DAIRY SEPARATORS AND STANDARDIZATION SYSTEMS

FPS GLOBAL PARTNERS

FLUID PROCESSING SOLUTIONS

Clarifiers

Milk clarification is a very important step in milk processing when aiming for high-quality dairy products. The purpose of milk clarification is to improve the milk quality by removing solid impurities such as dirt, straw, and sand particles, somatic cells, and bacteria.

The effective separation of solid impurities is strictly linked to the viscosity of the milk: the lower the viscosity, the higher the separation effect. Hence, for clarification purposes, warm milk is preferred to cold milk and a clarification temperature of approximately 50 °C may be considered as the optimum temperature to achieve maximum efficiency. Nonetheless, especially in those areas where the raw milk quality is questionable, milk clarification can also be performed with cold milk as soon as it arrives at the dairy. In whey processing, the clarifier allows removal of the cheese fines prior to whey skimming. This leads to increased efficiency in cream separation, resulting in higher fat recovery with low and consistent residual fat content in the skimmed whey. A low residual fat content helps to optimize operation of the membrane filtration unit or evaporator that follows.

OPERATING PRINCIPLES

- The milk/whey is fed under pressure through an enclosed pipe.
- It then flows smoothly into the bowl through the feed pipe and the distributor.
- Thanks to the action of the centrifugal force, the solids are forced towards the periphery of the bowl and accumulate in the solids acceleration zone.
- The clarified milk/whey rises through the disc stack up to the centripetal pump that discharges it through an enclosed pipe.
- The accumulated solids are automatically discharged at pre-set intervals.

STANDARD SCOPE OF SUPPLY

- Clarifier with built-in, compact feed/outlet block with manual back-pressure control for models up to size 201
- Pressure gauge at clarified milk/whey discharge up to size 201
- Solenoid valves for operating the bowl's hydraulic system
- Speed sensor
- Vibration sensor
- Base in stainless steel
- Sight glass and alarm switch for lubricating oil level
- Lubricating oil temperature probe for size 301 and larger
- Stainless steel cabinet including: VFD, power section with protection, state-of-the-art PLC and HMI system
- Remote assistance via VPN module, included from size 151 and up
- Cartridge filter and pressure reducer for the operating water
- Set of special tools
- Set of basic spare parts

OPTIONS

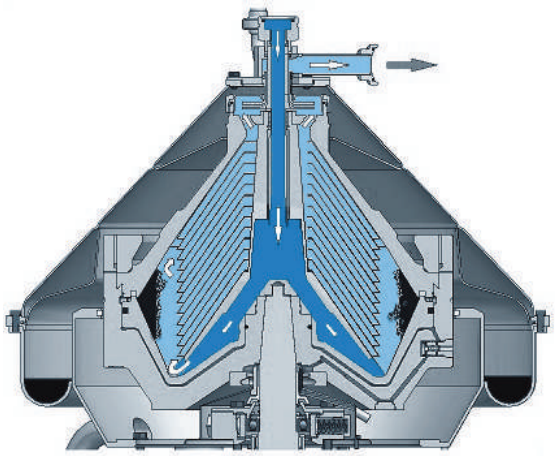
- Operating water feed unit
- Flow-rate indicator
- Manual valve for feed regulation
- Automatic back-pressure control
- Communication modules for signal exchange

TECHNICAL INFORMATION

- Feed pressure: 1 bar
- Discharge pressure: up to 4 bar
- Operating water: < 100 l/h under normal working conditions
- Product connections: DIN 11851 - SMS - CLAMP

Model	Feed capacity (l/h)	Motor (kW)
CA 21-P	3,500	4
CA 31-P	5,000	5.5
CA 41-P	7,500	7.5
CA 71-P*	15,000	15
CA 91-P*	20,000	18.5
CA 151-P	30,000	30
CA 201-P*	40,000	37
CA 301-P*	60,000	45

* available also with 3A certification



Bowl cross-section

Bacteria removal clarifiers

Bacteria removal from milk and whey significantly improves the quality of final products.

