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**FACHZEITSCHRIFT DES JAHRES -**  
**PREIS DER DEUTSCHEN FACHPRESSE**



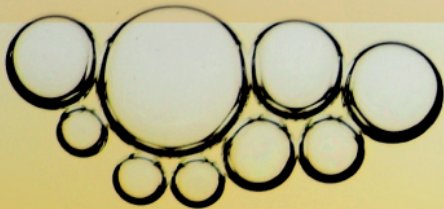
## REPRINT



COVER ARTICLE

## FlowMaster

New ABB platform for flow measurement instrumentation



successful media for experts

**SPECIAL  
Measurement  
technology**

# THE MASTER ASKS FOR A DANCE

**ABB puts flow measurement instrumentation on a new basis.** Platform concepts are trend-setting for instrumentation. On one hand, they open the chance to establish consistent device and operating philosophies and offer them to the customers. On the other hand, they help plant operators to save engineering time and money in their processes. With the FlowMaster series ABB wants to set a course on the flow measurement market.



The converter unit designed as a plug-in module

phases that play a minor or major role regarding the vendor selection or purchase decisions are ranging from order placement or installation and commissioning over operation and maintenance to disposal. Added to that, commercial and strategic aspects like Main Automation Vendor (MAV) concepts are considered.

Depending on whether the plant operator himself, one of his competent departments or a subcontracted plant engineering partner takes the decisions, the above-mentioned criteria carry more or less weight. Nowadays, the art of good business for the instrument vendors more and more involves listening to the users and figuring out how

**FlowMaster instruments store the process and device parameters both in the sensor and in the converter.**

their daily work can be made easier. Seen from the operating personnel's point of view, for example, operating convenience is an important issue. "There are several hundred different parameters and functions that can be set for state-of-the-art electromagnetic flowmeters", explains Volker Erbe, head of Product Management Flow Measurement at ABB Automation Products, adding: "It is our challenge to offer our users clear, simple operation with different access levels and assigned parameter selection".

The user interface, in addition to a simplified order process and optimized device characteristics, plays an important role in the development of the device platform, based on offering easy parametrization and access levels as a security measure. In

analogy to temperature and pressure measurement devices, a unified operational concept has been created for electromagnetic flow measurement devices, allowing users to modify the key instrument parameters in the commissioning phase in just a few steps using "Easy setup". Designed like a mobile phone, it uses softkeys which, when operated, trigger an action related to the situation and indicated in the display. "If our users let us know their preferred parameter settings at the time of ordering, we are able to fully pre-configure the device and deliver it to the customer in an operational status", adds Volker Erbe.

**Process parameters are stored both in the sensor and in the converter**

Parameterization is important not only for commissioning, but in some cases also causes problems to service technicians during maintenance. These are forced to read manuals before being able to customize replacement devices to local process parameters and operating conditions.

FlowMaster instruments therefore store parameters both in the sensor and in the converter. In case one of the units has to be replaced, the new converter accepts the process parameters from the sensor, or the existing converter transfers the data to a new sensor. In order to benefit from synergy and quantity effects resulting from the platform concept and, at the same time, allow for easy device replacement, the converter electronics are de-



**W**hen instrumentation specialists in the chemical industry these days reflect on the optimal instrument, they often identify requirements that go well beyond the ordinary functions and features required for precise measurement like, for example, accuracy, reproducibility or stability. All these have an effect on only one phase in a field instrument's total life cycle – albeit one that is important. The

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signed as a plug-in module which contains a set of boards. "The entire electronics can be replaced without disconnecting wires" says Volker Erbe to explain the plug-in concept.

### MID portfolio with extended diagnostics

Under the "FlowMaster" brand, ABB differentiates between mass flowmeters, Vortex flowmeters, variable area flowmeters as well as electromagnetic flowmeters. The company intends to launch electromagnetic flowmeters in spring 2008. The MID versions are differentiated according to their application – e.g. for industrial processes (ProcessMaster), water management (WaterMaster, AquaMaster) and for hygienic processes (Hy-



### „Menu structures have to be error-tolerant“

Volker Erbe, head of Product Management  
Flow Measurement at ABB Automation Products

gienicMaster). "Each newly developed or essentially modified product is given a new name under the FlowMaster roof", Erbe explains. Enhanced application characteristics announced by the manufacturer for the new devices include the following aspects:

- New human-machine interface with intuitive operation through the glass of the on-site display without any tools
- Extended diagnosis and its classification according to Namur recommendation NE107 including diagnosis simulation functions, electronic plug-in module in all housings usable for all variants, sensor memory technology
- Infrared service port

### DECIDER FACTS

#### For users

- Faced with increasing numbers of devices and functions in process plants, operators are more than ever faced with the problem of having to handle different operational concepts.
- ABB has developed the "Master" device platform to unify operation and to provide intuitive operation of field devices.
- The electromagnetic flowmeter "ProcessMaster" has been custom-built for use in the process industries.
- A three-stage diagnosis concept as well as enhanced performance data are opening up a broader range of applications for these devices.

- Application under higher fluid and environmental temperatures
  - Higher measurement performance
- The coil current has been increased and the excitation frequency has been increased to up to 25 Hz in order to improve the performance of the MID devices. According to the manufacturer, this has increased the standard accuracy to 0.4%, optional 0.2 %. Improved signal filters in the converter have helped to enhance the stability of the measurement signal. And ABB has added one more feature: According to Namur recommendation NE 107 diagnosis data are not only displayed in the control room, but also on the backlit display on site using appropri-

ate symbols. For MID devices, diagnosis includes the detection of electrode coating, corrosion, and short circuit as well as damaged lining, conductivity and detection of an "empty measurement pipe" and "measurement pipe not completely filled" status.

