

MOL Refinery Optimizes Blending Process with Honeywell Solution



Benefits

The MOL refinery in Százhalombatta, Hungary upgraded its existing Honeywell system to keep its key performance indicators within a certain range, to comply with environmental specifications, and to significantly decrease the sulphur content, quality giveaway and number of re-blends.

The refinery's Honeywell TDC3000[®] distributed control system (DCS) was expanded to include new hardware and software to provide an innovative connection to the refinery information system. The expansion included:

- Plant Control Network (PCN)
- Global User Stations (GUS)
- Rotork MOVs connected through redundant Honeywell Enhanced Programmable Logic Controller Gateways (EPLCG)
- Blending and movement automation software applications
- Off-site reporting system

The new system would support the blend operator by:

- Continuously monitoring product tank levels and shutting down the blend when high levels are reached
- Monitoring for leakage (material loss) throughout the duration of blending

Challenge

With the objective of producing gas oil in compliance with environmental regulations, MOL needed to revamp its gas oil blending facility. Tight specifications on sulphur (10 ppm) required the blending of high-sulphur and low-sulphur products using two isolated blenders. In order to reduce giveaway and the number of re-blends, additional qualities were added to the blending system.



Honeywell's blending solution helps refineries improve blending performance through improved yields and higher product quality.

The existing blending system provided a challenge for the Honeywell project team. The system consisted of:

- One blend header blending five different finished products
- Five component streams with flow measurement
- Four component pumps
- Five on-line analyzers for measuring density, CFPP, cloud point, flash point and sulphur content
- TDC3000 control system
- Off-line optimizer and scheduler program
- Blend Optimization and Supervisory System (BOSS) on-line quality controller
- Blend Ratio Control
- Route assignment program

The old blending system had many shortcomings. The result was poor optimization and scheduling of the blending area, increased giveaway and a higher number of re-blends.

- Blend models were outdated
- Integration with refinery planning and scheduling was missing
- BOSS hardware and software components were obsolete and very expensive to maintain
- Configuration of the route assignment program did not match the current process in the field

Solution

The existing TDC3000 system had to host blending applications and provide a connection to the refinery information system. The system was expanded to include the new instrumentation signals for the gas oil blender and upgraded with hardware elements required for the blending software. A Process Control Network was installed to connect the hardware components of the DCS as well as to MOL's plant information network, thus providing an interface to the refinery information system. The new blending application also had to eliminate the existing shortcomings by complying with new requirements.

BOSS was replaced by Honeywell's Blend Property Control (BPC) application. BPC uses a non-linear optimizer which executes at every control interval to adjust the BRC blend recipe based on analyzer feedback.

TDC 3000® is a registered trademark of Honeywell International Inc.

For More Information

To learn more about Honeywell's blending solutions, visit www.honeywell.com/ps or contact your Honeywell account manager.

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During the blending operation, the analyzers simultaneously measure the properties of the product. Properties such as CFPP, flash point, density and sulphur content are measured using traditional analyzers and forwarded to BRC through Honeywell HPM input/output modules. Properties such as cloud point, clear cetane number, polycyclic aromatic content and distillation parameters are measured by the FTNIR (Fourier Transform Near InfraRed) analyzer and forwarded to BRC through the EPLCG-serial link.

The third-party additive control system is integrated with BRC. BRC sends information such as blend state, current blend volume, target blend volume and current flow rate to the additive control system, which handles the anti-static additive injection into the blend based on a recipe generated off-line.

This blending solution includes the off-site reporting system, an off-line, customized Windows NT application that collects and historizes blend data and tank farm movement events, and generates blend reports and tank farm accounting reports. The reporting system is a Microsoft Access application and supports ODBC connection to third-party programs.

The Honeywell logo is displayed in a bold, red, sans-serif font.