

4B Standardiser

4B AUTOMATION | 4B SYSTEMS

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Food & Beverage Specialists in Process Automation, Equipment & Solutions

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Standardiser

System Overview:

Inline Standardisation units are used to control the fat content of the milk and cream for dairy products.



A high-speed separator supplies skim milk and cream to the standardisation unit. The skim milk fat content is a function of the high-speed separator while the cream fat content is controlled by the standardisation unit.

Automatic milk and cream standardisation are achieved using density and temperature measurements to derive and control the cream fat content. A portion of the standardised cream is then reintroduced to the skim milk. A Coriolis flow meter is used to provide the density measurement amongst others to the standardisation unit. A programmable logic controller (PLC) is used to control the system and calculates the derived values through various algorithms. A human machine interface (HMI) in the form of a touch panel allows the monitoring and control interface for the system.



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The system does not need to know the whole milk fat content supplied to it as it automatically derives this value and makes the required adjustments to the cream and standardised milk to achieve the required values.

Our system features great accuracy, excellent build quality, good return on investment, many variants to choose from and great optional features. We have developed our standardisers over many years, they are designed, manufactured and supported by our team in South Africa.

Although we have several variants available, customised solutions can be designed to the process and product requirements.

Integration to pasteurisers or one step sterilisers is available.

Technical Specification

• Accuracy for milk standardisation	**0.025%**
• Accuracy for cream standardisation	**0.25%**
• Whole milk fat content (standard design capacity)	**5.4%**
• Minimum Capacity	**3,000l/h**
• Dimensions (L x W x H)	**1100 x 600 x 2100**
• Minimum standardised milk set point	**0.5%**
• Minimum standardised cream set point	**28%**
• Minimum fat content required in whole milk	**>0.2% the milk fat set point**
• Material for product contact surfaces	**304L Stainless steel**
• Material for frame and control cabinet	**304 Stainless steel**

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Standard Features

- 20 User configurable recipes with customisable product names including the following selections:
  - Partial or Full Homogenisation
  - External cream / additive dosing
- Batching control function to produce milk and cream at the required set point and volume. Automatic tank changeover or early warning for the operator to changeover to the next tank if it is a manually operated plant.
- Sampling function allows the operator to get the average milk and cream values from the standardiser while a sample is taken of the product. This makes it easy to compare test results with the system values during the sampling window.
- Automatic detection of Separator discharge intervals if signal interface is not available.
- Auto correction of standardised milk fat content deviation.
- Profinet Communication.
- eWon remote support modem.
- Standard set of documentation (operating manual, equipment manuals, instruction manual, electrical drawings).
- Electronic manuals on Touch Screen for at hand access to information.
- Derived values for protein, solids non fat and lactose content of the milk.
- Remote control via communication interface or local control via operator input.
- Excellent hygienic design which prevent cream from being stagnant in the feedback cream line or excess cream lines when the system is producing skim milk or whole milk.



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Options

- Integration / Control of Separator / Bactofuge.
- Overflow control for open bowl separators during CIP cycles.
- Partial homogenisation function.
- Dosing of cream for high fat products / flavours / additives.
- Protein standardisation.
- Cheese yield optimisation through yield formulas for different cheese types and adjustment of standardised milk set point based on whole milk fat content.
- Flow control of pasteuriser through the addition of a flow meter and variable speed drive on the product supply pump.
- Interface with other plant equipment and control systems.
- SCADA integration.
- Constant pressure valve for the separator.

Variants

- Whey cream standardiser.
- Milk and Cream standardisation.
- Milk, Cream and Half Cream standardisation.
- Milk, Cream standardisation plus additive dosing.
- Milk, Cream standardisation plus cheese milk yield optimisation.
- Milk, Cream standardisation plus protein standardisation.
- Basic batch standardiser standardising cream and batching skim / whole milk to the standardised milk tank to produce milk at the required fat content requested.



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Process Requirements:

To ensure accuracy of the standardiser, the following is required for the plant to which the standardisation unit will be installed. These parameters need proper control and stability.

- Flow control.
- Pressure control.
- Temperature control.
- Hot milk with temperature between 45-65°C. Cold milk standardisation is also possible although a different high-speed separator is required and the standardiser is adapted.
- Separator with good skimming efficiency and consistency – Expected skim milk fat content 0.04 – 0.07%.
- Compressed air supply.

