Alfa Laval Centriflow system

A continuous wet rendering method for processing soft fatty tissues

Introduction

Alfa Laval Centriflow plants provide a gentle but efficient way to process all types of soft fatty tissue, including rind and connective tissues. This low-temperature process is a totally closed system that is especially suitable for processing edible raw materials into products intended for human consumption.

Applications

- Pet food processing
- Fish and seafood processing
- Meat and poultry processing

Benefits

- Short heating sequence
- Continuous processing
- Easy operation
- Constant high quality end products

Working principle

The constant flow of raw materials into the Centriflow system is imperative to maintain optimal conditions throughout the process. The minced raw material is pumped to the specially designed melting unit after final mincing, which enables a short and effective melting process by adding direct steam.

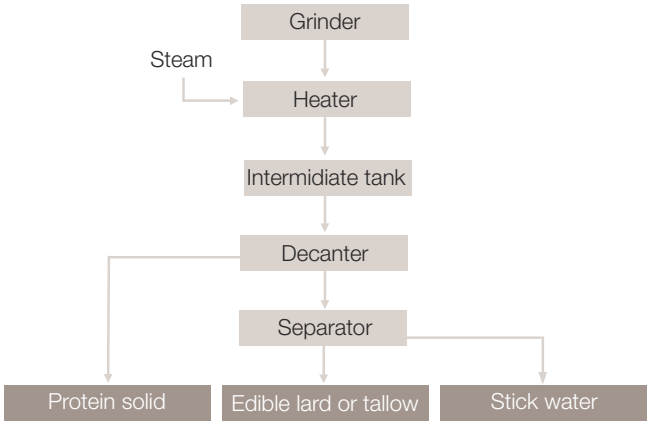
From the agitated melting tank, where direct steam injection keeps the temperature in the range 65–85°C, the melted material is passed to an Alfa Laval two-stage decanter centrifuge for immediate separation of the meat protein substance from the process liquid. This minimizes the contact time between meat proteins and fats at high temperatures. The meat protein greaves normally leave the decanter centrifuge with fat contents of 6–10%, depending on the type and quality of the raw material.

The process liquid from the decanter centrifuge is led to an intermediate buffer tank before pumped to the final separation stage. On the way to the self-cleaning Alfa-Laval disc stack separator, the temperature is raised still further to 90–95°C to facilitate separation. High centrifugal forces in the separator split the process liquid into three different phases – fat, process water and residual fines (solids). The latter can be recirculated to the start of the process, if required. Precise, constant cooling is a must for the retail packaging of fat. Alfa Laval Centricool plants provide superior temperature control, which is the key factor in efficient fat-packaging procedures.

Design

Centriflow plants can process all types of soft fatty tissues at rated throughputs ranging from 2 to 10 t/h. When materials with high rind content are processed, reduced throughputs (20–40% less) are imperative for effective melting. Because of its logical, compact design, a Centriflow plant requires minimum space. It can be easily fitted into existing buildings, and is easy to operate and maintain.

Full automation – ensuring optimum processing conditions at all times – is a readily available option with Centriflow. The ability to log process data, combined with fully continuous processing, creates new opportunities for boosting the quality assurance level of your products at reasonable cost.



Options

- **Stick water evaporation**
  The water-soluble protein fraction in the process water can be recovered as a protein concentrate by applying the compact, high-effluent AlfaVap™ cassette evaporator. This concentrate can then be used as a flavour component, or can be added to the solids fraction ahead of the dryer.
- **Greaves defatting**
  Demand for low-fat products is constantly increasing, both in products for human consumption and in pet foods. Alfa Laval special defatting units are applicable as an integrated part of a Centriflow plant, or they can be installed at any subsequent time. Typically, fat levels in such a plant will be reduced by about 50 per cent.
- **Greaves cooling**
  If the meat protein greaves are to be used locally, it can be most beneficial to cool the greaves to 2–3°C. Plants for this purpose include liquid nitrogen or carbon dioxide cooling, whereas cooling to approx. 10°C only requires a brine system.
- **Greaves dryers**
  Most type of dryers can be supplied. Flash dryers are preferred due to their unique short drying methods. This provides most easily digestible protein powder, which is especially suitable for edible meat and poultry meal.

Technical data

Typical products from Centriflow	Solids-TS (%)	Fat (%)	Moisture (%)
Greaves, fatty tissues	30–35	6–10	65–70
Fat		99.8	<0.2

Approximate throughputs and consumption figures				
Plant type		**CR 3000**	**CR 5000**	**CR 10000**
Throughput	Kg/h	2500–3400	4500–6000	9000–12000
	Lbs/h	5,500-7,500	9,900-13,200	19,800-26,400
Consumption	kWh/h	73	102	198
	HPh/h	98	137	266
Steam	Kg/tRMH	175	175	175
	Lbs/tRMH	385	385	385
Approx. space required	Sq m	75	100	150
	Sq ft2	807	1076	1614

200000159-3-EN-GB

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