

Indo Gulf Fertilizers Turns to Honeywell for Process Automation & Emergency Shutdown Solution



The scope of the total project included the design, engineering, supply, installation, testing and commissioning of both the complete process control system for the Ammonia & Urea plants and the emergency shutdown system for the Ammonia plant.

Benefits

Indo Gulf Fertilizer of India decided to upgrade and revamp the Ammonia and Urea sections of a fertilizer plant to the latest control system technology available. The company selected Honeywell to upgrade its control system technology from third party controllers to Honeywell's Experion® Process Knowledge System (PKS). As a result the company realized the following benefits:

- Increased efficiency: connectivity of 2 control rooms (Ammonia and Urea) ensured that operations can be done from either of places
- Improved operator performance through an enhanced Human Machine Interface (HMI)
- Improved process performance through more effective logging of events and generation of alarms
- Better system diagnostics
- Better decision making: report generation for business optimization decisions
- Increased security: multiple levels of security for access
- Improved productivity
- Greater operational convenience due to integration



Background

The Indo Gulf Fertilizers was operating the Ammonia and Urea sections of plant with third party single loop and multi-loop controllers. In 2006 Indo Gulf decided to upgrade and revamp the Ammonia and Urea sections of the fertilizer plant to the latest DCS based system.

Indo Gulf manufactures and markets urea, a nitrogenous fertilizer. Indo Gulf has been able to sustain its leadership position of through its unrelenting focus on adding value to farmers as a total solution provider, helping them improve their yield at lower cost. The first to introduce the principles of Six Sigma in the agricultural fields, Indo Gulf has successfully enabled farmers to achieve higher yield, quality and profits. Indo Gulf, with a production of 10.28 lakh mtpa (installed capacity : 8,64,600 tpa), is the only fertilizer unit in India to adopt the world renowned TPM practices under the guidance of the Japan Institute of Plant Maintenance (JIPM).

Challenge

Before DCS based automation, Indo Gulf was running the plant with third party single loop and multi loop controllers. The automation was introduced so that all operations could run in auto mode with a safe, proper and sequential shutdown system in case of emergency, thereby not endangering the plant.

Additionally,

- This was a revamp of the old system of third party controllers. This posed a major challenge in terms of design and engineering with regards to matching the locations of new panels within the present control room layout.
- The job was required to be performed in a short shutdown duration where major tasks such as, removing approx. 400 existing cables, tagging it for termination in new panels and installation of around 40 DCS panels needed to be done.
- Work in the plant could not be disrupted and had to go on round the clock. This meant that meticulous resource planning had to be done before and during shutdown activities.
- Seamless integration of all existing third party devices along with Honeywell's safety system into a single Experion PKS control system was required.
- Design, detailing, manufacture and supply of large system of more than 40 panels had to be done within a short duration of 4+ months

Solution

The solution supplied by Honeywell consisted of the following major subsystems

More Information

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- Experion PKS C300 based redundant controllers and data acquisition system. Experion provided a seamless third party interface solution, powerful HMI graphic tool with scripting facility, alarm management, historian facility and more.
- State-of-the-art, TUV approved (TUV SIL3) Safety Manager based emergency shutdown system for Ammonia section
- Mosaic based hardwire panels for ESD operation
- Hart management system
- Operator interface sub systems for Urea and Ammonia including peripherals like printers.
- State-of-the-art redundant network hardware with raid 5 servers along with latest switches

The scope of the total project included the design, engineering, supply, installation, testing and commissioning of the complete DCS system for both the Ammonia & Urea plants, as well as the emergency shutdown system for the Ammonia plant.

The major subsystems included:

- Controller and data acquisition subsystem
- Supervisory control system with high end raid 5 servers and latest workstations with 21" TFT monitors including peripherals like printers, etc.
- Optic fibre connectivity with gigabit interface between Ammonia and Urea control rooms.
- Hart Management System
- Integration of third party devices for temperature monitoring, vibration monitoring, gas chromatography analysis, etc.
- Alarm paging system
- Safety Manger (TUV SIL3) system for emergency shutdown for Ammonia plant.
- Hardwired MIMIC panels with Mosaic for ESD operation.