Always well connected

Communication between measurement instrument and control system is a hot topic. Deep device integration opens up efficiency and optimization potentials.

The world of process automation is colorful, with a wealth of manufacturers competing in the market. The variety creates choice; even the smallest of niches is being filled. Process plants often use measuring instruments from many different suppliers which must also be capable of communicating with the control system of another maker.

"The users in process industry welcome this variety because it ensures their freedom of choice. They are able to use the products delivering the best benefit in a specific application," says Michael Ziesemer, Chief Operating Officer of the Endress+Hauser Group. "But this variety also causes complexity when it comes to the interaction between measurement technology and control engineering – especially if the best possible use is to be made of the opportunities offered by modern instrumentation."

Above and beyond Compatibility is therefore the order of the day. Endress+Hauser's instruments are available with all current communication protocols and interoperate with the most important control systems. Since the year 2000, Endress+Hauser's own center of competence has taken care of device configuration, digital communication and fieldbus engineering. The COO underlines: "We're trying to make our customers' lives easier."

"There is still plenty of mileage in device integration," admits Michael Ziesemer. What counts is to avoid errors and so keep time and effort to a minimum – when planning and designing plants and fieldbus networks or when configuring and commissioning the instruments. Ultimately, the deep integration of the instruments into the control system opens up new chances to make operation and maintenance safer, more reliable and more efficient.

Modern measuring instruments supply a wealth of parameters. Digital fieldbuses such as HART, Profibus or Foundation Fieldbus often allow several measurement values to be read out at the same time, plus sums, averages or trends, status and diagnosis information. This data gives a profound insight into the ongoing process as well as details on the status of the sensor and statements on the properties of the product.

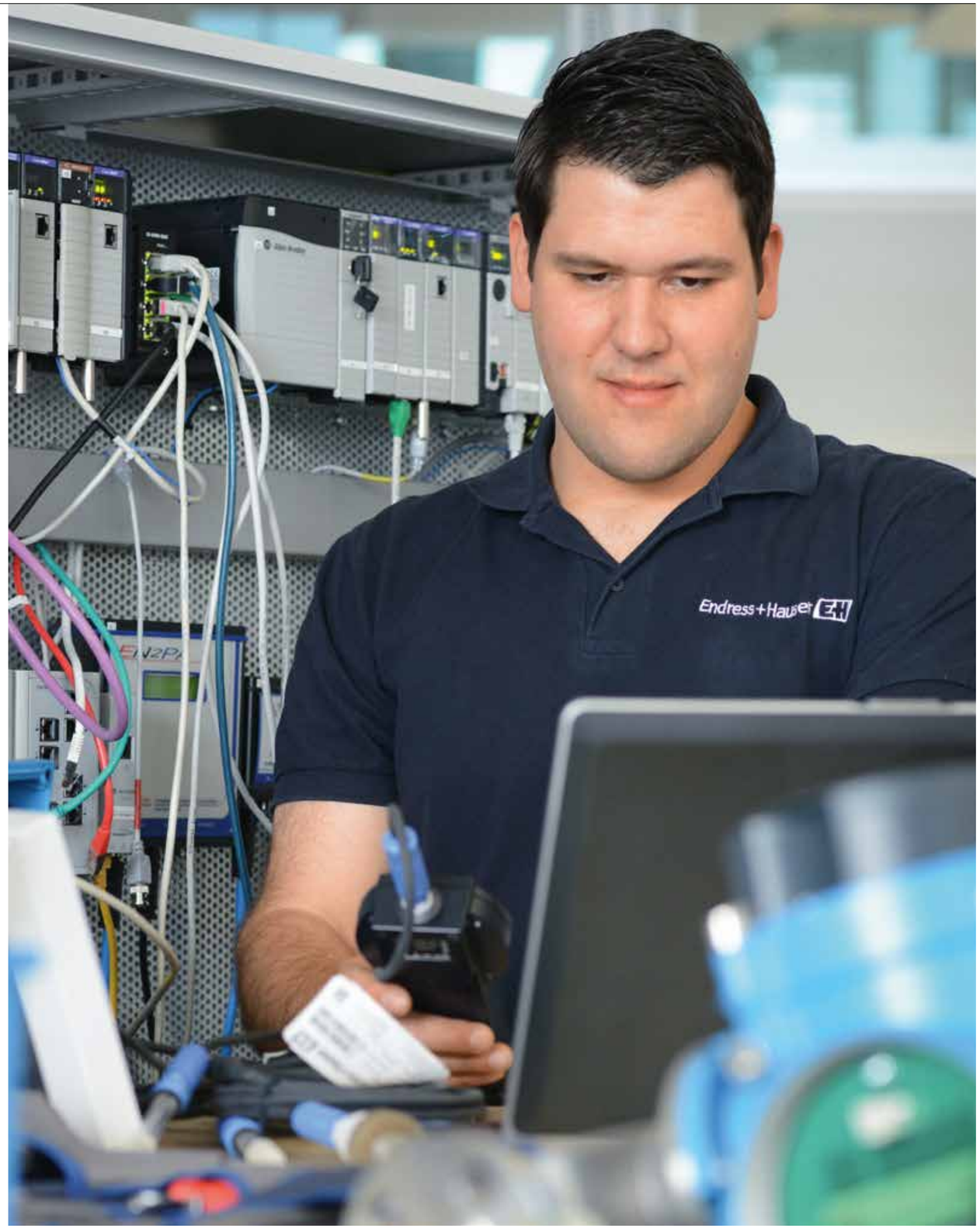
Businesses in the process industry are increasingly becoming aware of the efficiency gains from optimized processes and how new communication technologies allow for product and process quality enhancements. "For our customers, the benefits of these process engineering improvements are very important," says Derek Deubel, Vice President at TechniBlend, a manufacturer of blending systems for the food & beverage industry.

