The building blocks of profitability

Maximize reliability and yield with Alfa Laval protein, fat and oil recovery systems
Step up your game

Alfa Laval is one of the world’s leading suppliers of equipment and complete production lines for clarification, extraction, dewatering and fat recovery in fish, meat, vegetable protein and dairy processing. Companies across the globe rely on our products and solutions to recover high-quality proteins, oils and fats in a cost-efficient way.

The protein business is highly competitive, and to be profitable you need to maximize quality and yield while keeping operating costs low. At Alfa Laval we have more than 30 years’ experience from designing rendering, fat melting and protein recovery systems. We know how you can reduce your environmental impact and get the extra percent of product out of your raw material that make all the difference to your bottom line.

Please contact us at protein@alfalaval.com or visit www.alfalaval.com to learn more.
Innovating processing technology since 1883

Ever since Gustav de Laval founded Alfa Laval in 1883 and started manufacturing separators, we have been at the forefront of the development of processing technology. Over the years the company has grown and we have expanded our scope of applications, but one thing remains unchanged – our focus on performance, reliability and customer satisfaction.

Providing state-of-the-art solutions
Alfa Laval is active in many different industries and you can find our equipment in all sorts of processes – from breweries to power plants.

We are the world’s leading supplier of complete process lines for recovery of edible protein from fish, meat and vegetable sources. We supply components, complete skid-mounted modules and process lines for clarification, extraction, dewatering and fat recovery.

Optimizing our customers processes.
Time and time again.
We help customers around the world optimize their operations and continuously improve their processes. Our long experience, deep process knowledge and wide product range means we can help you get the most out of your raw material.

Core technologies
All our solutions are based on Alfa Laval’s three core technologies:

Heat transfer – We offer a wide range of highly efficient heat exchangers that help you cut energy costs and improve production in all types of heat transfer duties, including heating, cooling, evaporation, condensation and even steam generator systems.

Separation – Alfa Laval high-speed disc stack separators and decanter centrifuges are perfect for separating two liquids from each other, or solids from one or two liquids.

Separators are mainly used for purifying liquids, and decanter centrifuges are commonly used for defatting and/or dewatering solids. Alfa Laval decanter centrifuges are available in two or three phase designs. In the separation category we also offer membrane filtration systems and strainers.

Fluid handling – Our range of valves, pumps, pipes, fittings, tank cleaning equipment and agitators have been specifically developed for industries with stringent hygiene requirements.
A global partner to the industry

We are here to support you from the first idea stage and throughout the entire lifetime of your plant. We supply complete process lines, modules or individual components, and our global team of process experts are glad to assist you with good advice and inspiration. Our service organization helps you secure top-level performance that keeps you competitive throughout your equipment’s lifecycle.

Supporting you all the way
Partnering with Alfa Laval gives you access to all the resources you need to succeed in the protein recovery industry.

We can help you in all development phases, from design to testing. Our global team of process experts helps you get the right equipment to match your specific needs and operating conditions.

Once you have decided which equipment to use we can supply you with individual components, skid-mounted modules or complete process lines. We are also happy to assist with start-up and commissioning, training and service.

Global centre and regional hubs
Being close to our customers is important for us and this is reflected in the way we are organized. Our central and regional process experts support your local sales representatives. This decentralised way of working ensures you get the best possible local support and have access to world-class process knowhow.

Extending performance
Alfa Laval Service provides all the services you need to ensure top performance over the whole lifecycle of your equipment and maximize your return on investment.

With Alfa Laval as your service partner you get the peace of mind that comes from knowing your machinery is in the hands of dedicated professionals. We make sure your equipment and processes are optimized so that you keep your competitive edge and benefit from maximum uptime.

Our Performance Agreements are tailor-made service solutions that can include any combination of our services. A Performance Agreement gives you true security and advance knowledge of your service costs.

With service centres, field service engineers and service partners in nearly 100 countries, Alfa Laval is in easy reach of your operations. Dedicated specialists are ready to assist you whenever you need help.
A wide range of advanced process solutions

