

# Gunvor Ingolstadt Migrates from HPM to EHPM

## Case Study

**Gunvor Ingolstadt Refinery selected a HPM to EHPM On Process Migration to reduce risk and workload during refinery turnaround and focus on additional critical activities.**

### Introduction

Gunvor Refinery Ingolstadt (GRI) is a 100% owned inland refinery operating in a niche market. The 110000 barrels/day refinery with 500 employees gets its crude from the marine shipping terminal in Trieste, Italy. Light products and middle distillates such as gasoline, diesel, heating oil and jet fuel are sold predominantly in Germany and Austria.

The refinery opted for a control system modernization to increase the life of the system, improve operational effectiveness, and resolve existing performance issues of control networks. They had to get this done with minimal disruption to the ongoing operations at the site.

The automation plan included migration of Hiway equipment to HPM and C300 controllers, control room modernization from the legacy Universal Station to ES-T and Orion Consoles, and an upgrade of the coax based UCN infrastructure to FTE based EUCN.

While the Hiway to C300 migration using EHB had already been completed, the remaining steps of the control system modernization were planned to take place during the 2017 refinery turnaround.



### Challenge

Gunvor Refinery Ingolstadt refinery had recorded overruns on the UCN, and some HPMs which caused system alarms to the operators and occasionally slowed display responses, impacting operational efficiency. Due to UCN load some AM-based control were not receiving data from the HPMs in the loaded UCN, and were switching to Manual mode.

A highly reliable approach for control system operation was required, with no changes to the process control functions in the HPM or AM controllers. The 2017 turnaround investment plan included control system modernization to allow uninterrupted operation for the upcoming years.

*The on-process migration from HPM to EHPM can almost be described as "Plug'n'Play": in a short time both redundant controllers can be upgraded to EHPM and there is virtually no impact on the unit operation. All the control and logic configurations are retained, the native window displays keep working as before, and we gain the extra capacity and FTE connectivity.*

*- Gabriele Marchetti  
Section Head DCS*

*The new [TRUE On-Process Migration of redundant HPM to EHPM](#) controllers addresses the lowest risk approach for migration of process controllers with no control engineering effort for migration and no process downtime.*

*Automation investments for migration can be done in an incremental manner by a step-wise migration approach of the devices on the control network.*

## **The Plan**

After completing a system performance assessment using the Honeywell Integrated Automation Assessment (IAA) Tool, the recommendation was to upgrade the HPMs to EHPMs. Following a risk analysis, Gunvor decided to migrate two UCNs while starting with an on-process Migration (including Enhanced Network Bridge (ENB)) to reduce the workload during refinery turnaround activities. This would minimize any risk and scope creep during the shutdown.

A plan to reduce risk during migration included retaining the configuration and applications in the HPM and to extend the life support of control functions. Risk mitigation was the key consideration to select the EHPM solution as compared to migration of all HPMs to C300.

All migration activities that could be performed during normal plant operation would be done to remove a significant portion of the automation migration from the critical path of the shutdown.

The schedule during the turnaround included complete replacement of the operator consoles in the control room, renewal in the auxiliary room including construction and controller cabinet equipment upgrades.

## **Solution**

The solution developed together with Honeywell was to migrate some of the HPMs to EHPM on-process. The selected controllers were located in the auxiliary room next to the control room. Prior to execution of the on-process migration the FTE infrastructure (cables, switches, firewalls) were installed in the system cabinets to support the controller migration activities on-process or during plant turnaround.

The plan for on-process migration was initially focused on one UCN with one HPM to EHPM upgrade. The infrastructure setup was executed without disturbance to the plant operations.

Within 24 hours after infrastructure setup 3 HPMs were migrated on-process to EHPMs without operational disruption. During the turnaround all HPMs on two UCN networks were migrated to EHPMs.

After the successful on process migration, the Gunvor refinery placed a new order for additional EHPMs on another UCN for on-process migration after the turnaround.



## Benefits

In total, more than 15 HPMs will be migrated to EHPM in the refinery by the end of 2017.

Significant savings were achieved while retaining all control functions and applications inside the controllers. There was no reengineering of any of the controls or displays, and no shut down of the process was required. Plant operation continues using Native displays without disruption allowing operators to gradually familiarize themselves with the new HMIWeb displays until the full phase-out of the native display approach.

Gunvor sees advantage for on-process migration to minimize risk and scope during turnarounds.



## For More Information

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