



The protein premium

Producing functional, edible proteins from fish, meat and poultry by-products



Prime protein

Leftovers into high-value products

Fish and meat processing operations result in many “leftovers” of relatively low value. Most are normally turned into meat and bone meals used as commodity products or into fishmeals used as the basic components in animal feed.

However, there is now a growing worldwide awareness that such leftovers and other raw materials can instead be a rich source of high-value edible proteins with a wide range of attractive uses and considerable commercial potential.

The protein premium

The market for edible proteins in all their many forms is increasing rapidly. Growing numbers of food producers consider dried protein powder with 80–90% protein and as little as 6–10% fat an extremely attractive ingredient – for functional, nutritional and financial reasons.

The convenience food business, in particular, is a burgeoning market because the protein powder is extremely good at binding the water and fat in food products. The wet protein greaves can also be stabilized by cooling them to 3°C and then using them to replace expensive meat.

Using protein powder and wet protein greaves – from whatever source – enables food processors to provide competitively priced products that are ideal for boosting the functionality of dried products as well as for use in conventional products based on minced meat.

Know-how makes the difference

Alfa Laval can help you turn your fish, meat and poultry by-products into valuable protein fractions that represent important new business opportunities. This can provide breakthrough ways for your company to move further up the value chain.

With years of experience in supplying processing systems for edible products, Alfa Laval has built-up exceptional know-how, contacts and experience in the use of proteins as added-value ingredients.

This makes us the natural choice for companies that want to secure a results-focused working relationship with an experienced specialist in this field.



Benefits

An Alfa Laval continuous protein recovery system enables you to

- add significant value to “leftovers” and material previously considered waste
- move your company into new, high-value product segments within the food industry
- provide in-demand ingredients that play key roles in the quality of other food products
- use less energy and water in processing operations, thus cutting back on operating costs
- reduce the impact that your operations have on the environment.

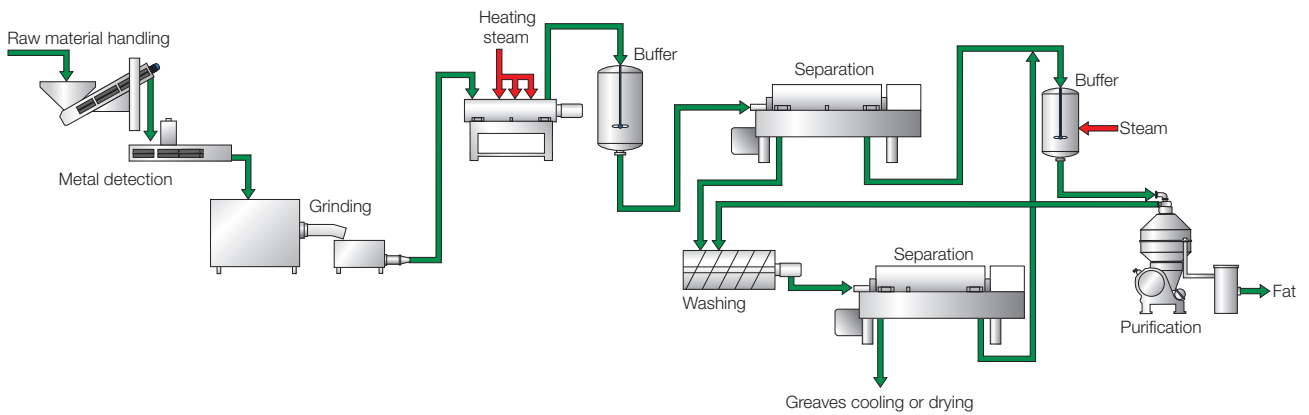


Diagram of a typical Alfa Laval continuous protein recovery system

Alfa Laval continuous protein recovery solutions enable you to process virtually all kinds of edible, boneless trimmings, connective tissue and fat that are by-products and leftovers from fish, meat and poultry.

To begin the process, the raw material is ground to make it easy to pump. Once it consists of smaller particles, it is quicker and more even to heat, and the fat is released more easily. The raw material is normally steam-heated in a closed heater unit that melts the fat, efficiently coagulating the proteins and preventing oxidation.

