HONEYWELL ENRAF SOLUTION AT PRIMAGAZ GASOL LPG LOADING OPERATIONS

Honeywell

Today, there is growing pressure to improve the efficiency and performance of bulk liquid terminal operations. This requires automation and management of key functions such as batch control, loading racks, custody transfer, and inventory management.

BACKGROUND

Primagaz Gasol, headquartered in Karlshamn, Sweden, is a division of Primagaz Scandinavia, which is part of SHV Energy, one of the world's leading suppliers of Liquified Petroleum Gas (LPG). SHV Energy is active in 28 countries on four continents and has over 30 million customers. It provides LPG and Liquified Natural Gas (LNG) along with bio LPG solutions for all types of applications.

Primagaz Gasol supplies LPG by trucks to users in the southern part of Sweden and by railcars to a large steel mill. The steel mill alone consumes several hundred tons of LPG every week, making reliable deliveries a high priority.

As a state-of-the-art LPG facility, Primagaz Gasol's Karlshamn terminal implements a number of functions to ensure loading bay operations are completed according to industry standards. These requirements demand that different types of control and metering systems and equipment be put into place.

CHALLENGES

The importance of terminal bulk vehicle loading as part of the total distribution complex must be fully realized when plans are made for the construction of new facilities, or the modernization and upgrade of existing systems.

At the Karlshamn LPG terminal, truck drivers plan and load their vehicles without assistance from the facility staff. This necessitates a loading system that is user-friendly and stable. The terminal is normally unmanned outside of office hours, and as such, its loading equipment must have a high uptime to avoid costly call-outs.

Delays in the loading bay can have a significant financial impact on both the terminal and drivers.

Primagaz Gasol's loading system previously consisted of turbine flow meters, 1010 batch control units, SSC-A additive units with monoblocks, and MeterWin software in the control room. The aging system presented various functional issues and required frequent restarts in order to return to normal operation.

Since Primagaz Gasol invoices LPG in mass based on the weighbridge, the liquid's flow must corresponding be calculated in mass units. The existing volume flow meters required compensation with pressure and temperature to display the correct mass, and this approach added an unnecessary error factor.

In addition, the 1010 batch control units and MeterWin software had both reached end of life. It was only a matter of time before a piece of equipment would fail, leaving the staff and drivers stranded.

Figure 1: LPG terminal operations requires an integrated loading system that is reliable and easy to use.

SOLUTION

As Primagaz Gasol had previous positive experience with Honeywell Enraf products and the local channel partner, Euromekanik, they asked for a modernization of their loading equipment to include both hardware in the field and software in the control room. It was important for the company to enlist partners who understood their processes and facility and could be trusted to give the best advice.

Honeywell Enraf and Euromekanik worked together to undertake a complete modernization of the terminal's loading bay. The upgrades were focused on obtaining accurate mass flow measurements without the need for compensating electronics or moving parts. There is a constant flow of LPG through the installed flowmeters, and this required the routing of the meters through a relay so their signals could be switched on and off to ensure readings are only taken when actual loading is taking place.

The implementation of advanced batch control technology would enable the facility to optimize its additive injection operation using a single, integrated device. By streamlining the measurement and control platform, there would be fewer system configuration and lifecycle support requirements.

In addition, the deployment of a more advanced terminal management solution would enable Primagaz Gasol to "future-proof" its operational capabilities by integrating additional equipment assets into the loading system. This solution was also needed to help operators keep better track of drivers and vehicles entering and exiting the terminal site, as well as improve the efficiency of the LPG loading process.

Euromekanik, together with Honeywell Enraf, proposed a solution based around the new Fusion4 MSC-L batch control unit. This advanced, multi-stream preset controller is designed for safe, reliable and accurate custody transfer of petroleum products in bulk liquid storage terminals. It helps to eliminate delays at the loading rack and reduce errors for a safer operation.

Figure 2: Honeywell Enraf's Fusion4 MSC-L batch control unit helps to optimize loading rack operations.

As part of the terminal loading system modernization project, the following actions were taken:

- The 1010 batch control units were replaced by Fusion4 MSC-L batch control units, which meet all modern requirements and regulations and will have support available for many years to come.
- The MeterWin software was replaced by the Terminal Manager solution running on Honeywell's Experion HS Supervisory Control and Data Acquisition (SCADA) system. Primagaz Gasol will have the flexibility to add the functionality of any site to Experion HS, ensuring a long-term automation solution.
- The old volume turbine flowmeters with pressure and temperature transmitters, along with a separate flow computer, were exchanged for Coriolis mass flowmeters, which provide the correct mass value without additional calculations.
- The SSC-A additive units were removed and the monoblocks consisting of a flowmeter and a solenoid valve injector were directly connected to the Fusion4 MSC-L batch control units. This configuration made the additive process and settings more transparent due to integration with Fusion4 MSC-L.

RESULTS

At the Primagaz Gasol Karlshamn terminal, site access control for drivers and trucks, product recipes, orders and shipments are now handled by Terminal Manager from the main control room. With this system, all loading bay operations are automated and monitored to minimize human intervention. Loading is allowed only after safety systems are validated. Batch Control Units (BCU) are used to initiate loading processes. Besides shipment planning, Terminal Manager also manages bay allocation and queuing. Each drop of liquid is accounted for with an audit trail.

Carrier and driver information, part of Terminal Manager master data, helps authenticate driver and carrier entry and access. Authentication can be done at various points, including entry, reporting office, weighbridge, loading bay, check-in counter, and the exit gate.

Vehicles arriving at the terminal are only checked in by Terminal Manager if they have a valid shipment for that date.

If communication between the control room and the loading bays should go down temporarily, the Fusion4 MSC-L batch control unit can take over the procedure to ensure there is no downtime or blending errors.

By switching to non-mechanical Coriolis flowmeter technology, the terminal was able to increase operational reliability and minimize the need for equipment maintenance—ultimately reducing its asset cost of ownership.

The updated loading system was installed and commissioned in three stages as normal operations had to be maintained and only one loading bay could be out of service at any given time.

Figure 3: Coriolis flowmeter technology provides accurate and reliable mass flow readings.

SUMMARY

By partnering with Honeywell Enraf and its channel partner Euromekanik, Primagaz Gasol was able to commission a new loading system providing increased capacity and improved operational reliability. The company places high demands on its suppliers, and so Honeywell Enraf was a natural choice for this project.

ABOUT HONEYWELL TERMINAL MANAGEMENT SOLUTIONS

Honeywell provides a comprehensive range of products and solutions for inventory management and bulk terminal operations. These solutions bring intelligent features and powerful functionality to loading, blending and additive injection operations, enabling terminal operators to continuously control and monitor system performance.

For More Information

To learn more about how Honeywell Terminal Management Solutions can improve performance, visit www.honeywellprocess.com or contact your Honeywell Account Manager.

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