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BACnet® for Chemical Manufacturing Complex

Tying It All Together

By Christian Müller

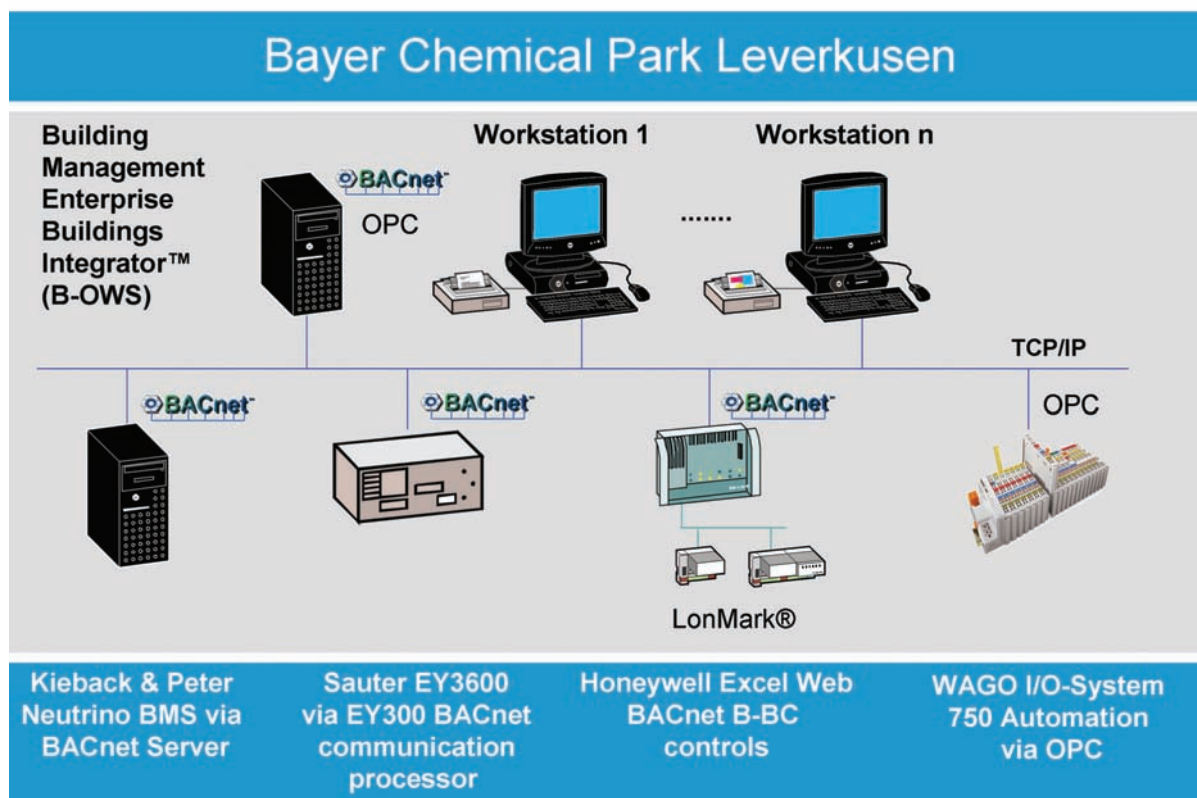
Bayer Chemical Park Leverkusen is one of four chemical manufacturing complexes in Germany that Bayer Industry Services GmbH & Co. OHG (BIS) provides to companies for chemical and chemical-related businesses. It gives these customers ready-to-use industrial and commercial installations, a complete and efficient chemicals infrastructure, customised services and reliable manufacturing conditions. Using BIS's full range of services allows customers of the park to focus on their core business, optimize synergies and capitalize on added value.

Leverkusen is a city-within-a-city. Self-contained, yet integrated into the life and fabric of Leverkusen, the 4 km² (43,100,000 ft²) complex is home to nearly 30,000 employees in almost 630 buildings. In recent years a lot of development has been done at the site and it ranks among the most versatile production facilities for the chemical industry in the world.

Building management is among the services BIS offers, which ensures seamless operation of the many technical systems in each facility.

About the Author

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Open multivendor system architecture at Bayer Chemical Park Leverkusen (Germany).

At the BIS business unit central services, Axel Janetschek is responsible for the building control technology. He oversees the many direct digital control (DDC) products from various companies that had been installed throughout the last decades and the different building management systems used across the campus. To quickly respond to HVAC issues in particular, and to fulfill customer comfort requests (e.g., changes to setpoints), BIS provides multivendor building management. A Honeywell Enterprise Buildings Integrator™ (EBI) building management system (BMS) is the integration platform supporting this requirement. According to Janetschek, the system was chosen because it is easy to use, efficient and offers open BACnet and OPC¹ interfaces.

The installed BMS also allows easy and full integration of the large inventory of existing freely programmable Honeywell Excel 5000 DDC systems in some 50 distributed properties on site. As there is no BACnet server capability built into these DDC systems, no way exists to connect them directly to BACnet. A BACnet gateway for each of the controllers would be too costly. The integration of the DDC is done by modem and into the BMS. With so many buildings distributed across the campus, it also is necessary to integrate building management into the company IT network.

The process started with 70 data points, all regulated by a DDC system from the controls company Sauter AG based on the novaNet system bus. Integrated into the multi-vendor building management, the Sauter EY3600 building management system is linked to the BACnet client available in the BMS via an integrated BACnet EYK300 server. The EYK300 is a communication card that provides the BACnet functionality for the EY3600. It also incorporates the BBMD (BACnet broadcast management device) function that makes integration into the park's IT network very straightforward, even beyond subnetwork boundaries (routers). (The BBMD functionality helps messages used by the BACnet standard to pass through routers that would normally filter broadcast messages.) Another 50 properties regulated using the Sauter system are set to follow shortly.

Other properties regulated with DDC systems from the controls company Kieback & Peter will also be switched to the BMS. One large one, with a total of 1,000 physical and virtual data points, has already been changed over. As part of this process, the automation island was BACnet-enabled and connected using a PC-based Kieback & Peter Neutrino building management system. Since then, another property containing a

system (150 data points) has been equipped with a Honeywell BACnet DDC system (called Excel Web) and integrated into the BMS as well.

Other mission-critical functions include the temperature and climate controls to 11 IT server rooms. Because only a few data points are to be recorded/monitored in each room, BIS decided to go for a low-cost solution and integrate them to the BMS via the OPC standard and the scalable WAGO I/O 750 controller with an integrated OPC server. According to Janetschek, the decision to opt for the new building management system, which provides BACnet, OPC, LonMark, Modbus, SINEC H1 and many other open interfaces, is already paying off.

All BACnet integrations at Leverkusen are done without gateways by using the BACnet servers or clients available with the various products. No gateways need to be programmed and maintained. The decision to go with BACnet as the default standard had been made to allow much more functionality than alarming and set-point adjustment in the future. Increas-

ing requirements for energy efficiency and user comfort will require the BIS to also access schedules and time programs of the underlying DDC controllers from a unique user interface in the future, which is possible with BACnet.

Integration of the BMS into the BIS IT network makes it possible to access building management data at any time. This is done via the Intranet using a browser and customer-specific Web sites.

Endnotes

1. OPC is a series of standards specification. The first standard specification, called Data Access specification, resulted from the collaboration of a number of leading automation suppliers working in close collaboration with Microsoft. The standard allows PLC type devices from various vendors to be linked into supervisory control systems both for industrial but also building control. The standard is based on Microsoft OLE COM/DCOM technologies. ●

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