

# Dairy separation range for sound performance

Tetra Centri® AirTight



# AirTight design for high profitability

We deliver reliable separation solutions that enable you to meet your customers' demands for high food quality and safety.

Our range of flexible separators combines high performance with cost efficiency and low environmental impact.

We call it sound performance.



For over a century, the Tetra Centri range of separators has been setting the standard for gentle and efficient separation. They meet the strictest performance requirements of modern dairies, and are available for a wide range of applications and capacities. The unique AirTight design delivers excellent product quality, superior separation efficiency and unmatched production flexibility.

### Excellent product quality

Thanks to AirTight design, the Tetra Centri separators and clarifiers, as well as Bactofuge units, treat your products very gently. The hermetic seals prevent intake of destructive air. This, combined with a smooth acceleration in the rotating hollow spindle, ensures maintained size of the fat globules and particles. With AirTight design you will, therefore, get a cleaner dairy product with fewer impurities and no increase of free fat and free fatty acid. In short, gentle treatment resulting in excellent product quality.

### Superior separation efficiency

When it comes to efficiency, no centrifugal separator is better than Tetra Centri and Bactofuge. In an AirTight separator, the separability of fat and impurities is outstanding, compared to other designs on the market. This is a result of the gentle product treatment and the fact that the product is extracted from the centre of the bowl.

The AirTight design not only enables superior skimming efficiency, but is also a real energy saver – the separator itself consumes up to 40 % less than conventional paring disc separators. That reduces the energy consumption of your overall separation system by up to 20 %. The maintained size of fat globules and particles means that a lower rpm can be used to achieve the desired separation efficiency. In addition, the centred outlet enables a higher recovery of rotational energy. You get maximum separation with minimum energy consumption.

### Unmatched production flexibility

Each AirTight separator, clarifier and Bactofuge unit handles a wide range of capacities without mechanical modification. Your benefit is that one unit can efficiently handle many capacities and recipes. The key to this unmatched production flexibility is the use of efficient product discharge pumps, a completely filled bowl and variable rpm control. For instance, the cream fat content in a hot milk separator can be increased to 60 % with maintained skimming efficiency.

All in all, the AirTight design enables sound production of sound products for any duty:

- Milk clarification
- Hot milk separation
- Cold milk separation
- Spore and bacteria removal
- Whey clarification
- Whey separation
- Anhydrous milk fat separation
- Buttermilk separation
- Quark separation

\* Data for Tetra Centri AirTight Eco is presented in a separate brochure

# Dairy separators for every purpose

## Milk clarification

The main purpose of milk clarification is to remove impurities. Many clarifiers can only be used for either hot or cold milk, but with Tetra Centri clarifiers, you can process both. The efficiency of the removal of smaller particles increases with the temperature, and the most efficient reduction of leucocytes and bacteria is achieved at 50–60 °C.

### Tetra Centri milk clarifiers

Model	Max flow rate l/h	Sediment space l	Installed motor power kW
D407*	10,000	4	11
D20	20,000	5	18.5
D25	25,000	5	18.5
D714	35,000	12	22
D45	45,000	35	37
D60	60,000	35	37
D70**	70,000	35	42
D617*	75,000	25	37/45

\* Not AirTight design

## Hot milk separation

The objective is to separate the globular milk fat from the serum, the skimmed milk. The separation process is normally incorporated into a pasteurization line and combined with a Tetra Alfast inline fat standardization system. The outgoing cream from Tetra Centri AirTight separators can contain up to 60 % fat with maintained skimming efficiency

The skimming efficiency of Tetra Centri hot milk separators has been optimized and the AirTight technology commonly produces skimming efficiency down to 0.04 %. As in all separation, the result is influenced by a number of parameters.

### Tetra Centri hot milk separators

Model	Flow rate skimming l/h	Flow rate max l/h	Installed motor power kW
H407*	5,000	7,000	11
H10	7,000	10,000	15
H15	10,000	15,000	15
H614	15,000	25,000	18.5
H714	20,000	30,000	22
H35	25,000	35,000	22
H40	30,000	40,000	25
H55	35,000	55,000	25
H60**	45,000	60,000	37
H75**	55,000	75,000	42

\* Not AirTight design

## Cold milk separation

When heating milk is undesirable and long run times are desirable, AirTight technology enables you to separate cold milk at 4–15 °C. The viscosity and characteristics of cream at low temperatures make AirTight technology the only feasible form of separation for this task – thus setting the industry standard. The performance of a cold milk separator is highly dependent on milk quality, operational temperature, flow rate, process control and selection of separator size.

The fat content of skimmed milk, for example, can go down to 0.08 % at 4 °C.

### Tetra Centri cold milk separators

Model	Flow rate skimming l/h	Flow rate max l/h	Installed motor power kW
C10	*	10,000	15
C714	*	20,000	22
C30	*	30,000	25
C40**	*	40,000	37
C50**	*	50,000	42

\* Depends on process conditions



## Spore and bacteria removal

Bactofuge units are traditionally incorporated in the pre-treatment of cheese milk, where typically butter acid spores (Anaerobic spores) are removed. Bactofuge units are also used to enhance the quality of powders, consumption milk and cream where typically aerobic spores (e.g. Bacillus Cerus) are removed.

The efficiency is stated as a percentage reduction of the incoming level of bacteria and spores. Generally, the efficiency can go up to 99 %.

