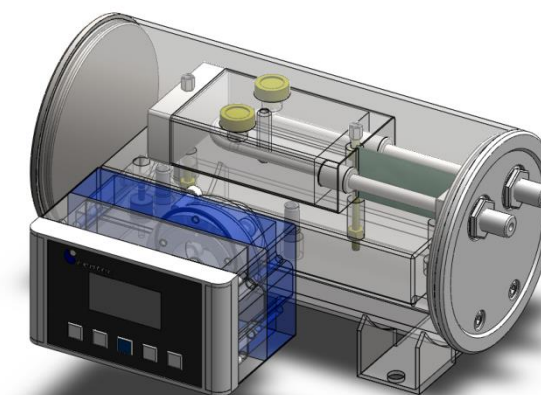


Milk Density Measurement during Milk Standardization

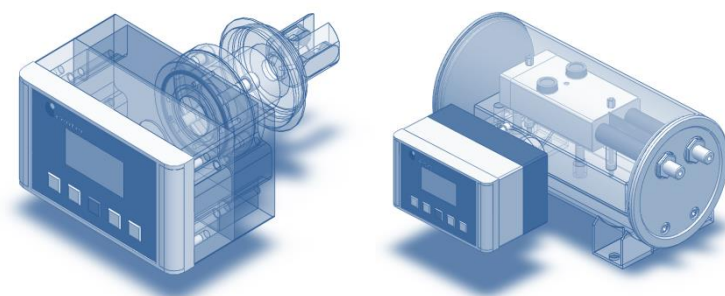
Application Report



Automated
process skids
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sensors from a
single source.
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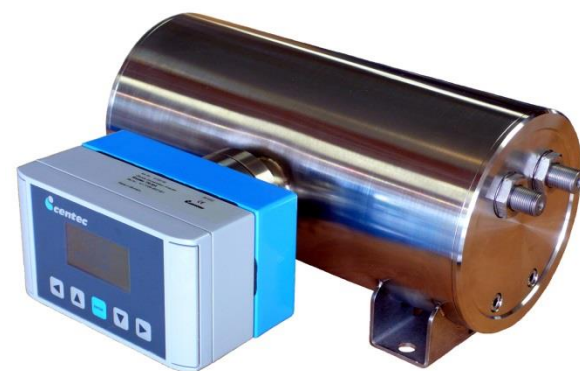
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RHOTEC

Application and Measurement Principle

Depending on breed and physical state of the cow and seasonal variations, the fat content of raw milk ranges between 3,5 and 5,0 %. It is usually higher than the fat content of consumable dairy products. During standardization the raw milk is split into skim milk and cream (fat) by a centrifuge. In order to manufacture a product with a precisely specified fat content, a certain part of the cream has to be dosed back into the skim milk. Milk is a multi-component mixture containing water, fat, proteins, lactose, etc., so it is not possible to determine the concentration of a single component like fat. Since the densities of skim milk and cream are known, the density change upon addition of fat is used to monitor and control the standardization process.

For density measurement, the multi-component liquid flows through a U-shaped tube. While the tube is electronically excited to oscillate at resonance, the oscillation frequency is observed. Any change in the fluid density has an impact on the detected signal and can thus be identified. Based on the correlation between concentration and density, the concentration is calculated and displayed.



RHOTEC
Transmitter Version

- Available as Transmitter Version with Local Display and as Sensor
- Highly Precise and Fast Determination of the Concentration
- Based on Density Measurement
- Applicable for a Huge Number of Liquids in Various Industries
- Short Response Time and Excellent Long-Term Stability
- Hygienic Execution, Full CIP Capability, Maintenance Free
- Outstanding Price-Performance-Ratio

Technical Data	RHOTEC
Measuring Range	0 - 3 g/cm ³
Accuracy	± 0,0001 g/cm ³
Repeatability	± 0,00001 g/cm ³
Response Time	≤ 1 s
Pressure of Operation	max. 50 bar
Temperature of Operation	- 25 - + 125 °C
Temperature Compensation	Pt1000
Material	1.4571/AISI 316Ti; Hastelloy C276; Monel 400; Incoloy 825; Tantalum; others on request
Connections	thread 3/8"; compatible to Varivent© Inline-Housings DN40 - DN150; others on request
Input	6 x digital (24 VDC)
Transmitter Version	
Output	3 x digital (24 VDC) & 2 x analog (4 - 20 mA)
Transmitter Version	
Profibus DP	
Transmitter Version	option
Sensor (w/o local display)	standard
Enclosure Rating	IP65
Explosion Protection	option
Ex II 2G EEx d IIC T6	
Power Supply	24 VDC