



SEPARATION

# RELIABLE SOLUTIONS FOR YOUR DAIRY PRODUCTION

DISC STACK SEPARATORS AND  
STANDARDIZATION SYSTEMS

**ANDRITZ**

ENGINEERED SUCCESS



MORE THAN  
**100 YEARS'**  
EXPERIENCE

MORE THAN  
**3,000**  
SEPARATORS  
INSTALLED

YOUR  
**SEPARATION**  
SPECIALIST

# More than 100 years of experience in the dairy industry

ANDRITZ Frautech S.r.l., with more than 100 years' experience in the dairy industry, is one of the world's leading suppliers of state-of-the-art separators for solid/liquid and liquid/liquid separation. Our full range of separators includes clarifiers, sterilizers, milk and whey skimmers, cream and butter oil concentrators, and automatic fat and milk standardization systems. Our solid bowl and self-cleaning separators cater for capacities from 1,000 l/h to 90,000l/h. Together with our expertise, engineering know-how, and innovative thinking, they allow us to provide you with safe, reliable, and efficient solutions.

## FEATURES

- Self-cleaning separators, that can be upgraded with an automatic CIP system
- Built-in, manual back-pressure control and manual valve for milk fat standardization in cream separators
- Stainless steel-clad base frame
- High-grade finish on all surfaces (both wetted and dry parts) for optimum cleanability
- Optimized motor control for a gentle start, rapid speed recovery after discharge, and low energy consumption
- Efficient lubrication to guarantee optimum working conditions and a long bearing life
- Time-controlled ejection of solids allowing for accurate discharge adjustment

## MAIN BENEFITS

- Maximum reliability
- Easy to install and operate
- Easy to maintain
- Low total cost of ownership
- Better working conditions
- High separation efficiency



# 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**

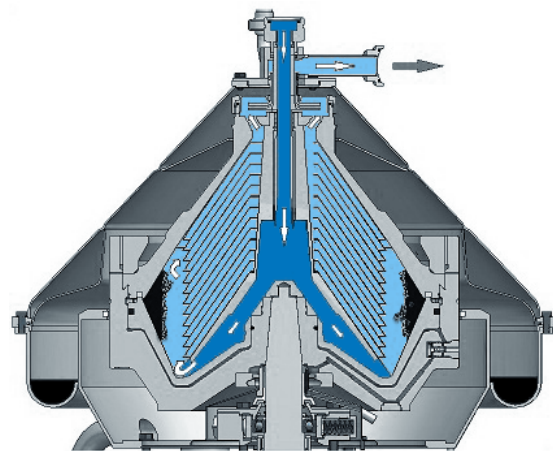
- Operating water feed unit
- Flow-rate indicator
- Manual valve for feed regulation
- Automatic back-pressure control
- Communication modules for signal exchange

**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
CA 501-P	90,000	75

\* 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

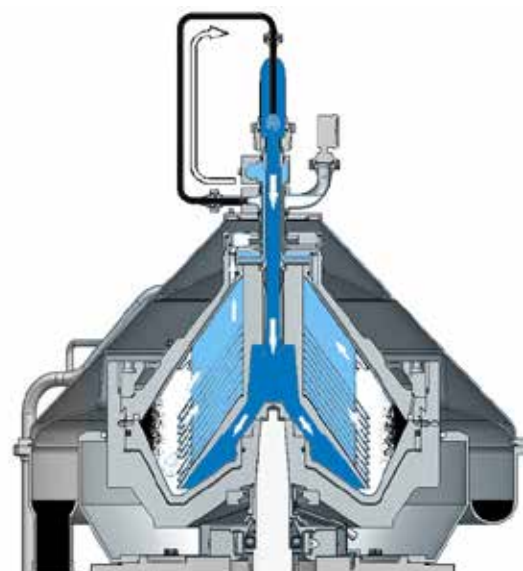
### OPTIONS

- 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
CA 501-D	50,000	75



Bowl cross-section

# Cream separators

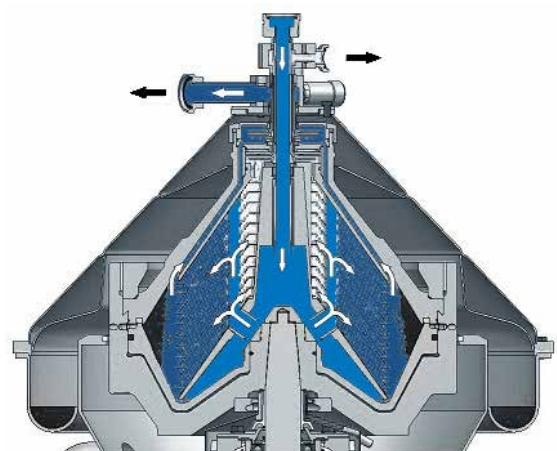
Cream separation, either from milk or whey, is a key process in the dairy industry.

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 ANDRITZ 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 ANDRITZ Frautech separators 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 ANDRITZ 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 271
- 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
CA 401-S*	40,000	-	45,000	55
CA 501-S*	50,000	-	50,000	75

\* also available with 3A certification



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

These capacities apply to 100% cow's milk. Performance may vary with different kinds of milk.

# Nozzle separator

The right equipment for soft cheese and yoghurt.

The ANDRITZ nozzle separator for the dairy industry is designed for dairy applications to increase performance and profitability through excellence in solid/liquid separation. Our state-of-the-art nozzle separators are the most reliable and efficient solution for separating Greek yoghurt, quark, or soft cheese from the whey and concentrating them.

The CNZ 601 model is offered for a capacity of 8,000 l/h total flow input and 2,000 l/h total output of cheese/yoghurt.

## OPERATING PRINCIPLES

- The continuous separation process starts when the product is introduced gently into the bowl through the feed pipe and the distributor in order to reduce shear stress on the product.
- The solids are subjected to centrifugal force and forced towards the periphery of the bowl, accumulating in the area that holds the solids.
- The concentrated cheese/yoghurt is discharged automatically and continuously through the nozzles.
- The clarified product rises through the disc stack up to the centripetal pump that discharges it through an enclosed pipe.



Nozzle separator



# 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  $\leq$  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%.

- 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

**TECHNICAL INFORMATION**

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

- 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

## 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

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
CN 50-P	10,000	11

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
CN 50-T	5,000	7,500	7,500	11





# Your full-service provider

With ANDRITZ Separation, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation systems, including such well-known brands as 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandenbroek.

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ Separation is your true full-service provider. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase predictability in operations while raising your overall production efficiency. Wherever you operate, our network of 550 service specialists and global service centers ensures we'll always be there to support you for many life cycles to come. Let's sit down and see how we could take your operations to the next level.



#### LOCAL SUPPORT

Responsive local service centers and field service technicians



#### REPAIRS & UPGRADES

Optimization of machine and process performance, repair work, retrofitting, and modernization



#### SECOND-HAND & RENTALS

Certified second-hand and rental machines



#### TRAINING

Operator training and tailored seminars for operating and maintenance personnel



#### OEM SPARE PARTS

Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



#### SERVICE AGREEMENTS

Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring



#### PROCESS OPTIMIZATION

Automation tools and process expertise to boost your profit



#### LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades





## WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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