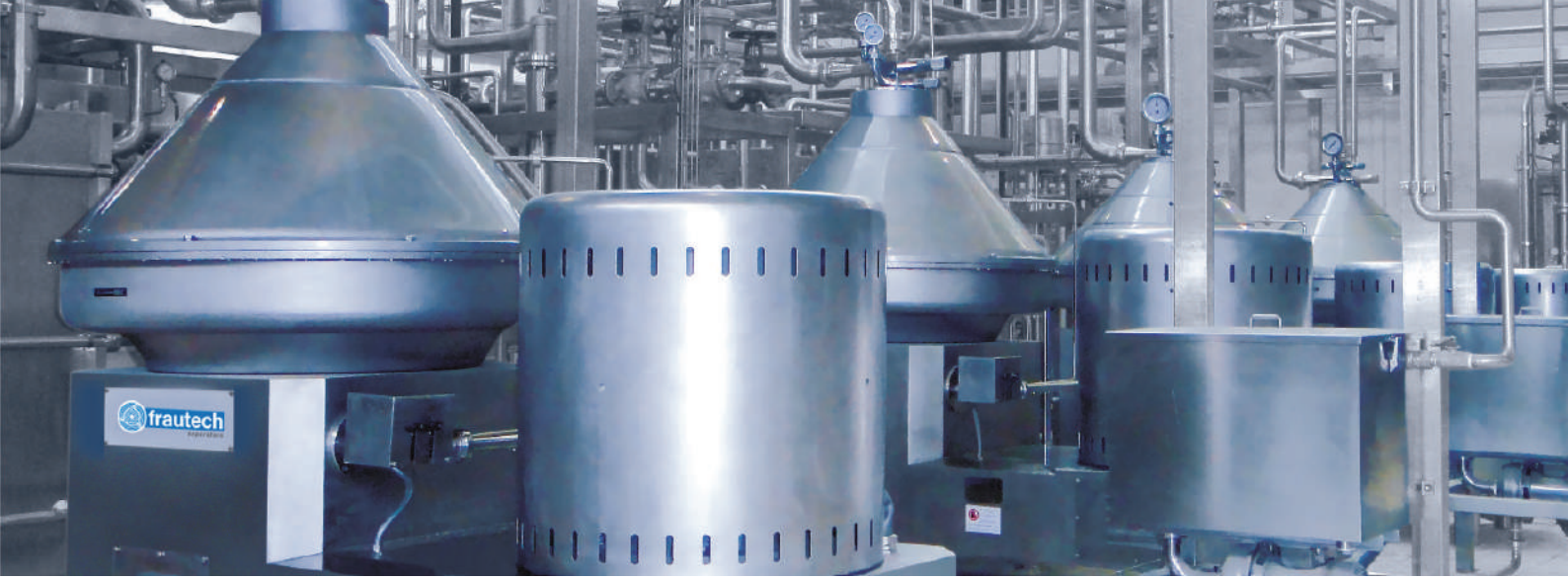
For instance, in production processes where the milk temperature does not exceed 50 °C throughout the entire process – production of raw-milk cheese for example – a higher product quality is obtained by using a bacteria removal separator. Undesirable effects often caused by bacteria, such as acid fermentation and cheese blowing, are thus avoided.

Furthermore, a reduced shelf life of soft cheese and soft cheese-based products may also be attributed to the presence of bacteria. As in the previous case, bacteria removal greatly contributes to achieving a longer life of fresh milk and a better quality of whey-derived products, such as protein drinks.

Used with warm milk/whey – ideally at 55-62 °C – for maximum separation efficiency, they guarantee the highest bacteria removal rate.

OPERATING PRINCIPLES

- The milk/whey is fed under pressure through an enclosed pipe.
- It then flows smoothly into the bowl through the feed pipe and the distributor.
- The bacteria and other solids subject to the action of the centrifugal force are forced towards the periphery of the bowl and accumulate in the solids acceleration zone before being automatically discharged at pre-set intervals.
- The clarified milk/whey rises through the disc stack and up the centripetal pump that discharges it through enclosed piping.
- The concentrate rises above the upper disc to reach the centripetal pump.
- The concentrate can either be discharged or recirculated into the bowl to further concentrate the bacteria for discharge.



STANDARD SCOPE OF SUPPLY

- Built-in, compact feed/outlet block with manual back-pressure control for models up to size 201
- Pressure gauge at clarified milk/whey discharge up to size 201
- Solenoid valves for operating the bowl's hydraulic system
- Speed sensor
- Vibration sensor
- Base in stainless steel
- Sight glass and alarm switch for lubricating oil level
- Lubricating oil temperature probe for size 301 and larger
- Stainless steel cabinet including: VFD, power section with protection, state-of-the-art PLC and HMI system
- Remote assistance via VPN module, included from size 141 and up
- Cartridge filter and pressure reducer for the operating water
- Set of special tools
- Set of basic spare parts

