Achieving more together

DMS and Bosch Rexroth are driving forward building automation.

Needs-based maintenance, smart buildings, cloud computing and effective data protection: a building automator who wants to remain competitive in the long term must embrace the latest trends in the sector. In view of this fact, **DMS**, Digitale Mess- und Steuersysteme AG has been a partner of Bosch Rexroth for over 35 years now.

Shared tasks and joint projects

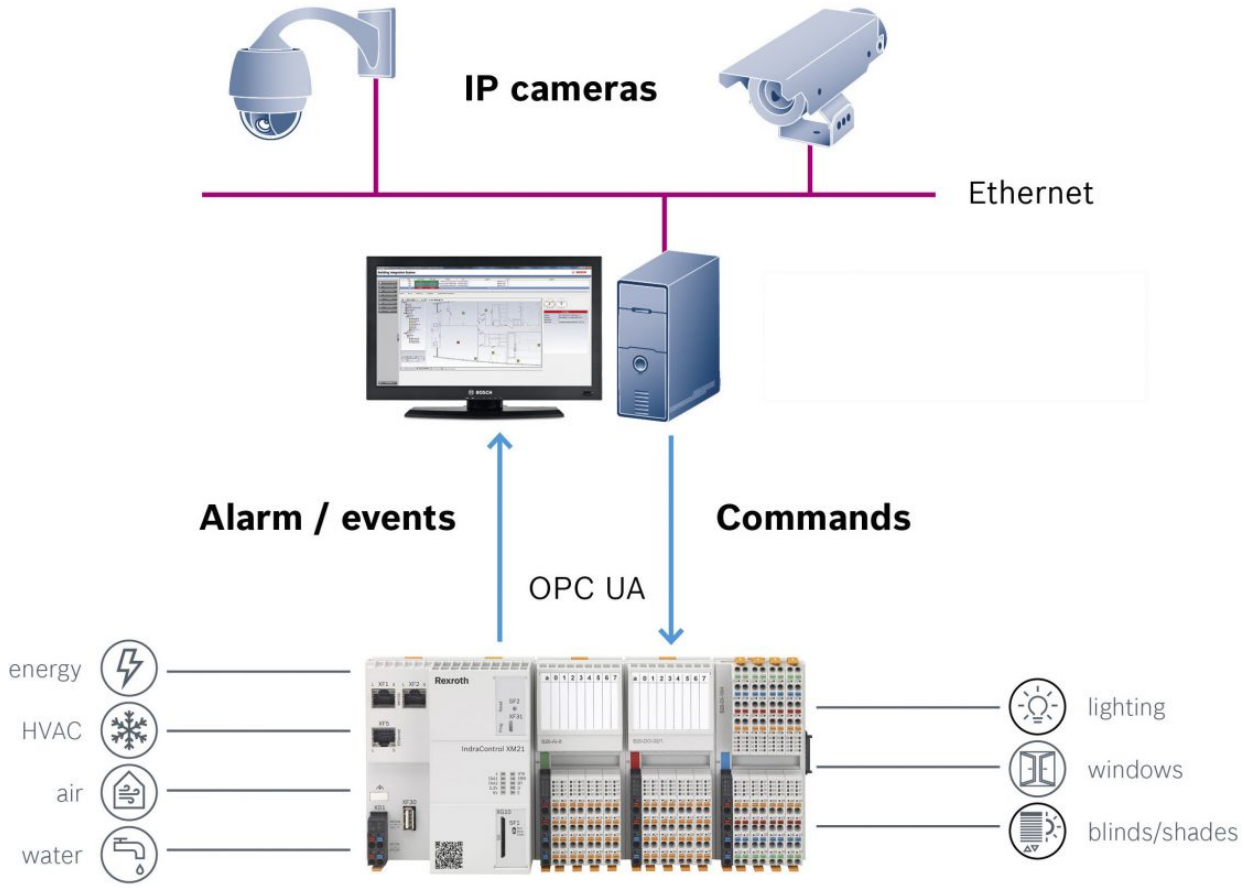
The companies' joint automation projects focus on offices and industrial buildings. In the former, the individual disciplines (shading, lighting and air conditioning) must be controlled in such a way that the people who work there can perform optimally thanks to perfect environmental conditions. In order to achieve the required level of comfort – 22 degrees and 50 % air humidity – entire floors are retrofitted with room zones with a particular emphasis on meeting energy efficiency requirements.

