

Case note

Future-proof ABB drives ensure smooth BMS upgrade



An ABB drive with native BACnet is helping improve the environment and save energy at Peikko Finland Oy's Lahti works.

Peikko Finland Oy, located in Lahti, and part of the Peikko Group, is a manufacturer of concrete fastenings and composite beams for the construction industry.

A building management system (BMS) was installed in 2006 to control, among other services, the heating, ventilation and air conditioning (HVAC) within the steel component production building. However, this BMS was under-performing and Siemens Building Technologies was commissioned to upgrade the system with open BACnet to increase reliability and cut energy use.

Fortunately, four ABB standard drives for HVAC, featuring native BACnet as standard, were already installed on the three air handling units (AHUs). The drive was the first variable speed drive to conform to the BACnet standard, and to receive BACnet Testing Laboratories (BTL) approval by BACnet International and BACnet certificate by WSPCert.

As such the drives could migrate seamlessly to the new BMS without any extra engineering or cabling.

Easy integration of existing AC drives into new system

A BACnet MS/TP (master-slave/token passing) subnetwork was created using cost-efficient 'daisy-chain' cabling between the drives, along with the installation of a BACnet router from ABB, within one of the drives. Only one new Ethernet cable was needed to connect the router to the direct digital controller (DDC), avoiding changes to the existing Ethernet backbone. The drive's built-in serial communication assistant ensures new parameters are entered rapidly, making commissioning of the BACnet protocol straightforward.

The BACnet router acts as a media converter, transferring messages between the drives' BACnet MS/TP subnetwork and the BACnet/IP network. The router can be easily configured using a standard PC and web browser.

The router enables operators to access all the drive parameters from the workstation. It also gives the commissioning engineer the option to monitor and control the drive while replacing the controllers.

Installation was carried out during office hours and the drives were manually operated without the automation system, thereby ensuring the AHUs operated within the buildings comfort zone at all times.



The ABB standard drive for HVAC, launched in 2004, was the first variable speed drive to conform to the BACnet standard, and to receive BACnet Testing Laboratories (BTL) approval by BACnet International and BACnet certificate by WSPCert.

Improved reliability and secure remote access

Reliability is enhanced by using the drives predictive maintenance function via the BMS. If a problem occurs, the system triggers an alarm to alert the relevant personnel. The system is remotely accessible over the Internet via a secure virtual private network (VPN) tunnel. Maintenance personnel can access the system at any time for troubleshooting, as can the building manager for configuring schedule programs.

Through BACnet, energy consumption data and other system information is readily available from any workstation.

BACnet system provides flexibility

A planned enhancement to the system is to connect the field devices, such as dampers and pressure sensors, direct to the drives - taking advantage of the pass-through access to the drives' inputs and outputs - rather than via the DDC. This will provide even greater reliability, as the drives are able to continue operating as stand-alone units even if the operation of the DDC is disrupted. This will also reduce cabling, as the field devices are located closer to the drives than the DDC.

Challenges

- Reliability issues affecting existing HVAC system
- High energy costs

Solution

- BMS upgraded while retaining existing ABB standard drives for HVAC
- ABB's BACnet router added to one drive

Benefits

- Future-proof ABB drives easily integrated into upgraded BMS
- Easy commissioning and start-up
- Energy use reduced, with information on consumption readily available from any workstation in the system
- Predictive maintenance helps to reduce maintenance costs
- Native BACnet embedded in drives facilitates system upgrades during office hours

For more information please contact:

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