MOL Reduces Energy Consumption at its Algyo Gas Plant Using Emerson's SmartProcess Distillation Optimizer

RESULTS

- 35%reduced energy cost (€1,200,000 per year savings)
- Return on investment less than 2 months
- Reduced operator workload, especially as feed composition changes
- Improved process stability and automatic disturbances rejection
- Operators now have a real-time indication of product quality specifications

"Emerson has delivered a solution which our operators find easy to use, understand and has resulted in savings of €1.2M so far."

Attila Bodócs
Production Chief, MOL Plc.

APPLICATION

Advanced Process Control on distillation columns at gas plant.

CUSTOMER

MOL Nyrt, Algyo Gas Plant located near Szeged, Hungary.

CHALLENGE

The Algyo gas plant includes two trains of distillation columns, three-columns in each train.The gas feed is supplied to both trains via a low temperature exchange and an oil absorption process. The distillation products are Propane, Propane-Butane mix, iso-Butane, normal-Butane, iso-Pentane and normal-Pentane. These are drawn off as top/bottom products from different columns in each train. The quantity and the quality specification for each of these product streams changes with demand.

MOL embarked on an energy saving initiative, for the use of advanced process control (APC), to improve control and optimize energy consumption. MOL sought to leverage its recent investment in the DeltaV™ system by exploiting its embedded APC capability.

The key challenges for the advanced control system were:

- Save in excess of €734,000/year in natural gas usage
- Increase operational stability
- Maximize valuable product yield
- Reduce operator workload
- Maintain on-spec production with frequently changing product specifications

For more information:
www.EmersonProcess.com/DeltaV

SOLUTION

The DeltaV system provides additional capabilities beyond conventional control. The SmartProcess Distillation Optimizer is a pre-engineered APC solution, within DeltaV PredictPro—that was customised for this specific application at MOL's Algyo gas plant.This application has high levels of performance and reliability because it runs in the dual redundant DeltaV controllers every few seconds.

SmartProcess Distillation Optimizer applications were deployed on five of the six distillation columns in the gas distillation trains. The deployment on the sixth column will be carried out when the prerequisite online analyser is commissioned.

Each SmartProcess Distillation Optimizer application includes calculations of pressure compensated temperatures, an accurate indication of composition over raw temperature measurements, which are used as constraints by the DeltaV PredictPro application as it optimizes the column pressure and reflux ratio. The predictive capability of DeltaV PredictPro enables improved control stability, disturbance rejection and optimization of column pressure and reflux ratio on each column, thus minimizing the reboiler heat duty, hence the overall energy requirement of the process.

A post project audit revealed a reduction in energy consumption by 35%, which, based on current fuel costs equates to €1,200,000 per year. This was far greater than the expected goal of €734,000. Additionally, reduced operator action to disturbances and product quality specification changes were highlighted.

Emerson's DCS and APC tools, as well as its engineering and consultancy services, have been instrumental in helping MOL achieve such a significant improvement in energy efficiency. The project team consisted of Emerson Strategic Services, Emerson Hungary and MOL personnel.

"Emerson's execution plan was robus enough to cope with unplanned outages, which made life easier for us."

Attila Bodócs
Production Chief, MOL Plc.

DELTAV

Emerson Process Management
12301 Research Blvd.
Research Park Plaza, Building III
Austin, TX 78759

www.EmersonProcess.com/DeltaV

EMERSON
Process Management