

Connectivity from the Valve to the Cloud

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IoT- but how? This question is increasingly being asked by plant manufacturers and operators. Networking, data provision, data evaluation and their use is interesting, but only if all disciplines are thought and implemented together. Until now, the industry has found it very difficult to offer intelligent concepts in this area. In the following article, the valve manufacturer EBRO presents its „SBU Advanced“ concept, which ensures the proper operation of all components of a valve unit through continuous monitoring.

There are many ways to encounter digitisation and to use it profitably for oneself. Which way is the right one cannot be answered in a general way. However, there are promising concepts that anyone interested in networking, data provision, data evaluation and their use should take a closer look at. Because digitisation is not an end in itself. The respective goal of a digitisation project must of course first be considered in its own right. However, one can only speak of digitisation speak when all disciplines of a company are involved. Many people who are looking for the right solutions for their company ignore this. The IoT application is certainly one of the first items on the digitalization roadmap of many companies. The reason is obvious - to provide a digital twin of the plant in a IoT platform in order to guarantee bundled access to documentation, maintenance and service instructions, 3D data, parts lists and spare parts at all times and in all places. That sounds exciting and has already been followed many times. Wouldn't it be another goal now to bring this digital world to life with live data from the plant? This is easier than it looks at first glance.

THE DIGITAL TWIN

The development in the industrial sector is driven by two sides. On the one hand, the view of plant manufacturers and operators, who derive their benefit from general digitization, is chan-

ging. On the other hand, manufacturers of devices and components want to offer modern solutions and thus expand their business. Thus two worlds meet, from which in the end a solution must be thought and implemented. In order to meet this trend and transform the functions offered into actual benefits, this means that many plant manufacturers and -operators to rethink their applications, solutions and products and to adapt them to the changing requirements of digitization. Then the question often arises of how to do justice to this topic in existing systems or in existing concepts of planners and system manufacturers. Solutions to changing processes and requirements must of course be innovative. Since Josef Schumpeter, „innovation“ has been characterised by „new“ and „unique“ and „offers relevant customer benefits“ and „is successful on the market“. Adaptivity is a key factor for success in digitization projects in plant construction. The products are prepared to the extent that they can be integrated optimally according to the application. Over the entire life cycle, digital interfaces offer the possibility of close networking.

MAKING OPTIMUM USE OF DATA FROM FIELD DEVICES

The challenge of accessing data is continuous, not just local and temporary. However, we assume that modern field devices must be networked and this should not

only be a cost-intensive add-on, but a standard. Just a few years ago, if you wanted to network field devices, you had to resort to expensive field-bus interfaces. These certainly have their right to exist for complex devices in automation technology, but this is not a particularly practical solution if a large number of devices are to be networked. Growing in line with these requirements, formerly conventional products are being transformed into communicative solutions. Modems field devices such as pumps, valves and sensors already offer a wide range of diagnostic possibilities today. However, many companies still find it difficult to integrate them. In many cases, the focus is on already existing control systems and devices networked via field bus. Installations and functions should not necessarily become more expensive, since there is still price competition here as well. In order to meet these requirements and to successfully carry out digitisation in spite of all this, multiple, interference-immune and above all inexpensive networking options come into play. This has the industry recognized and established increasing opportunities to extract valuable full information and data from the devices. Such methods of data transmission are also referred to as second communication channel or IoT interface. The main advantage of using a second communication channel in his plant is that the proven technologies and control concepts do not have to be changed.

JOT-PLATFORMS FOR Valves

The potential of such an interface can be seen in the example of the „SBU Advanced“ platform from EBRO ARMATUREN.

Via App

The „EBRO Connect“ app, which is available in the App Stores for iOS and an droid devices, is used to provide optimum support during installation and commissioning. Using the AppDirekt, all relevant information about the valve and actuator can be queried directly on site and settings for operation can be adjusted. First and foremost, this helps the user because it simplifies commissioning considerably. The effort required for variants can also be reduced, as a wide range of functions that previously had to be considered in advance when ordering can now be set directly on the device. Whereas in the past, functionalities were unchangeably preset ex works, today, with flexible solutions, broad requirements can be met.



Fig. 1: Making valves fit for the challenges of the future in a simple and cost-effective way. In picture: High Performance Butterfly Valve with double-acting pneumatic actuator and control box SBU

Via Bluetooth

In addition to the app for commissioning and diagnostics, there is also the option of integrating the valves directly into IoT solutions. In existing plants or plant concepts of manufacturers the communication structure is available and it would be expensive to expand it. In this case, it makes sense to use an established radio standard in the component instead of changing the existing communication infrastructure. By retrofitting Bluetooth-capable devices in conjunction with a IoT gateway, a bypass for data is created that optimally supplements existing systems and concepts to make them fit for digitisation projects. The Bluetooth standard is now established in almost all industries and applications and is used in many products. The most important advantage of this technology is that it gives access to a „new world“ without having to discard the proven control and communication concepts.

In the Cloud

Once the IoT application has arrived, you can the data can be used as required. In addition to the



Fig 2: The app identifies the assembly via Bluetooth or QR code. Specifications and evaluations can be read out in plain text and transferred directly to the user's cloud.

visualization of process data and measured values, data can be processed, derived and linked to create any functions and services. The only question that remains is how to bridge the gap between the product and the digitization project or IoT platform. IoT gateways are ideal for this purpose. They can be easily retrofitted, for example, by wall mounting and provide the data in secure channels via Ethernet, WLAN or LTE. Ebro valves offer an open standard with the digital interface, in order to bring the data directly into the user's cloud via a IoT gateway. As data protection is a top priority, the encryption of the data takes place at the lowest field level in the device. In addition, keys based on cryptographic algorithms are exchanged for authentication and encryption of the connection.

NETWORKING WITH IQ-LINK

Another possibility to network field devices without fundamentally interfering with the known controls, as well as the handling and wiring of devices, is 1O-Link. Without turning away from the proven wiring, complete digital access is guaranteed directly via the controller, where settings and status information can be found, but also events and alarms about changes in operation. This also offers the possibility of forwarding and using data from the control system.

OUTLOOK

Whether in one way or another, smart devices can be seamlessly and easily integrated into any IoT application to enable future-proof applications and to exploit the full potential of digitisation today.

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