



## Getting the most out of milk

Alfa Laval Foodec decanter centrifuges for casein and lactose processing





## Hygiene makes the difference

Casein and lactose are two important milk by-products with considerable market potential – if they can be processed under sufficiently hygienic conditions.

Alfa Laval Foodec decanter centrifuges provide you with an efficient, profitable way to do just that – processing casein and lactose into attractive, high-value products that are in demand by the food industry worldwide.



# From excess to opportunity

The amount of cow's milk currently produced on the world market greatly exceeds consumption. There is therefore considerable interest in alternative uses for this milk.

Some of the most common cow's milk by-products – casein and lactose – are distinctive for their high nutritional value. This means that with the right equipment and know-how, casein and lactose processing can open up significant new business opportunities.

## Casein

Casein is a special form of protein that is precipitated from skimmed milk, retaining as much as 80% of the protein content of raw cow's milk.

## Lactose

Lactose is the sugar content of cow's milk, comprising glucose and galactose. It is itself a by-product of casein production and cheese manufacturing.

## The process

The raw cow's milk that is the sole source of both casein and lactose is first separated into cream and skimmed milk. The cream is used in cheese production, whereas the skimmed milk is used in producing casein. Whey from both cheese and casein can then be used to produce lactose.

To produce casein, the skimmed milk is heated and acid is added to adjust the pH level so that the precipitation process can begin. The solids are then separated from the whey. This wet casein is then dried and packaged or sent for further processing.

To produce lactose, whey from a cheese or casein plant first undergoes mechanical separation in order to remove all the solid fines in the whey. The clarified whey is then defatted, evaporated and crystallized. The lactose crystals are separated, and this lactose component is finally dried and packaged.

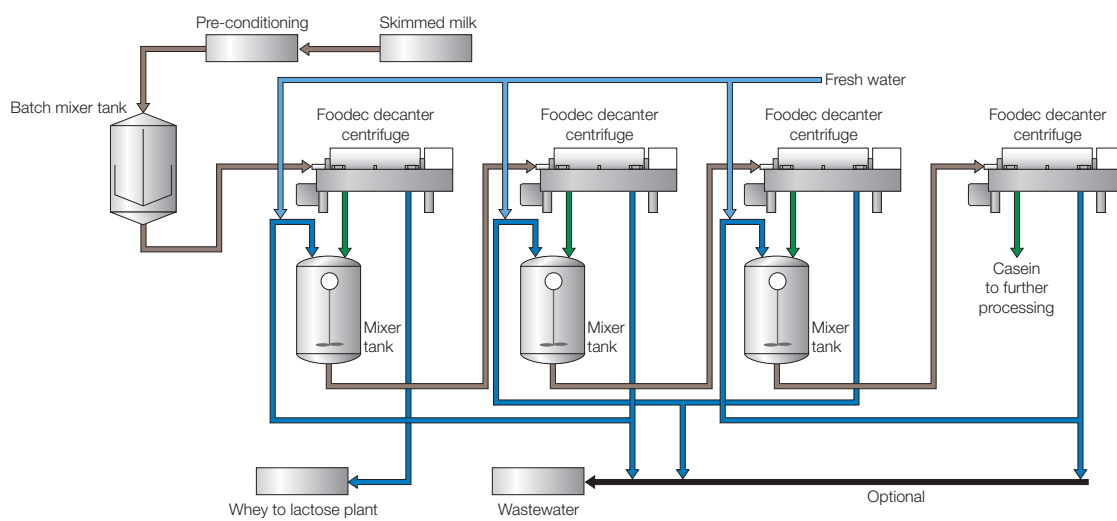
## The Foodec benefits for casein and lactose processing include

- special sanitary design to meet high hygiene standards, thus ensuring better product quality
- meticulous control, which means greater process efficiency and better quality
- up to 25% greater solids handling capacity, at no extra cost
- greater separation efficiency, which means faster processing.