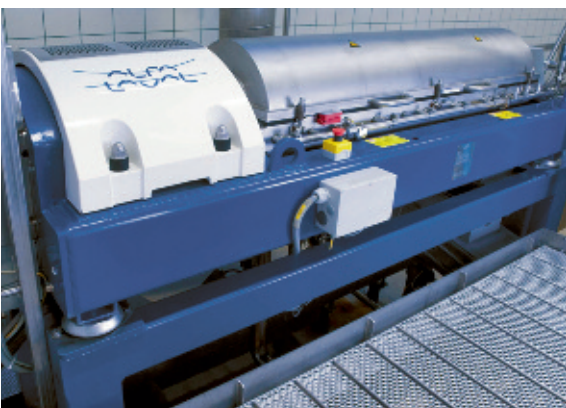
The heated material then passes to an ultra-hygienic Alfa Laval decanter centrifuge where fat and water are removed, resulting in a wet protein greaves fraction. In most cases, the wet protein greaves phase needs an additional defatting stage using stick water or hot water, before it is passed through a second decanter centrifuge that finally results in a defatted protein fraction.

The defatted wet protein greaves can either be preserved by cooling them to 3°C in an indirect cooling unit, or by being dried in special hot-air drier units with an ultra-short retention time. The result is a protein meal powder with moisture levels of about 5%.

Gently does it

To be sold as high-value products, edible protein powder or wet greaves need to be processed with great care, with minimum heat impact and avoiding other forms of shear that might affect the delicate protein chains – the source of their value.

Processing at the lowest possible temperatures and for the shortest possible time therefore ensures edible protein products of consistently high quality, with exceptional colour and low fat content. Alfa Laval protein recovery systems are designed to make sure this is done efficiently.





Low fat

There is a rapidly expanding world market for low-fat food ingredients, both for human consumption and in pet foods. Special Alfa Laval equipment can reduce the fat levels in protein powder and solids by as much as 50%.

Protein drying

Gentle drying is also essential to preserve the functionality of these delicate proteins. Alfa Laval solutions provide the gentlest drying methods available, using air at temperatures that do not affect characteristics such as digestibility or functionality, and that retain the best possible mouthfeel. Once dried, the protein powder is normally cooled so that it can be stored under the best possible conditions.

Keeping cool

When proteins are to be used directly as wet greaves to replace meat, cooling is desirable. Depending on storage time, the greaves are normally cooled to approx. 3°C before they can be stored and transported.

Alfa Laval supplies protein cooling systems with brine, ammonia or nitrogen as the cooling media, depending on plant requirements.

Hygiene

Processing fish, meat and poultry by-products into an edible protein phase requires that the end product is not contaminated in any way.

The Alfa Laval protein recovery system is therefore designed to provide an effective end-to-end hygiene regimen. It complies with even the most stringent quality requirements, and is equipped with supremely effective Cleaning-In-Place (CIP) modules for automatic cleaning of the most hygiene-critical parts of the plant.

Fats as by-product

Alfa Laval processing solutions also enable you to manufacture edible fats and oils as by-products, side by side with edible proteins. These fats and oils feature outstanding colour characteristics, low increase in free fatty acids (FFA) or peroxide value and very low moisture content. Such premium-quality fats and oils are ideal for both food products and use in the nutraceutical market.

Processing advantages add up

Alfa Laval protein recovery equipment ensures you

- effective removal of fat
- maximum processing versatility
- exceptional plant reliability
- stringent hygiene management
- rapid, gentle processing that ensures maximum protein functionality
- an easy upgrade/extension path to cope with changing needs.

Stick water evaporation

Alfa Laval equipment also makes it possible to extract product value from the stick water, by concentrating proteins dissolved in the water into a commercially attractive product.

Evaporation takes place in a special rising-film evaporator that has only a gentle effect on the proteins, thus maintaining the good flavour.



Edible protein products represent an increasing market value – and open up a wide range of new commercial opportunities for companies that can produce them efficiently.

Processing these proteins with due care requires specialist processing lines and product know-how. And, of course, a reliable supply of the necessary source material.

Fish, meat and poultry by-products and “leftovers” are one major source, and Alfa Laval processing systems are the most effective way of turning these into high-value edible protein products.



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