Integration made easy How far device integration can go is demonstrated by the collaboration with Rockwell Automation, makers of control systems and control engineering. "We've been in a strategic alliance for almost ten years," says Peter Rippen, Endress+Hauser's Director in charge of partnerships with other enterprises. A joint team from both sides addresses practical issues of the cooperation. "This is how we create added value for our customers," explains Mirko Brcic who heads the Integration Office at Endress+Hauser.

The partners thoroughly test devices and components and optimize the smooth interaction between them. Labeled 'Preferred Integration', users can draw on plenty of help. "We pre-configure everything to such an extent that all the additional information the instruments provide can be utilized; we also generate documents specific to certain devices, which bundle important information in a compact form, and we supply software modules which make programming the control system easier," continues Mirko Brcic.

Evolving from the collaboration with Rockwell Automation, Endress+Hauser developed measuring instruments with Ethernet/IP. "We've integrated these devices so well that a Coriolos instrument, for instance, can be commissioned with just a few clicks of the mouse, with all process variables and diagnostic information available," reports Mirko Brcic. "This approach guarantees efficiency, safety and quality." Derek Deubel of TechniBlend is thrilled with how the quick connection allows easy access to single devices. "We're getting more accurate measurement values, and we spot changes more quickly."

Double-benefit alliance "The strength of this alliance," Peter Rippen believes, "lies in both partners focusing on their core competencies. Both sides complement each other perfectly." Rockwell Automation is deeply rooted in the world of systems, Endress+Hauser in process measurement engineering. No other manufacturer offers this double focus, confirms Markus Fleuter, Director of Order Processing with the German specialist machine builder GEA Westfalia Separator Group. "The major automation companies market their products under the aspect of project handling. The end customer – especially the process engineer who wants to optimize the process – eventually loses out."



On familiar terms: Matthias Scherzinger of Endress+Hauser's Integration Office ensures perfect communication between device and control system.

The alliance viewed from the outside

Customers confirm that the cooperation between Endress+Hauser and Rockwell Automation creates benefits throughout a plant's whole life cycle.

"We anticipate more integrated hardware and software options for our process facilities."

Bryan Griffen, Nestlé

Nestlé is a true multinational. The world's largest food company operates more than 450 sites around the globe, manufacturing nearly 10,000 different products. This diversity characterizes the company's operations – and challenges process engineering specialists. "However, we are moving more and more towards standardization – such as Rockwell Automation for PLCs," says Bryan Griffen, responsible for Nestlé's global electrical and automation engineering strategy.

