



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Deltapilot DB 50 S and Liquiphant M in Monitoring Milk Storage Tanks- Food

Deltapilot S hydrostatic pressure sensor and Liquiphant M level switch monitor milk storage tank levels



Storage tanks



Deltapilot DB 50S and Liquiphant M



Deltapilot mounted in tank

Product information

Worldwide, approximately 500 million tons of milk are produced annually. About 90% of the milk comes from cows, with the remainder from sheep, goats and buffaloes. Milk undergoes treatment in a dairy before consumers receive it as a refined product. Road tankers equipped with double-walled tanks collect milk from dairy farms or local collection points.

Application description

After metering and cooling occur at the receiving bay, the raw milk moves to large jacketed tanks for storage. Normal capacity for those tanks ranges from 10,000 to 40,000 gallons.

Smaller tanks are often located inside the dairy while larger tanks are positioned outside to reduce building costs. Double-wall construction reinforces the outdoor silo tanks, with insulation used between the two walls. The inner tank is made of stainless steel that is polished on the inside. The outer wall is normally made of welded sheet material.

Hydrostatic pressure sensors are often employed to monitor the level of every storage tank in the dairy. The sensors measure the static pressure represented by the head of liquid in the tank.

To prevent the formation of cream at lower temperatures, the raw milk is kept agitated at all times. This circulation process must be carried out carefully, otherwise the milk's fat globules are damaged.

A vibrating fork (tuning) provides a high level limit switch for overspill protection. If the level reaches the fill limit, the intake valve is closed and the next tank begins filling automatically. These receiving tanks are also temperature controlled at 40°F. This cooled interim storage of the milk, prior to processing, minimizes growth of microorganisms.

Instrument description

The Deltapilot S hydrostatic pressure transmitter is specially designed for continuous level measurement in liquids for the food industry. Level, volume, differential pressure, product weight, and density can all be accurately and reliably determined with the Deltapilot S.

Various features make the Deltapilot S the ideal transmitter for the dairy industry, including:

- A Contite measuring cell; water proof, continuous temperature compensation, reduced down time after SIP/CIP cleaning

- Excellent linearity (better than 0.2% of measured value)
- All common flush-mounted process connections, meets 3-A sanitary standards

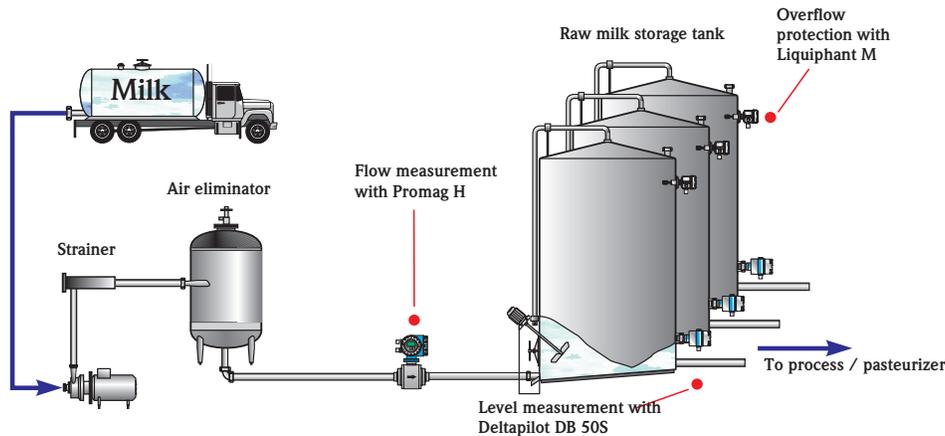
The Liquiphant M is a tuning fork used for high/low level alarms and pump protection in pipe lines. It is impervious to foam, buildup, and conductivity, and will handle viscosities up to 10,000 cP.

The small fork assembly allows for installation in pipes down to 1" while still meeting 3-A sanitary requirements. The Liquiphant M uses materials approved by the FDA and can be used in safety systems requiring functional safety up to SIL 3.

The Deltapilot S and Liquiphant M can also be used in other applications where level measurement is necessary including balance tanks on pasteurizers, ingredient inventory, and liquid absence/presence pump protection.

For more information contact

Endress+Hauser, Inc.
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Typical raw milk storage process

The Deltapilot S hydrostatic liquid level transmitter will handle cleaning temperatures up to 285°F and continuous operation at 212°F with little effect on zero stability.

Instrument selection: Deltapilot DB 50 S hydrostatic level transmitter
 Process connections: Tri-Clamp®, threaded, flanges
 Interface: 4 to 20 mA, HART®, Profibus®, FOUNDATION™ Fieldbus
 Pressure ranges: 0 to 60 psi (1662 inH₂O)

Instrument selection: Liquiphant M vibrating limit switch
 Process connections: Tri-Clamp, threaded, flanges
 Interface: PNP, relay, PFM, NAMUR, mA

Other measurement capabilities from Endress+Hauser

Flow measurement using Promag H electromagnetic flow meter to precisely meter and record the quantity of milk pumped into the storage tanks.

ISO 9001:2000 Certified

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