Eckelmann Group

LNT Gastechnik | Case Study Chemicals, Petrochemicals

Switching Equipment and Software for Gas Mixing Facilities

Mastering the transition away from natural gas dependency together: An Eckelmann customer, RHI Magnesita, is taking another step towards energy independence by converting its production facilities to propane gas. This task was implemented by the facility manufacturer LNT Gastechnik from Porta Westfalica together with our Erfurt subsidiary REX Automatisierungstechnik.

"Thanks to the most modern control and regulation technology, it is possible to significantly undercut the legally prescribed tolerances and achieve the highest accuracy"

Ralf Kampeter | Managing Director LNT

Objective

Eckelmann customer RHI Magnesita is taking another step towards energy independence and supply security by converting some of its production facilities in the DACH region. Propane gas is obtained through industrial processes in natural gas extraction or in oil refineries. Propane has about three times the heating value of natural gas, and to utilize this potential, 60% propane must be mixed with 40% air. To achieve this, the company commissioned the plant manufacturer LNT Gastechnik from Porta Westfalica to produce five plants in 2022.

The Customer

LNT Gastechnik GmbH from Porta Westfalica is a specialist in the planning and construction of high-performance, individual gas systems. This includes professional solutions for natural gas, liquefied petroleum gas, and biogas as well as for technical gases and autogas.

Founded in 1999, LNT Gastechnik employs 20 people. The team has long-standing expertise in the construction and planning of gas systems.

› To avoid unwanted pressure fluctuations, the start-up and shut-down of the system has been optimized. The air and propane gas flow rates are permanently monitored and regulated to ensure the specified pressure in the system is maintained at all times.

Performance by Eckelmann

- Electrical design
- Supply of switchgear including electrical equipment
- PLC software development with Siemens S7
- Development of the user interface HMI
- Installation including wiring
- Commissioning

The Gas Mixing Facility

For natural gas substitution, LNT Gastechnik supplies the gas mixing facility with liquefied petroleum gas and air. In the facility, liquefied gas is stored and evaporated. During the highly accurate mixing of the air, both the pressure and the ratio of 60% liquefied gas and 40% air are regulated. While deviations of over 1 kWh were tolerated in old facilities, modern control and regulation technology can reduce deviations to about 0.2 kWh.

The facility continuously monitors and regulates the flow rates of air and propane gas, as well as the pressure to ensure the system maintains a constant, predetermined pressure. The start-up behavior and shutdown of the facility were specially optimized to avoid unwanted pressure fluctuations.

The calorific value of the gas mixture is continuously determined and monitored in the facility using modern safety and measurement technology to ensure the specified calorific value is achieved and maintained.

For added safety, gas sensors detect potential leaks and automatically shut down the facility.

Additionally, a consumption meter records the collected facility data in a statistic.

Installed Plants	Performance up to	Parallel	Plants for RHI Magnesita
1,000 in 10 Years	**12,000** kW	**5** Projects	**5**

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Special Features

- The project was carried out within a very tight schedule, despite the procurement crisis and significant shortages of electrical components.
- This required multiple replanning and the use of alternative components within the project.
- Close collaboration within the Eckelmann Group: The Wiesbaden Automation Projects department supported the five parallel projects.

Do you have any questions?

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