For installations with high demand on efficiency, two or more Bactofuge units can go installed in series.

### Tetra Centri Bactofuge units

Model	Flow rate nominal l/h	Flow rate max l/h	Installed motor power kW
BB10	5,000	10,000	15
BM714	10,000	15,000	22
BB714	15,000	25,000	22
BM30	25,000	30,000	25
BB35	25,000	35,000	25
BM40**	35,000	40,000	37
BB45**	35,000	45,000	37
BM50**	40,000	50,000	42
BB55**	40,000	55,000	42

## Whey clarification

To maintain optimum fat separation and long run times, it is necessary to remove cheese fines from the whey before it reaches the whey separator. Installing a centrifugal clarifier upstream of the whey separator is the most efficient way to remove cheese fines. Clarification normally takes place at the same temperature as whey separation, i.e. at vat temperature.

Flow rate, fines content and production hours are important parameters in your choice of clarifier.

### Tetra Centri whey clarifiers

Model	Flow rate nominal l/h	Sediment space l	Installed motor power kW
D407*	10,000	4	11
D20	20,000	5	18.5
D25	25,000	5	18.5
D714	35,000	12	22
D45	45,000	35	37
D60	60,000	35	37
D70**	70,000	35	42
D617*	75,000	25	37/45

\* Not AirTight design

\*\* Also available in AirTight Eco design (see separate brochure)

## Whey separation

The aim of whey separation is to recover fat and make the skimmed whey as free from fat as possible, to facilitate downstream treatment and enhance the value of the whey.

When pre-clarified, the whey separation becomes more efficient, resulting in a low fat content in the skimmed whey, down to 0.03 %, depending on whey type.

Tetra Centri AirTight whey separators enable you to produce high-fat cream with a fat content above 30 % even at temperatures below 35 °C.

There are two types of whey separators: the W type and the WD type. The WD type has a clarification section in the bowl that makes it possible to utilize pre-filtered whey (without using a whey clarifier first), which has a higher fines content. This enables longer run times with a slightly lower efficiency.

### Tetra Centri whey separators

Model	Pre-filtred l/h	Pre-clarified l/h	Installed motor power kW
H407*	5,000	5,000	11
W10	7,000	7,000	15
W15	10,000	11,500	15
WD614	15,000	n.a.	18.5
W614	15,000	16,500	18.5
WD714	20,000	n.a.	22
W714	20,000	22,000	22
W25	25,000	27,500	22
W35	30,000	33,000	25
W40	n.a.	38,000	25
W50**	n.a.	50,000	37
W60**	n.a.	60,000	42

\* Not AirTight design

### Anhydrous milk fat

Anhydrous milk fat (AMF) is a product obtained from fresh raw material and has a milk fat content exceeding 99.8 %. Milk fat is concentrated in several steps up to 99.5 %, and is then vacuum treated. Butter oil is produced from raw material of varying age and contains a minimum of 99.3 % milk fat.

The raw material, cream or butter (stored or fresh), determines the number of steps required. The table below indicates machine sizes recommended for the steps.

Please get in touch with us for a discussion of process and layout suggestions for your specific demands. We are the suppliers of the highest capacity AMF lines in the world and have experience from a large installed base.

#### Tetra Centri AMF separators

Line capacity kg oil/h	Precon- centration	Final con- centration	Buttermilk reseparation
2,000	H614	A2	H10
4,000	H40	A614	H614
6,000	H55	A714	H614
14,000	H55 + H55	A14	H35
16,000	H60 + H60	A16	H40

Line capacity kg oil/h	Pre- concentration	Final concentration
2,300	From stored butter	A2
5,000	From stored butter	A614
8,000	From stored butter	A714
14,000	From stored butter	A14
16,000	From stored butter	A16

### Buttermilk separation

For separation purposes, buttermilk derived from butter production is classified as either sweet or sour.

In the separation of sweet buttermilk, a standard hot milk separator is used at its nominal flow rate. Sour buttermilk contains unstable proteins. Consequently, the general guideline is to use a whey separator or cold milk separator and process at half the nominal flow rate.

A fat content of 0.2–0.3 % in the separated buttermilk is expected after separation.

### Quark separation

Quark is a fresh cheese made from coagulated skimmed milk. In non-fat quark, the solids content normally ranges between 14 % and 22 %.

The customary separation temperature is 28 °C, and takes place immediately after fermentation. Additional heat treatment after fermentation and separation at about 40 °C increases the yield. Efficiency is calculated in terms of total yield between 3.7 and 4.2 kg milk/kg quark.

For separation of the acidified and fermented skimmed milk, nozzle-type separators are used, where the fresh cheese mass is discharged through the nozzles.

#### Tetra Centri quark separators

Model	Feed max kg/h	Installed motor power kW
Q517 SGV*	10,000	37

\* Not AirTight design



**Tetra Centri AirTight separators offer you excellent product quality, superior separation efficiency and unmatched production flexibility for a wide spectrum of applications. All in all, a sound investment in sound performance – and that enables high profitability.**

## Sound processing performance

Our job is to enable you to develop and improve your products and production.

The component solutions we deliver are specifically designed to:

- treat your products gently
- be as economical with resources as possible
- meet high demands on flexibility – in your present production and via future upgrading possibilities

That's what we call sound performance.