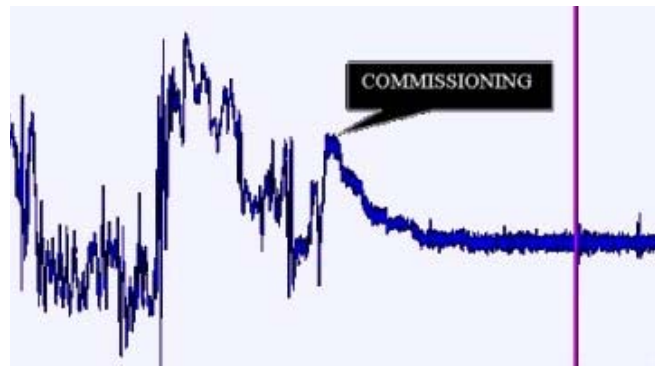
Another challenge was that the installation of the software needed to be completed while the process was running – downtime was not an option available to consider.

Solution

Sasol opted for a trial version of Honeywell's Profit Loop technology to help optimize control of the naphtha hydrotreater unit temperature. The Profit Loop controller uses a simple model of the process to predict the effect of past, present and future control moves on the process variable. Because Profit Loop can anticipate future process behavior, the controller knows exactly how much to move the process in order to meet the desired control objectives. The Profit Loop algorithm capabilities enable the easy replacement and online migration to this technology. The Profit Loop controller configuration is similar to PID, but has a superior algorithm and is easier to tune and maintain than a conventional controller.

The software was installed and commissioned in less than 20 minutes while the plant was running. With migration to the new control technology, the system was equipped to handle difficult process dynamics beyond the scope of a traditional PID controller.

Since Profit Loop can also be applied to virtually any regulatory control problem (temperatures, pressures, flows, discrete analyzers, tank levels, as well as complex dynamics and process delays), the need and expense of loop tuning packages and services is eliminated.



The Profit Loop controller was commissioned about midway through this trend. The change in performance is clear.

The newly commissioned Profit Loop controller successfully kept the temperature within 1.5 °C of set point yielding a performance better than any control previously attempted on this loop. Sasol was able to reduce the hydrogen consumption on the unit resulting in benefits that covered the cost of purchasing a site-wide license for the software.

Profit Loop is an optional algorithm in Honeywell TDC 3000 and Application Modules and TPS APP Nodes. Profit Loop and Profit Loop Assistant are standard deliverables in the Experion[®] Process Knowledge System (PKS) as an embedded algorithm in the C300, C200 and ACE/CEE environments.

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More Information

For more information on Honeywell's Profit Loop, visit www.honeywell.com/ps or contact your Honeywell account manager.

Automation & Control Solutions

Process Solutions

Honeywell

2500 W. Union Hills Dr.

Phoenix, AZ 85027

Tel: 602-313-6665 or 877-466-3993

www.honeywell.com/ps

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