

# Emerson's PlantWeb® Digital Architecture with FOUNDATION fieldbus™ Technology helps Hu-Chems MNB Plant with Early Start up and Improved Product Quality



## RESULTS

- Commissioning and loop check time reduced by 60%
- Plant startup 5 days ahead of schedule
- Control-In-the-Field improves product quality by 10%
- 2 manhours per day savings for Plant Maintenance team



## APPLICATION

Production of Mono Nitro Benzene (MNB), raw material for Methylene Diphenyl Isocyanate (MDI). The final product polyurethane made from MDI is used as heat insulating material in refrigerators, cars, shoes and mattresses.

## CUSTOMER

Hu-Chems, a world leading chemical product manufacturer provides industrial chemicals including nitric acid, DNT and MNB, as well as basic chemical products such as ammonia and urea to major chemical companies and industries. Hu-Chems has fourteen production plants which produce fine chemical products in the Yeo-Su, Jeon-nam industrial complex, South Korea.

## CHALLENGE

Hu-Chems decided to setup a new MNB plant in South Korea with a total capacity of 150,000 MTPY to meet the growing market demand. The project had a very tight schedule to deliver MNB with high quality in a competitive environment. The plant also wanted to utilize the full benefits of latest technology products for its automation system, including predictive diagnostics of intelligent field instruments.

*“From the project conceptual stage, we decided to use FOUNDATION fieldbus technology since we understood its benefits. After we commissioned the plant, we realized that the benefits are more than what we first thought. Also, better control due to FOUNDATION fieldbus technology helps to produce quality products.”*

Jinhee Roh  
Manager, Maintenance Control Department  
Hu-Chems

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## SOLUTION

Emerson's PlantWeb Digital Architecture with FOUNDATION Fieldbus technology met this challenge by supplying its advanced control system which includes:

- DeltaV™ Process Automation System
- Rosemount® pressure, temperature and level transmitters, magnetic and vortex flowmeters (all FOUNDATION fieldbus)
- Rosemount FOUNDATION fieldbus RADAR level transmitters
- Rosemount Analytical FOUNDATION fieldbus instruments
- MicroMotion® FOUNDATION fieldbus Coriolis flowmeters
- Fisher® valves with FOUNDATION fieldbus FIELDVUE® digital valve controllers
- AMS Suite software

FOUNDATION fieldbus technology laid path for easier installation and quicker commissioning of intelligent field devices. Loop check time was considerably reduced due to auto recognition, auto addressing and drag and drop commissioning of devices. This transforms to 60% savings in commissioning and loop check time.

During the plant startup, AMS device manager together with PlantWeb Alerts helped to analyze and troubleshoot device issues faster. All devices are connected to AMS database where PlantWeb Alerts notify device problems or failures during commissioning. Calibration work was simplified using "methods". As a result, Huchems MNB was able to start up their plant 5 days ahead of schedule.

Emerson provided continuous support during the implementation of the project with their knowledge and experience and this also contributed to reduction of the project schedule.

Execution of PID algorithm in the field devices, called Control-In-the-Field (CIF), improved the response time of the control loops and



enhanced the accuracy of control, thus improving product quality by 10%. DeltaV's controller software loading also decreased as a result of using CIF approach. This helped to perform some of the advanced control functions in the controller giving further improvements for control of the process.

Diagnostic alerts from AMS device manager enabled the technicians with correct information at the right time, allowing them to rectify the device faults without running to and from the field frequently. Preventive maintenance obtained through predictive intelligence of fieldbus devices gave 2 man hours per day savings and assisted them to prioritize their activity efficiently based on the schedule.

Overall, Huchems has adapted PlantWeb architecture based on FOUNDATION fieldbus technology to achieve early start up along with improved product quality.

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