



Level



Pressure



Flow



Temperature

Liquid
Analysis

Registration

Systems
Components

Services



Solutions

Promag 53 H and Promass 83 in Milk Fat Standardization- Food

Promag and Promass provide fat standardization with precise control of cream's density and flow



Cool, fresh glass of milk



Promag 53H and Promass 83F hygienic flow meters



Milk products

Product information

The accuracy and reliability of the fat standardization system is a key component to overall product quality and cost savings of cream and standardized milk. When the cream's fat content is monitored and controlled, the resulting product is standardized to a certain percentage of fat content. Standardized cream can be remixed (recombined) with the skim to blend standardized milk. Excess cream can be turned to butter or sold.

Application description

After the initial heating of the raw milk in the first regenerator section of the HTST, the raw, whole milk, containing approximately 3.6% fat, is separated into a cream phase and a skim milk phase with a constant fat content. To reach the desired fat content of the cream, a controlled flow rate of skim milk enters the cream line in the separator. Cream is usually standardized from 35% to 50% fat. Standardized cream can then be remixed with the skim after the separator. The flow rate of the remixed, standardized cream with the skim phase determines the final milk standardization (1%, 2%). If none of the standardized cream is remixed, the final product is skim milk. In comparison, if all of the standardized cream is remixed, the end product is whole milk. By monitoring the fat content of the cream and the flow rate of remix cream,

accurate adjustment of the standardized milk is ensured.

Electromagnetic flow meters determine the flow rates of skimmed milk and cream, or mathematically infer the flow rate of a stream based on the measured flow rates of other streams. In this example, the flow rate of the skim milk is calculated by taking the difference between the flow rate of the standardized milk and the flow rate of the remix cream.

The density measurement from the Promass mass flow meter in the cream line is utilized to continuously infer the fat content of the cream. Should the fat content of the standardized cream deviate from the set point, more or less skim will be discharged through the cream line, as required by modulating the cream line discharge control valve.

An electromagnetic flow meter and shut-off valve serve as a continuous remix cream addition to the skim milk line. The standardized remix cream flow rate is controlled by modulating the excess cream control valve. Through this process, the skim milk and standardized cream adjusts to any desired product fat content, i.e. milk standardization.

The electromagnetic flow meter on the standardized milk outlet line monitors the flow rate of the standardized milk. The standardized milk enters the second half of the split regenerator section of the heat exchanger and continues through the balance of the HTST pasteurizer.

For more information contact

Endress+Hauser, Inc.
317-535-7138
www.us.endress.com

Instrument description

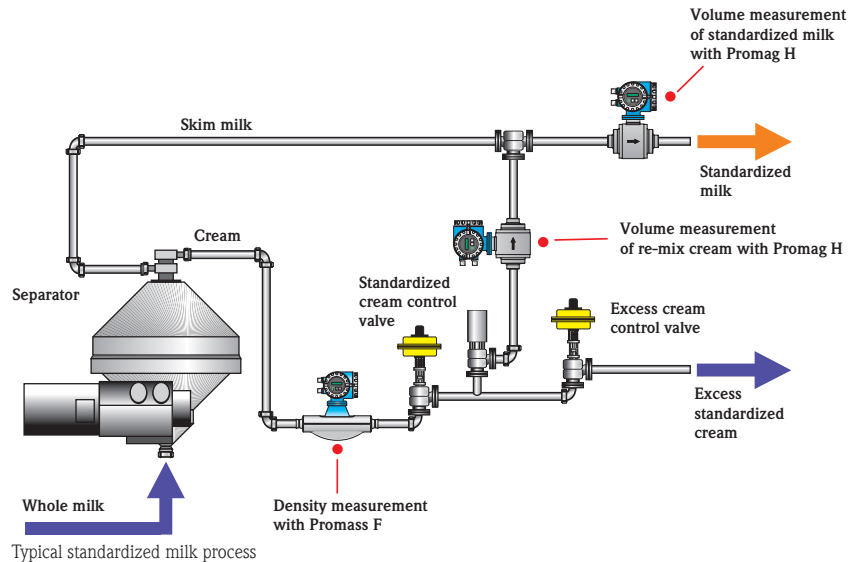
The Promass 83F mass flow meter measures the density of the cream to within 0.0005 g/cc. By using a reference table in the control system, the fat content of the separated cream can be inferred from density.

At the Endress+Hauser calibration lab, the Promass 83 mass meter is normally calibrated for density on air and water. Better than ± 0.0005 g/cc accuracy is guaranteed by performing a quick single or dual point density calibration on the cream. Endress+Hauser also offers additional calibrations for extended temperature and density ranges. This high accuracy ensures the tightest possible control over the standardization of cream without needing additional electronics to perform at such a high accuracy.

The Promag 53H magnetic flow meter controls the flow rate of standardized remix cream for the standardization of the final milk product.

Unmatched in sanitary design, the Promag 53 electromagnetic flow meter not only meets 3-A, FDA, and EHEDG guidelines, but is also designed with the same diameter as typical sanitary tubing. This ensures that no bacterial growth develops within the instrument.

Designed to handle Sterilization-In-Place (SIP) applications, the Promag H flow meter's transfer molded PFA liner can withstand temperatures up to 300°F. It is also available with a remote transmitter option for optimum functionality and cleanability in wash down conditions. The sanitary design of the Promag flow meter render it unmatched in today's market for supporting Critical Control Points (CCP) within the dairy industry.



Instrument selection:

Nominal sizes:
Process connections:
Interface:
Minimum conductivity:
Flow ranges:

Promag H
1/12" to 4"
Tri-Clamp®, weld nipples, flanges
HART®, Profibus®, FOUNDATION™ Fieldbus
20 mS/cm
0.015 gpm up to 1250 gpm

Nominal sizes:

Process connections:
Interface:
Flow ranges:

Promass F
3/8" to 10"
Tri-Clamp, flanges
HART, PROFIBUS, FOUNDATION Fieldbus, RS 485
0 to 80,860 lb/min

ISO 9001:2000 Certified

USA

Endress+Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143
Tel. 317-535-7138
Sales 888-ENDRESS
Service 800-642-8737
Fax 317-535-8498
inquiry@us.endress.com
www.us.endress.com

Canada

Endress+Hauser, Canada
1075 Sutton Drive
Burlington, ON L7L 5Z8
Tel. 905-681-9292
800-668-3199
Fax 905-681-9444
info@ca.endress.com
www.ca.endress.com

Mexico

Endress+Hauser México, S.A. de C.V.
Fernando Montes de Oca 21 Edificio A Piso 3
Fracc. Industrial San Nicolas
54030. Tlalnepantla de Baz
Estado de México
México
Tel. +52 55 5321 2080
Fax +52 55 5321 2099
eh.mexico@mx.endress.com
www.mx.endress