

Mangalore Refinery Upgrades and Optimizes Nitrogen Plant with MasterLogic PLC



“Honeywell was able to meet all our project demands and keep within the parameters of our short execution cycle. We drew upon their unbeatable expertise and capabilities to understand and complete such a complex job on time, which, in turn, enabled a successful system startup.”

Sathyanarayan H.C., DGM, MRPL

Benefits

When India's Mangalore Refinery and Petrochemicals Ltd. (MRPL) needed to optimize its nitrogen plant, it turned to Honeywell. The plant was controlled by a legacy Siemens PLC, which needed updating to newer technology. Minimizing shutdown time with meticulous planning and implementation was critical to make this project a success.

After a competitive review of various automation suppliers, Honeywell was selected to replace the legacy Siemens system with its MasterLogic PLC, a compact controller with a modular, scalable and fast-performing processor that installs conveniently into a confined space and delivers power and performance for control applications. Along with necessary barriers for field inputs, Honeywell programmed the total application software by comparing it with the existing ladder logic in the Siemens PLC. It also provided a new SCADA HMI to this PLC for operation using Honeywell's Experion® Process Knowledge System (PKS).

By implementing MasterLogic, MRPL was able to achieve the following benefits:

- Single, seamless PLC and HMI with alarms, trends and 3D graphics helped optimize plant operations
- Successful migration from Siemens PLC to Master Logic PLC with necessary barriers for field inputs and reprogramming of total application software
- New robust SCADA HMI to the PLC using Honeywell Experion PKS
- Replacement was executed flawlessly and ahead of schedule, enabling startup in a record time of five days
- Meticulous implementation in a defined shutdown period



Honeywell's modular, scalable and compact MasterLogic PLC optimizes plant operations.

Background

Mangalore Refinery and Petrochemicals Ltd. (MRPL), a subsidiary of India's Oil and Natural Gas Corporation Ltd. (ONGC), is one of the largest refineries in India. Located in a beautiful, hilly terrain north of Mangalore city, MRPL has a versatile design with high flexibility to process crude oil of various API gravities with a high degree of automation.

MRPL has the capacity to process 9.69 million metric tons of crude per year and is the only refinery in India to have two hydrocrackers producing premium diesel (high cetane). It is also the only refinery in India to have two CCRs producing high-octane unleaded petrol.

MRPL maintains high standards in refining and environmental protection matched by its commitments to society. MRPL has also developed a green belt around the entire refinery with plant species specially selected to blend with the local flora.

Challenge

Automation of MRPL's nitrogen plant was based on a legacy Siemens PLC and WinCC SCADA system. After taking control of the nitrogen plant, MRPL noticed that the PLC was obsolete with no spares or support available.

"Because the nitrogen process was the heart of our plant, we needed to have a very robust PLC and couldn't afford a long shutdown time without adversely affecting our refinery's performance," said Sathayanarayan H.C. of MRPL.

"Meticulous planning and implementation was critical to minimize the shutdown period."

MRPL's automation project was challenging because of the lack of documentation of the existing Siemens system. The little bit of documentation available was written in German. "We had the daunting task of getting the entire code translated from German to English, and then involving expert resources for meticulous implementation in a stipulated shutdown time," continued Sathayanarayan H.C.

Solution

After reviewing the challenges facing the Mangalore facility, refinery management realized it needed to work with an automation supplier that was technically sound, had the capabilities to understand and complete such a complex job, and offered the experienced resources needed for meticulous implementation in a stipulated shutdown time. Honeywell was chosen from a group of competitors that included Siemens, Godrej and other suppliers.

"Honeywell met all of our requirements, and having already had experience with them and their DCS system at our refinery, we knew firsthand their capabilities in terms of planning and implementation of such detailed projects," said Sathayanarayan H.C.

Unlike the control platform replaced at MRPL, Honeywell's solution provided a single, seamless system and HMI with alarms, trends and 3D graphics – all of which helped to optimize the operation of the plant. In addition, operators were provided with the historical insight they needed in the way of alarms and other actions.

"In spite of the project complexity, short execution cycle and various roadblocks, Honeywell was able to successfully commission the system and start up the plant in a record time of five days, which was well within our scheduled shutdown period," added Sathayanarayan H.C. "The Honeywell services team executed this job flawlessly and their willingness to try different methods simultaneously while working with our engineers is one of their best characteristics."

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More Information

For more information on MasterLogic, visit www.honeywell.com/ps or contact your Honeywell account manager.

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