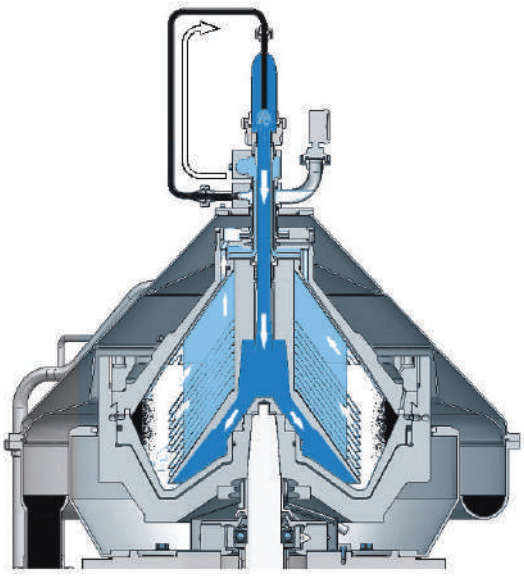
OPTIONS

- Operating water feed unit
- Flow rate indicator
- Manual valve for feed regulation
- Automatic back-pressure control
- Communication modules for signal exchange

TECHNICAL INFORMATION

- Feed pressure: 1 bar
- Discharge pressure of clarified milk/whey: up to 5 bar
- Discharge pressure of bacteria concentrate: 2-2.5 bar
- Operating water consumption: < 100 l/h under normal working conditions
- Product connections: DIN 11851 - SMS - CLAMP

Model	Feed capacity (l/h)	Motor (kW)
CA 41-D	5,000	7.5
CA 71-D	10,000	15
CA 141-D	15,000	22
CA 171-D	20,000	30
CA 201-D	25,000	37
CA 301-D	35,000	45



Bowl cross-section

Cream separators

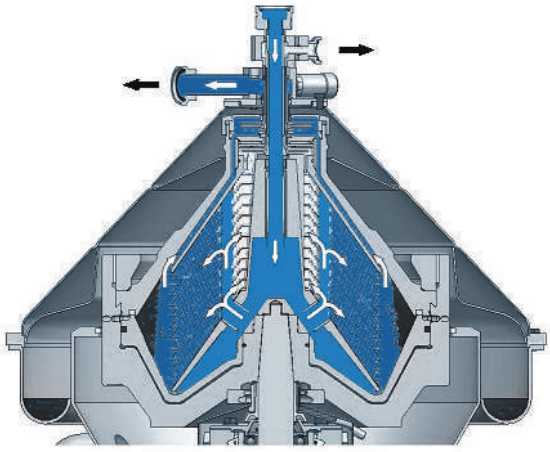
Cream separation, either from milk or whey, is a key process in the dairy industry.

In cream separation from milk, either full or partial skimming can be applied, whereas in whey processing, only full skimming is applied to recover the valuable fat that remains in the whey after cheese production.

Gentle treatment of the milk to avoid damaging the fat globules is an essential requirement that FRAUTECH SEPARATORS can guarantee thanks to the optimized design in feeding the separator. When full skimming is required, high skimming efficiency is a must, and our are designed to ensure this. Under optimal feeding and process conditions, the residual fat in skimmed milk is always at the lowest possible level, i.e. 0.05% or less. Milk fat standardization with FRAUTECH cream separators is made possible thanks to the built-in standardizing apparatus that allows fat re-mixing into the skimmed milk for manual adjustment.

OPERATING PRINCIPLES

- The whole milk or whey is fed under pressure through an enclosed pipe.
- It then flows smoothly into the bowl through the feed pipe and the distributor and starts rising through the rising channels.
- Due to the centrifugal force and the milk's higher specific weight, it is forced towards the periphery of the bowl while the cream is concentrated in the central area.
- Both skimmed milk and cream rise along their respective paths and are pumped out or leave the separator, respectively, through enclosed pipes.
- The solids are also subjected to the action of the centrifugal force and are pushed to the periphery of the bowl, accumulating in the area that holds the solids, and automatically discharged at pre-set intervals.



Bowl cross-section

STANDARD SCOPE OF SUPPLY

- Built-in, compact feed/outlet block with manual back-pressure and milk fat standardization control for models up to size 251
- Pressure gauge at clarified milk/whey discharge
- Solenoid valves for operating bowl's hydraulic system
- Speed sensor
- Vibration sensor
- Base in stainless steel
- Sight glass and alarm switch for lubricating oil level
- Lubricating oil temperature probe for models CA 301 and larger
- Stainless steel cabinet including: VFD, power section with protection, state-of the-art PLC and HMI system
- Remote assistance via VPN module, included from size 131 and up
- Cartridge filter and pressure reducer for the operating water
- Set of special tools
- Set of basic spare parts

