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ABB

The Multisensor Advantage



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Universal pressure transmitters with multisensor technology measure flow and level in a wide range of applications

In the portfolio of pressure measurement products at ABB, the 267 and 269 models from the 2600T series play a special role. Utilizing state-of-the-art multisensor technology, the pressure transmitters measure up to three different process variables simultaneously. In addition to differential pressure, static pressure and temperature, users measuring mass flow benefit from an internal compensation function. This combination can reduce cost by 30 to 40 percent, according to the manufacturer. The modular design supports a variety of materials, process connections and communication protocols for use in chemical, pharma, food and energy applications.

■ Ulla Reutner

ABB is no stranger to success, and the pressure transmitters in the 2600T series have the look of another success story in the making: sales are growing significantly ahead of market, there is a high rate of acceptance among users, and several models are available to meet the needs of a wide range of industries. Almost three years after product launch, Gerhard Lütkepohl, Head of Pro-

duct Management for Pressure Measurement at ABB Automation Products in Minden, Germany, might be perfectly satisfied. However, he believes his “number one” product, the multivariable transmitter, has more potential: “Growth rates of more than 20 percent are achievable.”

The key for Lütkepohl is multisensor technology, which although not cheap makes for highly economical solutions.

Because these devices measure differential and absolute pressure in a single meter. In addition, external temperature sensors can be connected to detect process temperature. Sensor temperature is also calculated and can be used for service, diagnostics and, like absolute pressure, to eliminate environmental influences.

ABB uses the equation $1+1+1=1$ to describe the range of functions available:

Suppose you want to measure three values – differential and absolute pressure as well as temperature? The 267 or 269 is your 3-in-1 solution.

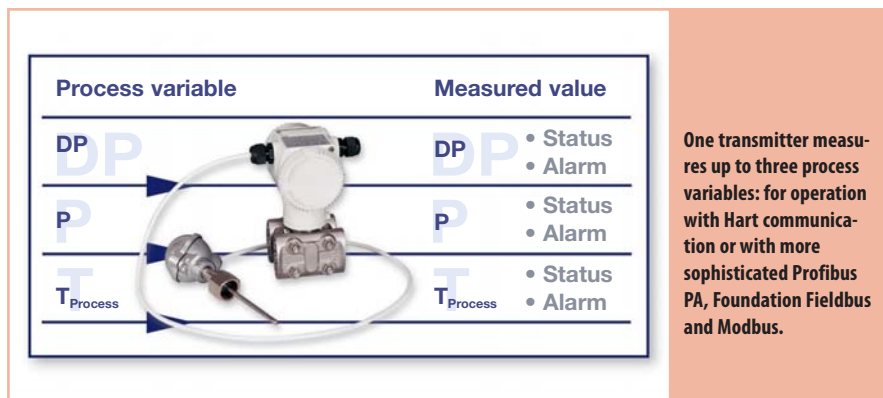
1+1+1=1 – three process variables, a single transmitter

It should come as no surprise that transmitters with this functional range are more costly than conventional differential pressure transmitters. “The bottom line, however, is that users save 30 to 40 percent of the initial cost,” states Lütkepohl, based on his experience with applications in which multisensor transmitters replaced a combination of separate transmitters. The valve blocks and welding activities typically associated with installation are only necessary for one instead of two transmitters. The same applies for the electrical supply and signal processing – and further reduces costs. Once in operation, fewer spare parts and less maintenance is required.

When using the multisensor to measure flow rates, the internal dynamic compensation, which detects changes in density, Reynolds number, etc., enables users to calculate mass and standard volume flow. Separate flow computers or corresponding functionality in the control system are no longer necessary. “We have continued to modify and improve the compensation function since the series was launched,” adds the product manager. “The compensation function now also accounts for the temperature-dependent change in the diameter of the pipe. Even with larger pressure or temperature changes, the device provides high-precision measured values.”



The cost-effective differential pressure method can be used in combination with multivariable transmitters to measure the mass flow rate of steam or the normal volume flow of gas.



The devices also perform well in a cost-benefit comparison based on other measurement principles. The models 267CS and 269CS are designed specifically to measure flow based on differential pressure, and are used primarily with gases and steam. As a result, they compete with Vortex velocity flowmeters. Lütkepohl adds: “Since only the primary unit, i.e. the pitot tube or orifice is in the pipe – parts without electronic components – the multisensor usually has a longer life than

Versatile modular design and fieldbus communication

The wide range of diagnostic functions of the multisensor can be used with Hart communication or fieldbus data transfer. Open communication is the standard for all our devices. “We are the only manufacturer supporting all the current protocols, including 4...20 mA/Hart, Foundation Fieldbus, Profibus PA and Modbus,” states Lütkepohl. Users benefit from



“In addition to the low installation costs resulting from fewer devices, the dynamic compensation function significantly improves accuracy over legacy systems – this is not an easy combination to beat!”

