

Rashtriya Chemicals and Fertilizers Integrates Control and Safety with Experion PKS



Rashtriya Chemicals & Fertilizers reaps benefits from installing a Honeywell solution to safeguard their ammonia process plant.

Rashtriya Chemicals & Fertilizers (RCF) at Chembur, Mumbai, India, manufactures 900 metric tons per day of ammonia, in addition to urea, nitric acid, and other chemicals. For optimal control of the ammonia plant, as well as safeguarding their personnel and production facility, RCF selected Honeywell as their automation control solution supplier. RCF chose Honeywell's seamlessly integrated Experion™ Process Knowledge System (PKS). This includes the Experion platform for the control domain and Safety Manager™ for the safety domain, with all required safety segregation for an in-depth approach to plant safety and security.

The fully electronic solutions replace RCF's pneumatics and relay-based systems. Lack of spare parts and maintenance problems associated with dated technology encouraged RCF to pursue Honeywell's latest, and most intuitive, integrated solution. Now, RCF operators have access to production-critical process parameters without jeopardizing safety. In addition, to meet RCF safety policies, they chose a SIL-3/AK-5 approved solution with adequate SIL-coverage of the connected field devices.

Honeywell Solves the Problem

Honeywell analyzed RCF's compressor application and chose an Experion PKS solution. This solution provides tight integration between the control and safety domains. The control functions and the dedicated anti-surge functions are effectively managed with Honeywell's Experion control platform, consisting of an Experion C200 controller and Logic Manager I/O modules. While still maintaining optimal processor throughput, the anti-surge function is kept within the control domain—not jeopardizing the physical segregation between safety and control.

The SIL-3 rated Safety Manager is focused on safety-related process variables and prevents unacceptable access or interference from the operators or maintenance personnel. The architecture diagram below demonstrates the overall solution.

Simple and Effective Solution

The RCF fertilizer plant uses Safety Manager for compressor process interlocks. Safety Manager initiates an emergency shutdown if unhealthy process values are detected. Safety Manager can also be used to start and stop the pumps in auto and manual modes.

Compressor processes are vital to the rest of the plant. Compressors, such as process air compressors, are supplying instrument air to the entire plant. If this equipment is tripped, the rest of the plant is affected. Employing shutdown for these units prevents unsafe shut-down practices which may result in serious injury and damage to plant personnel and assets. A nuisance trip can also cause lost production time. For these reasons, Safety Manager is used as the emergency shutdown failsafe programmable logic controller to secure plant safety during normal operation, and to ensure systematic plant shutdown during abnormal operation.

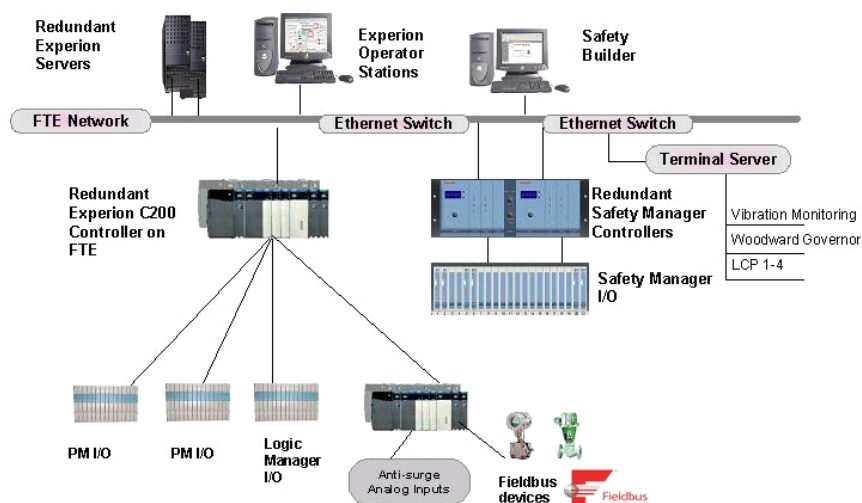
The anti-surge control is critical for optimizing the compressor lifecycle and for ensuring proper energy utilization. It also protects the compressor from a drastic reduction in the downstream compressor load. Honeywell successfully implemented this control strategy in Experion.

Exceeding Customer Satisfaction

RCF is extremely satisfied with the installation results and with the professional interaction with Honeywell's project execution team. Standout product features, such as the audit trail, which records complete details, have been great assets to the customer. No fault has been noted since the Safety Manager implementation, drawing praise from all levels of the company. The Safety Manager is operating with a scan time of 110 milliseconds, which fully meets the performance requirements for the compressor application. The customer's process and instrumentation engineers have also benefited from the highly reduced compressor start-up time delivered by this solution.

Project Features and Benefits Summary

- First integrated Experion platform and Safety Manager solution implemented in Asia.
- On-time execution of the project design, engineering, acceptance testing, and installation, meeting an aggressive schedule and the targeted business requirements.
- Best-in-class integration of safety and control, meeting the customer's demanding business requirements while securely maintaining the necessary functional segregation.



Experion PKS implementation architecture at Rashtriya Chemicals & Fertilizers

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