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German Magazin 'Brewery Industry'

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FlowMaster –

Intuitive Measurement from the Masters of Flow



FlowMaster Product Family with new appearance

New Developments in Flow Measurement

Food industry production processes today are increasingly subject to optimization. Such processes require a high degree of flexibility. Various expectations are created every time a user adds a new metering point to his process. This involves the expectation to increase the product quality. For this purpose, it is essential to collect the relevant quantity as precise, safe and reproducible as possible. Another goal is to increase the safety of the plant, e.g. to avert or to minimize potential danger for humans and the environment, caused by the production process. It is therefore necessary to clearly define the failure mode of the devices. Two new electromagnetic flowmeters are introduced in the following.

ABB flow measurement products have been assigned to the new FlowMaster product family, which has been designed to make sure every customer receives a product, tailored exactly to meet his requirements. Customized to various industries, ABB's product range offers an excellent price-performance ratio and meets the growing demand for safety.

Two new electromagnetic flowmeters of the FlowMaster product family are introduced below – ProcessMaster and HygienicMaster. The ProcessMaster has been designed to meet the modern flow measurement requirements of in the process industry. The new HygienicMaster has

been designed for food and pharmaceutical industry applications where one of the key objectives is, to increase the availability of the plant. This requires an early detection and correction of production process or measurement instrument errors in order to avoid any incidents. In case of an unexpected outage, this must be corrected as quickly as possible to minimize downtimes and associated production losses. This means that defective metering points must be put back into operation within the shortest time frame possible.

For the maintenance personnel it must be easy to find out whether the process or the device is causing an error. In case the device has caused an outage, it should be possible to safely replace defective parts within a short time. Device functions should ideally support the responsible maintenance personnel.

These requirements have been met for the development of the new electromagnetic flow meters



Two of ABB's electromagnetic flowmeters, ideal for challenging applications in the food and beverages industry: HygienicMaster and ProcessMaster.

HygienicMaster and ProcessMaster. Both devices have similar functionalities while the HygienicMaster is mainly used in hygienic production environments, e.g. in beverage production or in milk-processing applications.

Universal Application

To ensure the coverage of a large range of applications and to facilitate the logistics of the customer, the same hardware and firmware

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can alternatively be supplied with accuracies of 0.4% of the measurement value and 0.2% of the measurement value. The accuracy classification is not linked to the device itself – it is rather a question of calibration. It is therefore possible for standard applications to choose basic calibration and avoid higher costs.

A HART-compliant transmitter for all applications has been developed to ensure easy replacement of transmitters and to facilitate storage. No matter whether the device is used for a compact or for a field version of flow meter, or whether ATEX, FM or CSA approvals are required, the same electronic component can always be used. Customers only have to decide whether they prefer 230 Volt or low voltage power supply for their plant.

The entire transmitter is located in an encapsulated housing which, if necessary, can be replaced without having to disconnect any cables or to insert or take out individual modules. The display at the encapsulated module can be turned by 90° to the left or right without having to use any tools. Once the module has been installed in its external housing, the capacitive keys can be operated manually through the glass plate without having to touch the keys directly. For standard applications, it is no longer necessary to open the housing and to take the risk of humidity penetrating the housing.

ABB has enhanced the temperature range for medium temperature applications of 180°C and for ambient temperatures of 60°C. While in the past it was necessary to ensure a certain maximum ambient temperature when measuring high medium temperatures, with the new devices it is now possible to fully use the entire temperature range.

Simplicity in Initial Operation

ProcessMaster and HygienicMaster devices are usually delivered

ready-to-use with a complete factory presetting. The device is labeled with the MSR job number. This number is shown on the display after connecting the device, assuring the installation personnel that the device has been installed in the correct place. To further facilitate the personnel's work, sufficient space is provided at the connection area and a connection diagram with pin allocation is included inside the device.

If the flowmeter has to be adapted to a modified measuring point, users can quickly open an Easy Set-up menu and change the required parameters in just a few steps. The menu offers plain help text and setup limits for user support. To make sure users do not have to read lengthy operating manuals, the keys and the menu support have been designed to strongly resemble those of commonly used mobile phones.

Upon termination of the Easy Set-up menu, the measuring point parameters are automatically stored both in the converter and in the sensor.

Increased Uptime through Online Diagnosis Functions

To provide better support with error analysis for operators, the HygienicMaster has been equipped with a package of diagnostic functions which identify both process-related and hardware-related errors. Diagnosis messages are classified according to the Namur recommendation NE107. The four symbols defined in NE107 are used to display whether the device requires maintenance work, whether it is operated outside the specified range (e.g. due to process or environmental conditions), whether a functional test is required or whether the malfunction has been caused by internal reasons. Plain text messages are used to provide information concerning potential errors.

Identified process errors can include an empty pipe or electrode covering of the medium. The diagnostic tool also offers suggestions for error removal. All this information is made available directly at the device display on site. HART- or future field bus communication can be used to transfer these data to control systems for direct processing by means of plant access management or maintenance software packages.

In the Unlikely Case of Emergency

In case of an outage, a metering point should be made available again as quickly as possible. If the online diagnostic has not reported any process or sensor error, the operator will most likely attempt to remove the error by replacing the transmitter without opening the product pipe.

The transmitter is a fully encapsulated electronic component which can be installed and removed without disconnecting or connecting of cables. Guide rails are used to ensure a precise fit. After a replacement of parts, the transmitter automatically detects any change of configuration, requesting the maintenance personnel to indicate whether the transmitter or the sensor has been replaced.

After providing an appropriate answer, the additional 'Sensor Memory' function becomes active. When replacing a transmitter, all sensor calibration data and also the data related to the measuring point are automatically transferred to the new transmitter. When replacing a sensor, the measuring point data would be written to the new sensor. Measuring point information is stored both in the transmitter and in the sensor, providing redundancy. Users therefore do not have to reconfigure any parameters or to replace any memory chips, as required during initial operation.



FlowMaster series ProcessMaster and HygienicMaster, shown both with a compact design and as a separate version.

Extensive Service Support

After successfully fixing process errors, additional service tools are available in order to isolate errors on site. A sensor simulator e.g., onto which a transmitter can simply be plugged, may be used as a

reference that cannot be influenced by external effects of the measuring point.

An infrared interface, simply attached to the glass of the transmitter display, can be used to read additional data from the device for

service purposes without having to remove the transmitter. Such an interface can also be used to update the firmware, to load future additional diagnostic functions or language packs, or to create an extensive documentation of the measuring point. □

Intuitive Measurement from the Masters of Flow



FlowMaster...

...Welcome to the future of flow measurement. With its range of innovative products, FlowMaster offers unrivalled functional and economical benefits. The smart design for each application has been combined with utmost measurement accuracy, state-of-the-art diagnostics and flexibility for customization to various measurement tasks. Benefit from the simple planning, installation, maintenance and upgrade functionality while enjoying minimum operating costs over the entire life cycle.

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