

Stable and Accurate Density Measurement to Control Fat Content in Skim Milk

Industry: Food

Product: Liquid Density Meter

Introduction

Skim milk is what remains after cream is removed from raw milk. Cream is removed to bring the fat content of the skim milk as close as possible to the lower limit of a designated range. For this purpose, control of the fat content in the cream and the skim milk is essential. The fat content in the cream and the milk has a direct relationship to their density and is controlled by the measurement thereof.

The DM8 vibration liquid density meter has high sensitivity and stability, and a sanitary detector is available upon request. The DM8 enables highly accurate control and is easy to maintain.

Expected Benefits

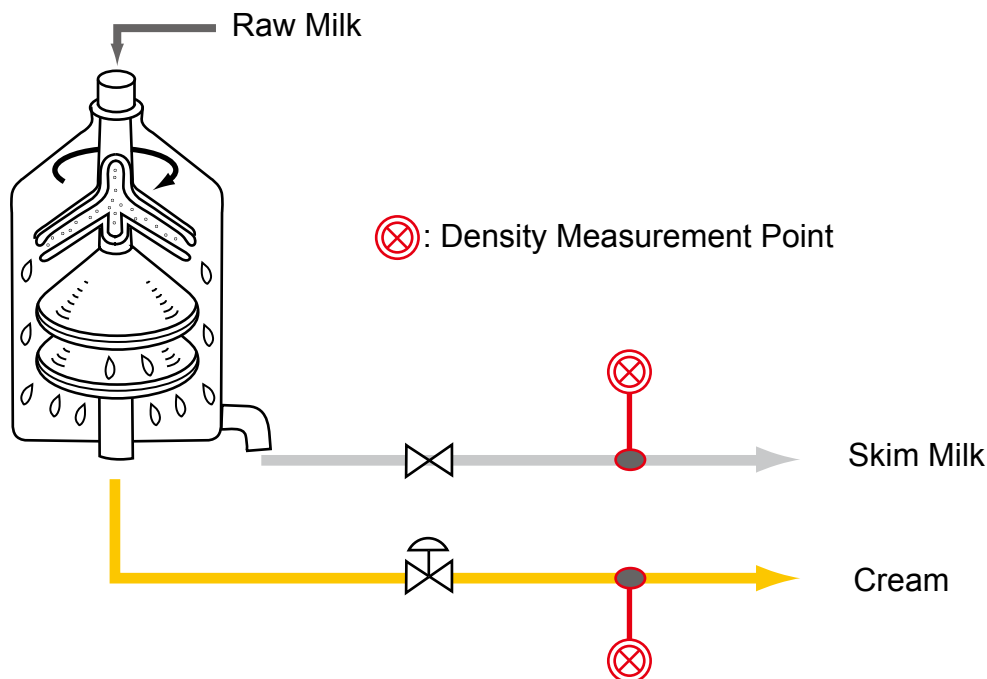
- Ensures stable and accurate measurement of liquid density
- Reduces operating and maintenance costs

Process Overview

In a cream separator the raw milk is separated into lighter cream and heavier skim milk. After passing through sterilization and cleaning processes, the cream is used to make butter and other dairy products, while the skim milk is dried to produce skim milk powder, which is widely used in confectioneries and other foods.

The fat content in the skim milk is controlled by adjusting the flow of the cream at the separator outlet. Liquid density meters are installed at two locations: one in the cream line and another in the skim milk line. The opening of the cream flow regulating valve is controlled according to the measured density values.

Cream Separator



Solution Details

Measurement System

Sanitary use detector:	VD6DS-S3*B
Converter:	DM8C-A□*B
Dedicated cable:	DM8W-L□□□□*A
Sampling system:	(provided by customer)

Field Data

Process conditions

Measurement point: Cream and skim milk lines, after cream separator

Sample temperature: 30 to 40 °C

Other conditions were not disclosed.

Utilities

DM8C converter/VD6DS detector:

Power supply (to converter): 90 to 132/180 to 264 V AC, 50/60 Hz

Power consumption: 20 VA

Notes

- A reducing clamp should be used when a sampling pipe other than JIS 6A (6 mm dia.) is used.
- The VD6SM standard sampling unit is not designed for sanitary use. For a sanitary use sampling unit, contact Yokogawa.
- Steam trace tubing is not allowed with the sanitary use detector. The vibrator's built-in temperature detector is removable.

DM8C Converter



VD6DS Detector



Feature

- The vibration density measurement principle allows high accuracy and resolution.
- The structure is maintenance free.
- The detector is more compact compared to other manufactures'.

Other applications

In addition to milk processing, liquid density meters are well suited for applications such as ice cream manufacturing overrun control.