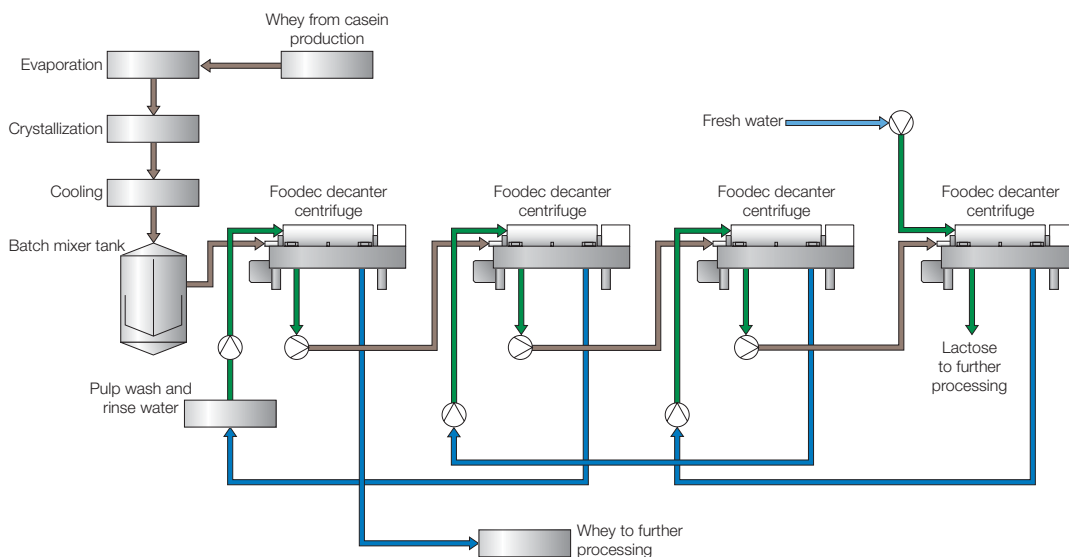




### High-efficiency process flow chart – casein production



### High-efficiency process flow chart – lactose production



#### Alfa Laval in casein and lactose processing

The production of both casein and lactose involves high levels of hygiene. The separation equipment used for dewheying and dewatering must be

able to handle high solids content and to provide a clear centrate. Purity and yield are the most important parameters, and Alfa Laval Foodec decanter centrifuges are ideal for meeting these requirements.

Any mixing with air contributes to foaming that leads to yield problems. Foodec decanter centrifuges are equipped with a special seal design and liquid discharge system that hinder any such foaming and thus alleviate any problems associated with this.



### Dewheying

Foodec decanter centrifuges are ideal for removing the whey from both casein and lactose. In this process, the focus is on

- high solids recovery rate
- good clarification
- high levels of hygiene
- easy cleaning.

The solids content for both casein and lactose is normally no less than 15%. However, the solids from casein and lactose have different characteristics and the separation equipment used for processing these two products therefore has different features.

Alfa Laval Foodec decanter centrifuges have the advantage of a complete range of features – such as the new range of Foodec conveyors – that make them suitable for both processes. Foodec decanter centrifuges are specially designed to handle high solids content, combined with the ability to control cake dryness and the specified level of solids content in the centrate.

### Washing

Washing is carried out in either one or two stages using two Alfa Laval Foodec decanter centrifuges and a method called counter-current washing. This involves re-using centrate from the discharge of each decanter centrifuge to wash and re-mix with the solids discharge. In general, this method means that water consumption can be reduced by up to 70%, compared with a co-current washing method.

Foodec decanter centrifuges are equipped with special rinse and pulp wash features that make it possible to undertake washing and re-mixing of the solids within the decanter itself, thus providing notable reductions in equipment costs. Along with the efficiency provided by the Decanter Core Controller (DCC) control system, this enables the operator to regulate the process with considerable accuracy.

### Recovery

The recovery process involves the final washing of the solids, in which clean water is used to boost the purity of the final product.

The centrate clarity and cake dryness are controlled by an advanced system that features the new Decanter Core Controller (DCC), specially developed for Foodec decanter centrifuges.

### Benefit from Foodec decanter centrifuges in your casein and lactose processing operations

The unique design of the Alfa Laval Foodec range enables you to virtually eliminate problems with oxidation and foaming, as well as maintaining high levels of hygiene and drastically reducing processing time.

The built-in advantages and benefits of Foodec decanter centrifuges include

- special sanitary design that enables you to match stringent FDA, 3A and USDA standards. The Foodec design also focuses on ease of cleaning
- a new drive and control system that gives you even better control over the separation process, to help you boost the quality of the end product
- better solids transportation that enables you to boost solids handling capacity by up to 25% compared with all other designs currently available – at no additional cost
- greater separation efficiency, which means faster processing.

### **Alfa Laval in brief**

Alfa Laval is a leading global provider of specialized products and engineered solutions. Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

### **How to contact Alfa Laval**

Up-to-date Alfa Laval contact details for all countries are always available on our website at [www.alfalaval.com](http://www.alfalaval.com)