Gerhard Lütkepohl, Head of Product Management Pressure Measurement at ABB

the Vortex devices, especially for high temperatures. In addition, flow measurements based on differential pressure can be used universally and are of an unbeatable price for larger pipe sizes.”

With reliable, robust technology, the series also meets user needs through piezo-resistive sensor technology, which results in significantly less material aging compared to sensors that combine different materials. In addition, piezo technology provides a high degree of accuracy (0.075 or optionally 0.04 percent). “What customers want is one meter for all tasks,” states Lütkepohl, “and it has to be easy to configure for a variety of measurement activities.” The multifunctional transmitter is alone in its class and is ideally suited to fulfill these requirements. Users in fields such as oil and gas, energy and chemicals, increasingly appreciate the benefits of the multivariable transmitter technology.

reduced costs when using multi-variable transmitters to measure mass flow rates – regardless of the communication protocol.

Another important design element is the modularity of the transmitter, which enables users to replace electronic units and adjust for different communication protocols. The measuring element, electronic unit and housing can be easily configured in any combination.

The modular system reduces spare parts inventory costs. The models of the 2600T series are also user-friendly, and can be configured directly at the measuring site during installation and startup.

In addition, ABB offers for all units a Device Type Manager (DTM), which enables the user to be independent of third-party tools. Any system with an FDT interface can be used, even for offline configuration or documentation, etc. “The benefits of the FDT/DTM>

Focus on Growth Sectors

Dr. Volker Huck, Head of Instrumentation, and Lothar Gellrich, Head of Marketing Communications and Industry Management for Instrumentation at ABB, discuss market development in the pressure measurement technology industry

■ **P&A: Since the acquisition of Hartmann & Braun, the Pressure Measurement division at ABB is positioned for success, with production mainly in Minden, Germany, and Lenno, Italy. Does the business development reflect these recent changes, Dr. Huck?**

Huck: Yes. After a few years of stagnation, the division is experiencing double-digit growth rates, which is true of the entire process instrumentation sector.

■ **P&A: How much personnel does this involve?**

Huck: With 2500 employees worldwide, 830 of whom are located in Germany, Instrumentation at ABB is set for success. Pressure Measurement has more than 400 employees, divided evenly between Italy and Germany. Additional manufacturing plants for other divisions within Instrumentation are located in England, Canada, the USA, India and China. In fact, we have active sales organizations in about 95 other countries.

■ **P&A: What position does ABB hold in the pressure transmitter market?**

Huck: In Germany we have a market share of approximately 13 percent. Globally, we are between 2 and 4 in the market, and very little separates these positions.

■ **P&A: With some 40 percent market share, Emerson remains the uncontested leader in this sector. What goals did you set in this regard?**

Huck: We have a clear, realistic goal – we want to be the number 2 or 3 among leading companies in the primary markets.

■ **P&A: Your competitors are also gearing up. What plans do you have to continue to grow and expand your position?**



"We have a clear, realistic goal – we want to be the number 2 or 3 among leading companies in the main markets."

Dr. Volker Huck, Head of Instrumentation

Gellrich: A number of actions are planned. The most important element is the platform strategy. We are developing new devices based on common components. This has two major benefits: it reduces development costs and the streamlined user interface improves device handling almost like the simple handling of a mobile phone. Customers can also interchange electronic modules within a product family and subsequently reduce storage costs. This concept also offers numerous synergies. The new electronics platform was developed in accordance with the rules of IEC 61508, and all new devices are classified as SIL 2 for system safety, which is especially important in the chemical and petrochemical industries.

■ **P&A: Have you already brought to market devices based on this new concept?**

Gellrich: Yes. We started last year with the stainless steel model 261 pressure transmitter, which we were able to position very successfully in the market. This year at the Hanover Fair we presented the TTH300 temperature transmitter. In addition, devices from the Flow

Measurement and Pneumatic Positioner divisions are scheduled to follow.

■ **P&A: What sectors do you consider to be growth fields for the Process Instrumentation division?**

Gellrich: The chemical industry, which has always been one of



"We are adopting a platform strategy for product engineering and implementing a modular design for our instrumentation portfolio."

