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“Built in” Migration Capability for Stockhausen Acrylic Acid Plant

Location: Marl, Germany
Order Date: First order placed in 1999
Completion: 2007
Industry: Chemical



Executive Summary

An acrylic acid production plant in Marl, Germany provides a good example of how a CENTUM DCS can be adapted over time to meet the changing needs of a plant owner. Operated by Stockhausen GmbH, formerly a company of the Degussa Group and now part of Evonik Industries AG, this plant has been expanded several times since 1991 and currently has an annual capacity of 200,000 tons. The acrylic acid is mainly used in the manufacture of super absorbers, which are used in diapers and other products.

In 1999, in the course of the construction of a new production line, the decision was made to migrate from the plant's existing control system to a Yokogawa CENTUM CS 3000 R2 DCS. Due to continuous and ongoing modifications at this acrylic acid plant, its automation was especially challenging and inevitably required a DCS that could be smoothly and easily modified.

Migration Roadmap

By design, CENTUM DCS solutions are fully compatible with all sorts of migration objectives, including:

- Expansion of field instrumentation
- Upgrade of bus systems
- Upgrade of core DCS hardware and software components, including field control stations (FCS), human interface stations (HIS), and engineering workstations (EWS)
- Integration with MES and ERP systems

The migration process at the Stockhausen acrylic acid plant was conducted in the following phases (Fig. 1):

Phase 1 (1999)

- Immediate startup of new production line with newly installed CENTUM CS 3000 R2 system
- Replacement of existing control system with minimal interruption to operations on the plant's original production line

Phase 2 (2004/2005)

- Release upgrade of HISs to CENTUM CS 3000 R3, which mainly involved the replacement of old PCs and conversion from Windows NT to Windows XP

Phase 3 (2006)

- Implementation of a new Vnet/IP bus segment to expand the DCS
- Release upgrade of all FCSs to CENTUM CS 3000 R3

Phase 4 (2007)

- Hardware release upgrade and Windows XP rollout for the remaining HISs

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Results

The initial migration in 1999 began with the installation of the CENTUM CS 3000 R2 DCS for the new production line. Following the startup of the new line, work commenced on migrating the plant's original production line from a third party control system to the new DCS. This was accomplished with a minimum of plant downtime. By spring 2001, the CENTUM DCS comprised 13 FCSs, 23 HISs (including two EWSs), and a total of 9,900 I/Os. A subsequent upgrade in 2004/2005 introduced the latest HIS PC hardware and software and was implemented in a highly systematic way so as to allow for easy maintenance. In 2006, the DCS was expanded by another 2,500 I/Os and four more FCSs, and a new Vnet/IP bus segment was introduced. Modifications undertaken in spring 2007 mainly focused on the replacement and upgrade of six HISs that had been used for archiving purposes. The system currently has a total of 21 FCSs and 13,000 I/Os and relies exclusively on CENTUM CS 3000 R3 and Windows XP.

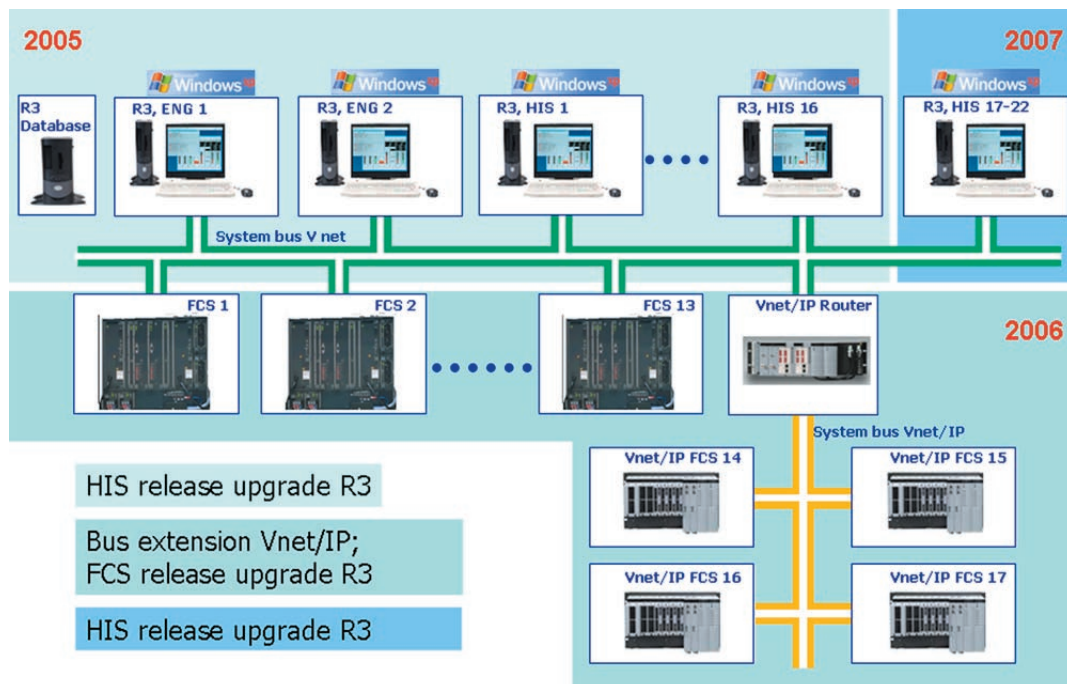


Fig. 1 major migration phases for the CENTUM system

Customer Satisfaction

Dr. Jürgen Mosler, Head of Technical Operations at Stockhausen, explains why Yokogawa was selected as DCS provider: "In 1999, we were looking for a competent partner who, on the one hand, could reliably deal with the migration of the old DCS, and, on the other hand, provide a new system with a convincing concept for future adaption and expansion. This is why we decided to go for Yokogawa."

Dr. Mosler is also highly content with the subsequent migration steps: "In 2005, we could perform the release upgrade without any shutdown at all. All the FCSs just continued to operate, making this upgrade a very simple and cost-efficient procedure. In 2006, we opted for the Vnet/IP implementation although our V net installation had not yet reached its limits. This was in order to ensure a maximum of flexibility also for the future."