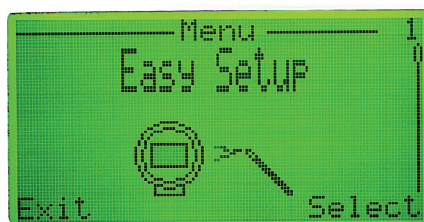
"Device diagnosis largely depends on the application", adds Bernd Kammann, Global Vice President Flow Products, emphasizing the imperative of a sophisticated alarm management. ABB therefore delivers its products with an inactivated alarm function so that users are able to selectively activate their relevant alarms. "We do this to avoid alarm showers especially during commissioning", Kammann points out.

#### Error-tolerant operation

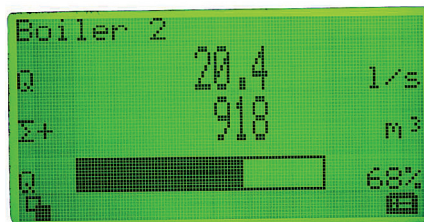
When developing state-of-the-art operating concepts, manufacturers more than ever have to take into account the structural change in the process industries which has begun a few years ago. More and more rarely, field instruments are operated and configured by specialized staff.

"To support less experienced users, or users who only occasionally configure devices, the menu structures have to be error-tolerant", Volker Erbe emphasizes another development target. This has been implemented in the menus of the FlowMaster instruments by means of a situation-related plausibility check. For local software or firmware updates, the devices are equipped with an infrared interface. A service port attached to the outside of the display transmits the data without the need to open the device.

However, with its new device concept ABB does not only focus on new plants, but also keeps an eye on devices already installed. "Some devices have already been in use for 25 or 30 years. As a result, new products have to be backwards compatible", says Bernd Kammann. For this reason, the new converter is compatible with electromagnetic sensors from ABB. Existing FXE4000 installations can thus be upgraded to the new technology.



"Easy Set-up" allows users to modify key instrument parameters in the commissioning phase in just a few steps



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## “MARKETS HAVE CHANGED CONSIDERABLY”

**CT: Which trends have you noticed on the flow measurement market?**

Kammann: Markets have changed considerably within only a few years. In Great Britain just ten years ago a portion of only around ten percent of the instrumentation business was transacted by contractors. Nowadays, approximately 90 percent of the instruments are sold via contractors. A recent service case elucidates what this means: An instrument being used in a paper machine was specified in Germany, delivered to a package unit vendor in Finland, tested in the USA and finally delivered to a company in Uruguay. In this company, a problem occurred and we received their call on a Friday evening, requesting our service to come to their place within 24 hours at the latest to avoid a production shutdown.



**“New products must be backward compatible”**

**Bernd Kamman**, Global Vice President  
Flow Products, ABB Automation Products

**CT: What has changed for instrument engineering?**

Kammann: In the past, an instrument was designed for only one market and the certificates and approvals for other countries were prepared one by one. As a global supplier, we nowadays have to launch products with certificates and approvals for all international key markets. For hazardous areas this means, for example, compliance not only with ATEX, but also with IEC, FM, CSA, Gost, Chinese standards, etc.

**CT: ABB’s market share for flowmeters has decreased over the past years. What could be the reason and how do you intend to increase your market share?**

Kammann: Due to the restructuring that we did in the past years, caused by mergers and acquisitions, we have been less active on the market than our competitors. As a consequence, we have launched a smaller number of innovations which means that our product portfolio now has a few gaps – for example in the field of high-temperature and hazardous-area applications. On the other hand, the chemical industry is looking for partners who can cover the entire range of measurement tasks. Our company has seen massive changes over the past three years. With ABB Instrumentation, we are now creating a new quality standard for instrumentation. The FlowMaster concept is an important building block on our international roadmap for our complete portfolio.

**CT: What exactly are your plans?**

Kammann: We have spent a considerable amount of time finding out how to make it easier for our users to operate their plants. This covers a whole range of items, from simply structured ordering numbers, easily accessible information and selection programs on our website, short processing and delivery times in our production to fast installation & commissioning. This package also includes user support covering the entire product life cycle.

**CT: The Main Automation Vendor concepts requested by the chemical industry requires that a vendor offers all products from one source, but not necessarily from his own production. Against this backdrop, does it still make sense to provide a complete portfolio?**



**“For us as a vendor the special challenge of the MAV concept is to dominate the related risks”**

**Günther Denecke**, Chemical + Pharmaceutical Industries Manager, ABB Automation Products

Kammann: As an MAV you undertake to support the user over the entire product life cycle. If you are able to deliver products from a single source you can control the related risk.

Denecke: An important motivation for an MAV project is to put the responsibility for the process automation on a service provider. For us as a vendor the special challenge of the MAV concept is to dominate the related risks. However, the individual chemical companies have different attitudes towards this issue. Some operators definitely want to keep the full automation and instrumentation competence in their own house. Moreover, an MAV concept usually undermines the supplier and standard device lists for a plant.

**CT: At the Namur main conference in November the users demanded various features for field instruments, among them a standardized length for Coriolis mass flowmeters and a manufacturer-spanning uniform operating concept. How realistic is this?**

Kammann: For most of the already existing Coriolis instrument series on the market a standardized, uniform length would involve considerable modification and re-engineering efforts. So far, there have not yet been any activities from the manufacturers’ side to achieve a manufacturer-spanning operating concept. Our new concept complies with the NE 107 requirements, but every manufacturer has developed special features which must be supported by such an operating concept.