



Level



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Promag 53 H in Milk Pasteurizer Flow- Food

Promag electromagnetic flow meter controls the flow rate on dairy pasteurizers



Cool, fresh glass of milk



Promag 53H Stainless Steel meter



Milk products

Product information

Magnetic flow meters often play a critical role in controlling the flow rate on dairy pasteurizers. When installed in conjunction with a centrifugal pump and control valve, the meters effectively monitor and control the flow rate through the holding tube. Once the FDA inspects for proper flow to assure pasteurization time, the meter is sealed prior to operation in accordance with the Pasteurized Milk Ordinance (PMO).

Application description

At a temperature of 40°F, the cold raw milk is drawn from a balance tank. It enters a regenerator section of the pasteurizer where – on the opposite side of thin, stainless steel plates – hot, pasteurized milk flows in a counter current direction. Heat from the pasteurized product warms the raw milk to approximately 160°F. While still under suction, the raw milk passes through a centrifugal pump and a magnetic flow meter, arriving under positive pressure through the rest of the High Temperature Short Time (HTST) system.

As it is forced through the plate exchanger, hot water on opposite sides of the plates heats the raw milk to a temperature in excess of 187°F. While at this pasteurization temperature and still under pressure, the milk flows through the holding tube where it remains for at least 16 seconds.

Measurements from the electromagnetic flow meter govern the maximum velocity. After passing an indicating thermometer's temperature sensor and a recorder-controller at the end of the holding tube, the milk moves into the Flow Diversion Device (FDD).

The FDD assumes a forward-flow position if the milk passes the recorder-controller at the preset cut-in temperature. The FDD remains in normal position (in diverted flow) if the milk has not achieved the preset cut-in temperature. The improperly heated milk flows through the diverted flow line of the FDD back to the raw milk balance tank. Properly heated milk flows through the forward flow section of the FDD. The product then moves to the pasteurized milk regenerator section where it gives off heat to the raw product and in turn is cooled to approximately 52°F.

The warm milk passes through the cooling section where it is cooled to 40°F or below by coolant on opposite sides of the thin stainless steel plates. Finally, it moves into the storage tank filler for packaging or further processing.

Instrument description

In place of the positive displacement timing pump, the Promag 53H and associated control valve monitors and controls the

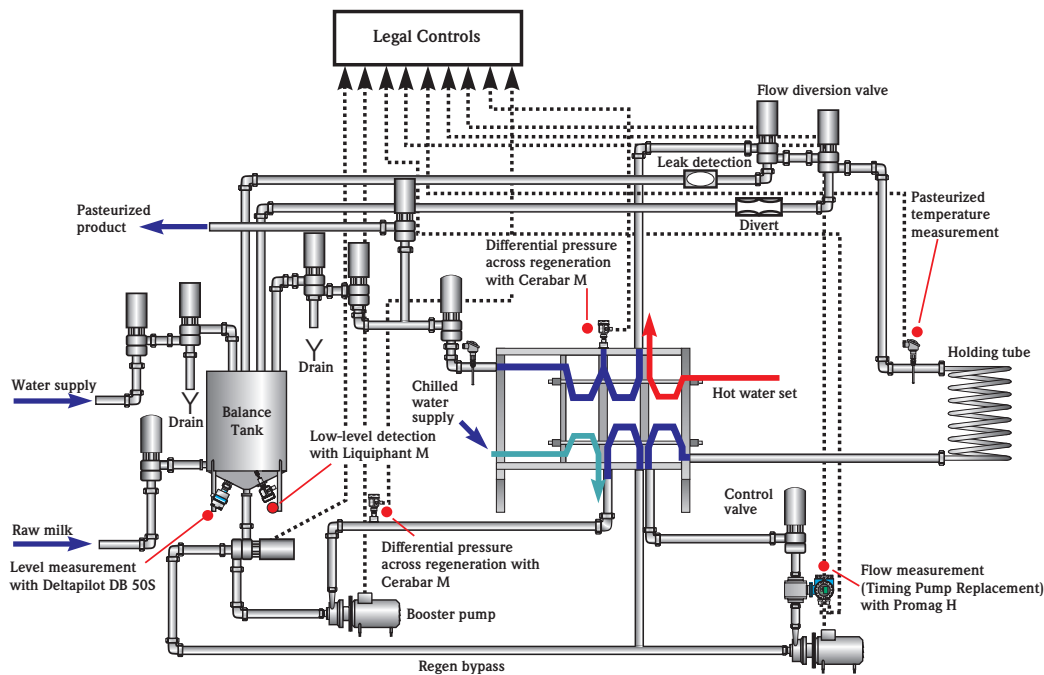
flow rate through the holding tube. In comparison to a positive displacement pump, the Promag H, working with a centrifugal pump, offers a maintenance-free system with minimal up-front costs. The largest advantage of this system is that it can be completely cleaned-in-place while the timing pump must be disassembled and cleaned away from the process.

All wetted parts of the Promag H are transfer-molded PFA and stainless steel. Its ability to be cleaned in place using hot cleaning fluid or steam at temperatures up to 300°F distinguishes the Promag H from the competition.

The Promag H is designed to fit the specific dimensions of the sanitary tubing standards found in the food industry and can be inserted directly into the milk pipe. With the Endress+Hauser magmeter, there are no dead spaces where bacterial buildup could occur.

For more information contact

Endress+Hauser, Inc.
317-535-7138
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Typical raw milk pasteurizer process

Instrument selection: Promag H
 Nominal sizes: 1/12" to 4"
 Process connections: Tri-Clamp®, weld nipples, flanges
 Interface: HART®, Profibus®, FOUNDATION™ Fieldbus, RS 485
 Minimum conductivity: 20 mS/cm
 Flow ranges: 0.015 gpm up to 1250 gpm

Other measurement capabilities from Endress+Hauser

Level measurement for the raw milk storage tanks is ideal for the Deltapilot hydrostatic pressure sanitary level transmitter.

Low level protection with the Liquiphant M vibration level limit switch, suitable for hygienic applications plus SIL 3 functional safety.

Temperature measurement using the TH 17 Pt 100 sensor, designed for use in hygienic and dairy applications.

Differential pressure with Cerabar M pressure transmitters, ideal for hygienic processes.



Promag H meets the strict 3-A sanitary requirements of the food industry

ISO 9001:2000 Certified

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