Lothar Gellrich, Head of Marketing Communications and Industry Management

our traditional strengths, is a major growth area. Oil and gas, as well as energy, which

for years were neglected by investors, are now considered potential growth areas.

■ **P&A: In the oil and gas industry, investment is largely on an international scale. How do you support your global business?**

Huck: Because 50% of our instrumentation is manufactured in Germany, we have a strong focus on export. We play a leading role in the global instrumentation business of ABB. For example, we strengthened export sales with international resources or better on-site support of the regional companies in target markets. We are also building satellite plants in the key markets so that our products are assembled and calibrated under license. In addition, we plan to develop and certify international service units in the regions to provide our global customers with the same high quality products and services.

■ **P&A: How do you plan to grow ahead of the market in the various industries?**

Gellrich: We plan, for example,

to grow considerably with pressure measurement technology in the food and beverage

industry. For this reason, we developed the 261 model, which is designed especially with hygienic connections. We also anticipate considerable growth in our multivariable transmitter in the energy as well as the oil and gas industry. When implementing the

growth plans, we involve Industry Management for support. We also rely on the technical expertise of our employees, who have worked closely over the past years with the various application groups and are familiar with their specific needs.

■ **P&A: To what extent have you already implemented Industry Management?**
Gellrich: Industry Management is largely implemented in the areas of chemicals, energy, water/waste water, food and beverages, as well as pulp and paper. The manager for each of

these industries is supported by personnel to ensure that in the future strategic as well as operational activities can be optimized. As a result, customers have direct access to ABB specialists, who are familiar with specialized applications and can provide appropriate solutions. ■

concept are fully realized in the 267/269 models, which greatly surpass standard devices in terms of functionality," states Lütkepohl. "EDD or GSD have limits in this respect."

Calculating costs in Bayer Chemical Park

The practical operating concept has been recognized by companies that have deployed the multivariable transmitter "on a large scale," including the chemical park operator Bayer Industry Services (BIS). Chemical park partners purchase steam, gas or compressed air from facilities in Leverkusen, Dormagen and Krefeld-Uerdingen, and BIS is increasingly using 267CS/269CS models instead of three transmitters and a flow computer to calculate volumes for accounting purposes.

"In addition to the low installation costs, the dynamic compensation function significantly improves accuracy over legacy systems – this is not an easy combination to beat!" The broad range of measurements also plays an important role for BIS. Another advantage is the freedom that ABB allows its customers to connect external temperature sensors. "We avoid the

complicated designs of other manufacturers, and allow users to connect virtually any commercially available sensor."

Wide range of applications based on materials and process connection technology

Moreover ABB does not compromise regarding corrosion-resistant materials. "For standard devices in the 2600T series, we use stainless steel for the parts that come into contact with the measuring medium. For parts that are particularly sensitive such as isolating diaphragms, we use Hastelloy C," explains Lütkepohl. More demanding, customized projects include Monel, tantalum or gold plating upon request. The entirely stainless steel models used in pharma and the food and beverage industries are constructed without dead spaces and hygienic requirements are observed for process connections.

The latter industry presents potential for growth for the Pressure Measurement division at ABB, according to Lütkepohl and Lothar Gellrich, the Head of Marketing for Instrumentation. "With an implemented Industry Management and the full product offering, we are well positioned for the food and beverage industry now," states Gellrich (read more in the interview beginning on page 14).


At the end of last year, ABB introduced a new transmitter for gauge and absolute pressure with a variety of connections, the product manager adds. In the food and beverage industry as well as in the pharma industry, the rapid 140° C cleaning processes are performed smoothly since the devices designed for these applications can operate at temperatures up to 180° C. This extends the life and improves the stability of the device.

For further product updating, ABB is focused on optimizing accuracy and ergonomics in order to further promote these unique selling points. To open multisensor technology to other traditional application

fields for differential pressure transmitters, for instance, to measure level, the manufacturer added the new models 267 JS and 269 JS to the 2600T series. The new models measure differential and absolute pressure as well as process temperature. However, they do not calculate or adjust for the flow rate. As a result, they are considerably more cost effective.

"We believe that these models will open new applications for multisensor technology," states Lütkepohl. "We now boast a comprehensive offering of standard devices for measuring pressure and differential pressure." ■

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Company info



Founded	1890 (ASEA), 1891 (BBC)
Employees	105,000 worldwide, 11,600 in Germany
Sales	2.7 billion EUR (Germany)
Operating areas	Process Automation, Automation Products, Energy Technology Products and Systems, Robotics
ABB Automation Products GmbH:	
Headquarters	Ladenburg
Sales	330 million EUR
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ABB is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 104,000 people.

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