In industrial buildings, the tasks include renewing the central cold water treatment system and the system for distributing it to adjoining buildings. Production too

requires a reliable supply of noble gases such as xenon and argon, treated water etc. To ensure that the production process runs smoothly, all coolants must be kept at the optimum temperature at all times.

Robust, IoT-ready industrial control systems

Given the common requirements in the fields of industrial and building automation, Bosch Rexroth solutions are the obvious choice for DMS. Both sectors require robust, compact, powerful and intelligent control systems. Data protection, support and service must also be guaranteed at all times. DMS combines individual building blocks from its partner’s modular overall package to create needs-based solutions. The IoT-ready PLC system ILC is at the heart of the architecture. Because it communicates both horizontally with the disciplines and vertically with the relevant management system, it was a good reason for the building automator to work even more closely with Bosch Rexroth.



Modular architecture: a robust, central control system communicates vertically with the management system via OPC UA and horizontally with the individual disciplines via I/O modules.

10,000 I/O points per control system

In combination with the powerful ILC software, the embedded control XM processes several thousand I/O points. This equates to around 40,000 Scada items. In conjunction with OpenLS6000,

an open control system which likewise has a modular structure, and other popular management systems, up to 175,000 information points can be evaluated on an ongoing basis. The robustness of the industrial hardware is seen for example in the broad temperature range (-25 to +60 °C), in the high level of EMC compatibility and the maintenance-free design with no wearing parts or batteries which need to be replaced. The compact I/O-modules are also heat-optimized. They can be installed right next to the control system on the same top hat rail and can be wired quickly without the use of tools.

Minimal costs per I/O point

The more complex the installation, the lower the maintenance costs should be and the less space and cooling it should require in the control cabinet. As a result of the partnership, DMS benefits through a maximum number of I/O points per cm^2 and minimal overall costs per point. The standardized I/O connections with their configurable terminals help to achieve this. “The close partnership allows us to achieve technologically innovative building automation solutions again and again,” said Dieter Gruber, Managing Director of DMS AG. “Over our 35-year development period, we have provided numerous attractive products for our customers.”

Modular and IoT-ready for smart buildings

Even the control cabinet shows how flexible and easy to implement the modular automation technology is. In addition to the I/O modules, the embedded control XM can be expanded with security or connectivity modules. There is a practical advantage here as DMS can connect existing field buses at short notice. It is also possible to create complete security applications using the same control system. In order to connect new sensors later on, the existing installation is quickly reconfigured. Ultimately, the fact that there are not so many different parts reduces storage costs and the costs of spare parts.

Needs-based maintenance retrofittable

DMS can also carry out needs-based maintenance quickly and easily because the ILC includes easy-to-configure IoT Gateway software. Thanks to this software, building automation systems can be connected vertically too – even at a later date. The IoT Gateway collects all necessary sensor data, processes them and passes them on for analysis to higher-level IT systems and cloud platforms. Communication via the open OPC UA Industry 4.0 standard avoids unnecessary costs owing to proprietary protocols. “Openness and the sharing of knowledge have always been the sound basis for our partnership,” explained Dieter Gruber. “Our customers too appreciate this special technology and partnership.”

Easy configuration, free programming

The programmers at DMS can also work with high-level languages such as C# or C++. This would not be possible with purely PLC-based solutions. The integrated Open Core Interface allows the relevant programming environments direct but protected access to the control firmware. This reduces the development time and makes it easier to implement functions which go beyond standard PLC functions. For each language used, Bosch Rexroth also provides complete function libraries which can easily be selected and parametrized. Special tasks can be performed via the integrated Automation Interface with the help of scripts. The engineering also reduces the development time and costs thanks to the IndraWorks cross-solution tool. This allows I/O points for example to be assigned via drag and drop.

Added value through security, support and service

In order to comply with or even surpass the important IEC-62443 and VDI 2182 security standards, the IoT-ready PLC system ILC includes numerous security functions. These include for example encrypted communication via the OCI interface and OPC UA as well as the deactivation of insecure protocols such as ftp. For improved data protection, the control system must

also be reset if the password was forgotten. A master password is deliberately not used.

Support and service continue to have a major influence over the availability of automation systems. DMS particularly appreciates the intensive support provided by a direct contact person as well as the Rexroth Hotline which is manned round the clock. Spare parts can also be delivered within 24 hours.

Sound basis for optimum solutions

This example shows how building automators such as DMS can rise to today’s and tomorrow’s challenges in an efficient, economical manner with the help of an experienced solution partner. Modular solutions, optimum support and service and expertise when it comes to control systems and IoT provide a sound basis for this.