OPTIONS

- Operating water feed unit
- Flow rate indicator
- Manual valve for feed regulation
- Automatic back-pressure control
- Automatic cream concentration control
- Communication modules for signal exchange

TECHNICAL INFORMATION

- Skimming temperatures: 50-58 °C for warm milk; 35-45 °C for whey
- Skimming efficiency: < 0.05% residual fat (measured by Röse-Gottlieb method) under optimum feed and process conditions
- Feed pressure: 1 bar
- Discharge pressure of skimmed milk: up to 4 bar
- Discharge pressure of cream: up to 2.5 bar
- Operating water consumption: < 100 l/h under normal working conditions
- Product connections: DIN 11851 - SMS - CLAMP

	Capacity			
Model	**Warm milk skimming (l/h)**	**Warm milk standardization (l/h)**	**Whey skimming (l/h)****	**Motor (kW)**
CA 21-T	2,000	3,000	3,000	4
CA 41-T	4,000	6,000	6,000	7.5
CA 51-T	5,000	7,500	7,500	11
CA 71-T/S*	7,500	11,000	11,000	15
CA 91-T	10,000	15,000	-	18.5
CA 131-S*	13,000	20,000	20,000	22
CA 141-T	15,000	22,500	22,500	22
CA 171-T	17.500	26,000	26,000	30
CA 201-T/S*	20,000	30,000	30,000	30
CA 251-T/S*	25,000	35,000	-	37
CA 301-S*	35,000	-	40,000	45

* also available with 3A certification

** Depending on whey type (acidity, quantity of fat globules, type of cheese, etc).

Cream concentrator

When cream concentrated to 80% is required, special separators are used. These separators ensure high efficiency in cream concentration as well as the lowest possible residual fat content in the heavy phase discharged.

TECHNICAL INFORMATION

- Cream concentration temperature: 70 °C min.
- Cream with 35-40% fat content in the feed
- High separation efficiency: residual fat in heavy phase ≤ 0.40%
- Feed pressure: 1 bar
- Skimmed cream and concentrated cream are discharged through centripetal pumps

Model	Feed capacity (l/h)	Motor (kw)
CA 41-CP	500	7.5
CA 71-CP	1,200	15
CA 201-CP	2,500	30

Butter oil concentrator

In the production of butter oil, the cream concentration stage is followed by the phase inversion process. Then the emulsion and the heavy phase (serum phase) are separated from the product by an oil concentrator, which increases the oil concentration to up to 99.5%. The reduction in free fatty acids (FFA) is obtained by washing the oil with water that is separated from it again together with the undesired FFA in an oil polishing separator. A vacuum dryer further reduces the moisture in the final product to >99.8%.

TECHNICAL INFORMATION

- Oil concentration temperature: min 95 °C min.
- Feed pressure: 1 bar
- Heavy phase and concentrated butter oil are discharged through centripetal pumps

STANDARD SCOPE OF SUPPLY FOR CP AND CO MODELS

- Built-in, compact feed/outlet block with manual back-pressure control
- Solenoid valves for operating bowl's hydraulic system
- Speed sensor
- Vibration sensor
- Sight glass and alarm switch for lubricating oil level
- Lubricating oil temperature probe
- Stainless steel cabinet including: VFD power section with protection, state-of-the-art PLC and HMI system
- Cartridge filter and pressure reducer for the operating water
- Set of special service tools
- Set of basic spare parts

OPTIONS

- Operating water feed unit
- Flow rate indicator
- Manual valve for feed regulation
- Automatic back-pressure adjustment
- Communication modules for signal exchange
- VPN-based remote assistance, from size 131 and up

Model	Feed capacity (l/h)	Motor (kw)
CA 71-CO	1,000	15
CA 131-CO	2,000	22
CA 201-CO	3,000	30

Lattomatic, the automatic milk fat standardization system

Lattomatic is an automatic milk and cream fat standardization system designed to obtain both precise control of the fat content in cream coming from the skimming separator as well as accurate standardization of the fat content in milk.

Lattomatic guarantees exact adjustment of the cream fat content in a range between 30% and 45% fat. The system can calculate and automatically adjust the fat content based on different parameters. Lattomatic enables accurate dosing of cream to the skimmed milk flow and thus, continuous production of fat-standardized milk. Surplus cream is discharged separately. Thanks to the high level of automation, parameter adjustments are possible during operation without stopping the process. The touchscreen panel is user-friendly, easy to set up, and allows direct control of all operations. Signal exchange and operating modes (CIP, water, product) can be changed easily using the higher-level control system. Lattomatic can be used to upgrade milk skimming separators and be integrated into existing systems as well as new installations.