The Nestlé manager expects to benefit from the alliance between Endress+Hauser and Rockwell Automation through a higher level of integration. "This will reduce design constraints, expenditure of time and increase functionality, including the full utilization of information available from the instruments." More and more Nestlé plants are switching from 4–20 mA signals to digital fieldbuses. "As we become more connected, we are able to build conditional maintenance and early warnings into our control strategies. We can provide better information to our personnel to improve both operations and maintenance." As Bryan Griffen says, the increased availability of data allows more advanced control systems to be designed and processes optimized.

"Preferred integration benefits our customers due to substantial productivity gains."

Derek Deubel, TechniBlend

In the United States, TechniBlend designs and manufactures engineered process systems and solutions for various applications. Key customers use the company's blending lines to produce soft drinks. In more and more systems, TechniBlend applies Ethernet/IP technology to connect Endress+Hauser's Coriolis flowmeters with process control components from Rockwell Automation – a direct outcome of the companies' alliance.

"We and our customers benefit in a couple of areas from the preferred integration concept," says Derek Deubel, TechniBlend's Vice President. "Easy access to single devices and instruments' readings can lead to substantial productivity gains as a result of not having to shut down because of a problem." The TechniBlend engineers profit from the ability to duplicate settings. "It is much easier to get the system started up, running and tested."

Derek Deubel also sees the widely untapped potential of device information accessible with Ethernet/IP. Preventative maintenance based on instrument data is one option, another is the flexibility offered through deep insights into the process. "We definitely wish there were more Ethernet/IP instruments. The more data, the better!"

"Enterprises cultivating good partnerships will be more successful in future."

Markus Fleuter, GEA Westfalia Separator Group

When it comes to mechanical separation, GEA Westfalia Separator Group is amongst the world leaders. The company, specializing in custom mechanical engineering, makes separators and decanters, for instance for the food & beverage industry. "Electronics and IT develop much faster than materials," says Markus Fleuter, Director of Order Processing. "We want to combine both worlds to meet our customers' growing expectations with our solutions."

The machine builder therefore aims to gain and use more information from the process with 'hybrid' electromechanical systems. "For GEA, the future development of sensor technology is the subject we're most interested in," stresses Markus Fleuter. Today, mass flow is measured in the centrifuges. But the instrument supplies many other measurement values, such as viscosity for instance. The fine art is to identify the parameters that are crucial for product quality and safety.

The GEA manager sees the worth of the alliance between Endress+Hauser and Rockwell Automation in terms of "finding an advantage from the extra information". Markus Fleuter: "After discussions with Endress+Hauser and Rockwell Automation, we now increasingly equip of our machines with digital fieldbuses to make use of these options."

Automation solution for overfill prevention

Playing it safe in tank storage

If storage tanks overflow in the oil & gas business or in the chemical industry, the consequences can be catastrophic. Endress+Hauser has therefore developed an automation solution for overflow prevention which meets the highest safety and security standards. The control components come from alliance partner Rockwell Automation, ensuring that our customers enjoy all the benefits of deep device integration.

The system alerts if a certain top level is reached and optionally also warns in advance. The operating panel displays plain text and every incident can be traced back. "Our solution is modular in structure and easily extendable to cover as many as 16 tanks," says Dr Raimund Sommer, Managing Director of Endress+Hauser's center of competence for automation solutions. The system is suitable both for automatically and for manually controlled tank storage units.

The modular structure ensures flexibility and makes engineering, installation and commissioning easier. All components are pre-configured, with only parameterization being required on site. As reliable watchdog a Liquiphant FailSafe is deployed – a variant of the tried and tested limit switch using the tuning fork principle. It features internal redundancy and permanent self-monitoring.

Reliable through and through "The whole system has been independently certified and complies with all safety requirements right up to SIL 3," stresses Raimund Sommer. A push of a button will at any time simulate an alarm, allowing the proper function of the downstream components to be tested. Recurring tests, as demanded by guidelines for functional safety or legislation like the German Water Resources Law, are thus made a great deal easier.