Equipment Specification:

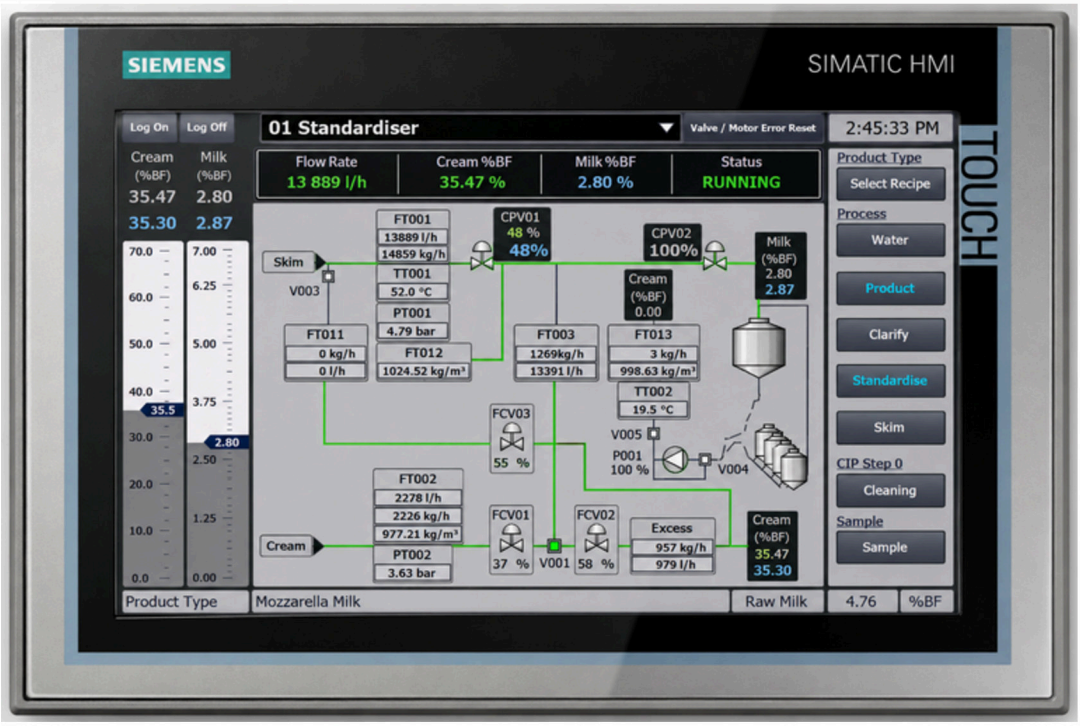
- Siemens S7 1500 PLC.
- Siemens 10" MTP1000 Unified Comfort Touch Panel.
- Siemens Panel isolator and circuit breakers.
- SMC Pneumatic equipment.
- Alfa Laval valves.
- Alfa Laval / Samson / Burkert Hygienic Control valves.
- Alfa Laval pumps for additive dosing – if required.
- Alfa Laval heat exchangers for additive dosing – if required.
- Anton Paar Coriolis Flow Meter. Density accuracy 0.0005g/ml, flow accuracy 0.1%.
- Anderson Negele Electro-Magnetic Flow meters for skim and cream re-injection. Flow measurement accuracy 0.2% ±1mm/s.
- IFM Pressure and Temperature transmitters.
- Danfoss VSD's – if required.
- Keofitt Sampling valves.



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Illustration of user interface:



Standardiser Main Screen

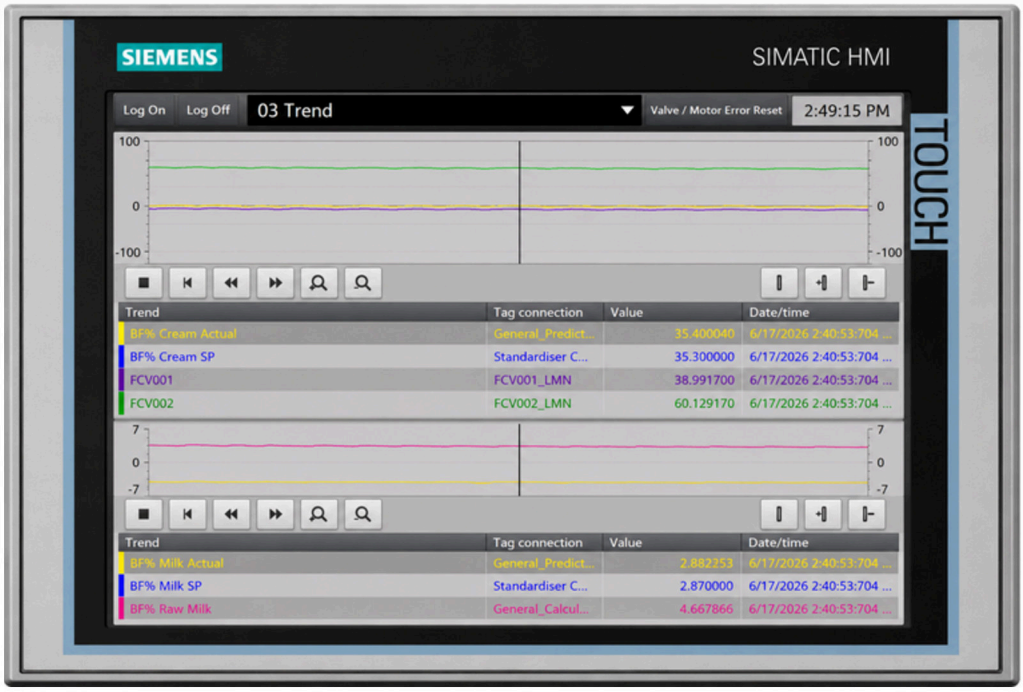


Standardiser Recipes

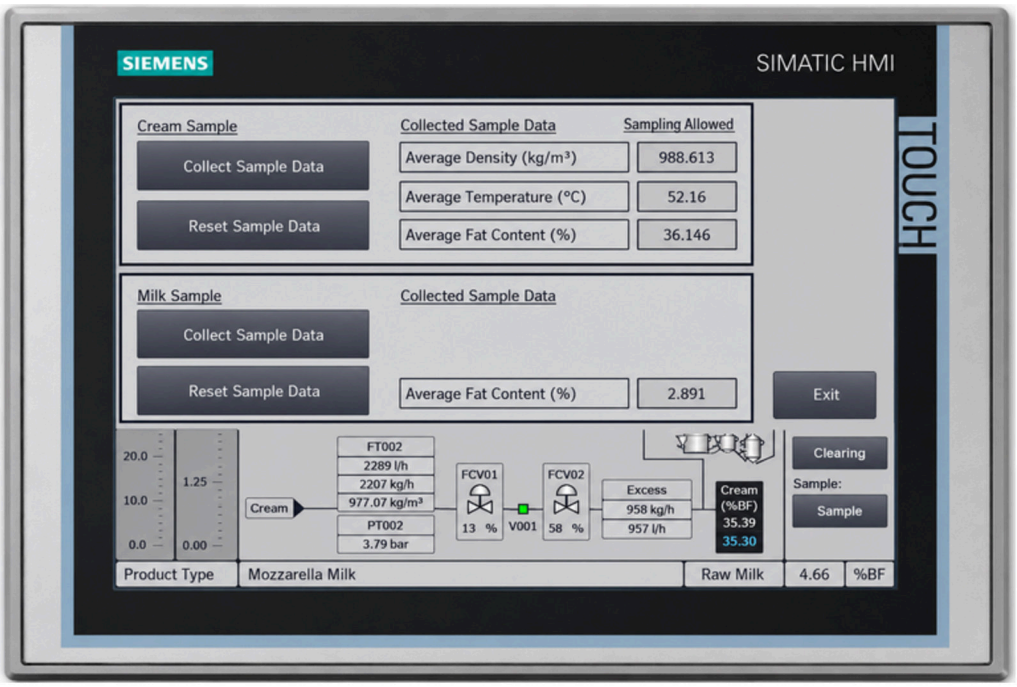


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Illustration of user interface:



Standardiser Trend



Standardiser Sampling

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One Partner. Every Layer Of Your Plant.