MAIN BENEFITS

- Maximum flexibility
- Full control of the process
- Maximum accuracy
- Easy to install and operate
- High level of automation

STANDARD SCOPE OF SUPPLY

- Lattomatic, skid-mounted
- Control panel

OPTIONS

- Back-pressure control: pressure transmitter and automatic control valve at skimmed milk/whey line
- Automatic feed control for the separator

Model	Feed capacity (l/h)
Lattomatic 15	15,000
Lattomatic 30	30,000
Lattomatic 50	50,000

Crematic, the automatic cream fat control system

Crematic is an automatic concentration control system for cream coming from a skimmer for milk or whey.

Crematic is controlled by the skimmer control panel or by a dedicated control panel. The fat concentration in the cream is measured continuously, and the Crematic system guarantees constant monitoring and optimum adjustment to ensure that the desired concentration level is achieved accurately. Fast and specific control of the process parameters allows the cream concentration to be maintained at the set value, even if the fat content of the product fed to the system varies.

STANDARD SCOPE OF SUPPLY

- Mass flow meter and temperature probe with transmitter
- Pressure transmitter in cream line
- Automatic control valve in cream line

OPTIONS

- Back-pressure control: pressure transmitter and automatic control valve at skimmed milk/whey line
- Automatic feed control for the separator
- Dedicated control panel

MAIN BENEFITS

- Easy to install and integrate into existing plants
- High level of automation
- Maximum accuracy

Model	Capacity (l/h)
Crematic 10	10,000
Crematic 20	20,000
Crematic 30	30,000

Solid bowl separators, a cost-effective solution for smaller-scale milk processing

The same design criteria adopted for the large, self-cleaning separators are used for our solid bowl separators, making them extremely reliable and efficient. Ease of use and maintenance, together with sturdy construction guarantee peace of mind for our customers in terms of ownership costs and long, trouble-free life of the equipment.

FEATURES

- Large solids space to allow for extended running times
- Built-in, manual back-pressure control and milk fat standardization valve
- High-grade finish on all surfaces (wet and dry parts) for easy cleaning and sanitization

TECHNICAL INFORMATION

- Feed pressure: 1 bar
- Discharge pressure of clarified milk, skimmed milk/whey: up to 5 bar
- Discharge pressure of cream: 2-2.5 bar
- Product connections: DIN 11851 - SMS - CLAMP

STANDARD SCOPE OF SUPPLY

- Clarifer/cream separator
- Manual back-pressure control
- Manual milk fat standardization control for cream separators
- Stainless steel-clad base frame, provided with supporting legs and vibration dampers
- Pressure gauge at clarified/skimmed milk/whey discharge
- Tachometer for gear-driven models
- Frame-mounted inductive sensor for belt drive models
- Vibration sensor
- Control panel including VFD for motor control (belt drive models only)
- Set of special service tools
- Set of basic spare parts

OPTIONS

- Control panel for gear-driven models
- Flow rate indicator
- Manual valve for feed regulation

MAIN BENEFITS

- Easy installation and operation
- Long running time without interruptions for cleaning
- High separation efficiency
- Reduced ownership costs
- Peace of mind for the customer

Model	Feed capacity (l/h)	Motor (kw)
CN 10-P	1,500	1.8
CN 10-P Trolley	1,500	1.8
CN 31-P	5,000	4

Model	Warm milk skimming (l/h)	Warm milk standardization (l/h)	Whey skimming (l/h)	Motor (kw)
CN 10-T	1,000	1,500	1,500	1.8
CN 31-T	3,000	4,500	4,500	4

FPS GLOBAL PARTNERS
FLUID PROCESSING SOLUTIONS

WHAT SEPARATOR DO YOU NEED?

FPS GLOBAL PARTNERS, CORP. is a leading supplier of centrifugal separators with a wide range of models that meet production needs in many applications in the dairy, brewing and general beverage industries.
The company has offices in North America and Asia Pacific with highly qualified personnel for the design and manufacture of disc separators with the utmost attention to detail, using materials of excellent quality.
The use of electronic systems for full control of the equipment allow us to build machines with high separation efficiencies, saving operating costs and ensuring low energy consumption.
To support our customers throughout the entire lifecycle of our machineries, we rely on a global network of authorized distributors and after-sale service partners.
Whether your business is part of an international group or a local family company, our mission is the same: to provide safe, reliable, and efficient solutions that boost your productivity.

FPS GLOBAL PARTNERS
FLUID PROCESSING SOLUTIONS

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