<table>
<thead>
<tr>
<th>System</th>
<th>Grade</th>
<th>Raw material</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Food</td>
<td>Feed</td>
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<tr>
<td>CentriFlow</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image2" alt="Feed" /></td>
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<tr>
<td>Wet rendering - commonly known as “fat melting line” or “whole fish decanting”</td>
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<td>Fish Liver Oil Plant</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image5" alt="Poultry" /></td>
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<td>Oil recovery from fish liver, usually from whitefish</td>
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<tr>
<td>CentriBone</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image3" alt="Technical" /></td>
</tr>
<tr>
<td>Production of primarily food-grade bone chips or gel bones</td>
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<td></td>
</tr>
<tr>
<td>CentriBlood</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image3" alt="Technical" /></td>
</tr>
<tr>
<td>Blood meal production from raw whole blood or haemoglobin</td>
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<td></td>
</tr>
<tr>
<td>CentriSkim</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image3" alt="Technical" /></td>
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<tr>
<td>Recovery of oil and fats from industrial waste water streams. DAF followed by a 3-phase decanter</td>
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<td></td>
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<tr>
<td>Surimi Plant</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Surimi production, primarily from filleted whitefish</td>
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<td></td>
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<tr>
<td>Fat Reduced Meat Plant</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
</tr>
<tr>
<td>Low-temperature, mechanical meat defatting for reduction of excess fat and/or recovery of high-grade oils/fats</td>
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<td></td>
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<tr>
<td>AlfaBlood</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<td>Plasma recovery from whole blood using a high-speed separator</td>
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<tr>
<td>CentriFine</td>
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<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Final purification of recovered oil or fat using a high-speed separator</td>
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<td>VegPro80</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Recovery of protein concentrates, fibres and carbohydrates from vegetable protein sources</td>
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<tr>
<td>VegPro90</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Recovery of protein isolates, fibres and carbohydrates from vegetable protein sources</td>
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<tr>
<td>HyPro Plant</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Protein concentrate recovery from soft and/or bone material or feathers through thermal/enzymatic hydrolysation with water and/or enzymes</td>
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<td>Silage Plant</td>
<td><img src="image1" alt="Food" /></td>
<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Conversion of by-products, e.g. from fish, to animal feed using acid hydrolysation</td>
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<td>CentriMeal</td>
<td><img src="image1" alt="Food" /></td>
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<td>Conventional dry rendering using press technology</td>
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<tr>
<td>CentriMealEco</td>
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<td><img src="image7" alt="Vegetables" /></td>
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<tr>
<td>Upgrade for dry rendering plants. Production is optimized by connecting a CentriFlow upstream of the existing process.</td>
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<td></td>
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<tr>
<td>End product</td>
<td>Grinding</td>
<td>Direct heating</td>
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<tr>
<td>-------------------------------------------------</td>
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<tr>
<td>Oil/fat, meal or greaves</td>
<td>Grinder</td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td>Macerator</td>
<td></td>
</tr>
<tr>
<td>Gel bones and fat or bone meal</td>
<td>Pre-breaker and grinder</td>
<td>Raw material heater with conveyor</td>
</tr>
<tr>
<td>Blood meal</td>
<td>Macerator</td>
<td></td>
</tr>
<tr>
<td>Oil/fat and meal</td>
<td>SH heater</td>
<td></td>
</tr>
<tr>
<td>Surimi</td>
<td>Mincor / refiner</td>
<td></td>
</tr>
<tr>
<td>Texturized fat-reduced meat; high-grade virgin oil/fat</td>
<td>Mincer / deboner</td>
<td>RotaTherm (Gold Peg)</td>
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<tr>
<td>Plasma and haemoglobin fraction</td>
<td></td>
<td></td>
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<tr>
<td>Purified fat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein concentrate, fibres and carbohydrates</td>
<td></td>
<td>Hydrolyser</td>
</tr>
<tr>
<td>Protein isolate, fibres and carbohydrates</td>
<td></td>
<td>Hydrolyser</td>
</tr>
<tr>
<td>Soup/broth or extract/protein concentrate/digest and oil/fat</td>
<td>(Pre-breaker and grinder [and refiner])</td>
<td>Sterilizer – broth/soup</td>
</tr>
<tr>
<td>Silage and oil</td>
<td>Grinder</td>
<td></td>
</tr>
<tr>
<td>Oil/fat and meal</td>
<td>[Pre-breaker and grinder]</td>
<td>Dryer/sterilizer</td>
</tr>
<tr>
<td>Oil/fat and meal</td>
<td>[Pre-breaker and grinder]</td>
<td>Melting tube</td>
</tr>
</tbody>
</table>

- **Alfa Laval equipment, required**
- **Alfa Laval equipment, optional**
- **Sub-supplied equipment, required**
- **Sub-supplied equipment, optional**
Components and modules

Separation

Decanter centrifuges
High-speed separators
Membranes

Heat transfer

Gasketed plate heat exchangers
Brazed and fusion-bonded plate heat exchangers
Scraped surface heat exchangers
Tubular heat exchangers
Dry Cooler VDD

Fluid handling

Pumps
Valves and actuators
Tubes, fittings, instruments and tank cleaning equipment
Mixers and agitators

Standard and customized modules

CentriFlow – wet rendering module
SteriTherm – sterilizer module
Skid-mounted membrane filtration module
AlfaVap – evaporation module
Alfa Laval in brief

Alfa Laval is a leading global provider of specialized products and engineering 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

Contact Alfa Laval’s global protein specialists at protein@alfalaval.com. We are happy to discuss the possibilities in your plant and explain how we can help you improve your profitability.

If you wish to get in contact with your local Alfa Laval office, you can find up-to-date contact details for all countries on our website at www.alfalaval.com.
Alfa Laval is a leading global provider of specialized products and engineering solutions. We help our customers to heat, cool, separate and transport products based on oil, water, chemicals, beverages, beverages, liquid and non-heatable.

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A wide range of advanced process solutions

- **Centriflow — wet rendering module**
- **Centriflow Separator**
- **HAMMER—protein separator**
- **Hypro Plant**
- **Purified oil and grease**
- **Vegetable protein concentrate**
- **A wide variety of advanced process solutions**
- **Centriflow — wet rendering module**
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- **HAMMER—protein separator**
- **Hypro Plant**
- **Purified oil and grease**
- **Vegetable protein concentrate**

### Components and modules

#### Separation

- **Liquid separators**
- **Vacuum dryers**
- **Film dryers**
- **Vacuum dryers**
- **Dryers and dehydrators**
- **Vacuum dryers**
- **Dryers**
- **Dryers**
- **Dryers**
- **Dryers**

#### Heat transfer

- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**
- **Heat exchangers**

#### Field handling

- **Pumps and compressors**
- **Pumps and compressors**
- **Pumps and compressors**
- **Pumps and compressors**

#### Standard and customized modules

- **Standard and customized modules**
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- **Standard and customized modules**
- **Standard and customized modules**

### Support

**Supporting you all the way**

We help you to get the most out of your equipment, no matter how large or small, by providing fast, professional service, wherever you are. Support starts on the shop floor and continues through to after sales. Our local sales representatives are on hand to help you and our service centres are there to assist with all your needs.

**Global service network**

Our global service network gives you direct access to local services and support, no matter where your operation is located. Our local sales representatives and service centres work closely together to ensure that your needs are met quickly and effectively.

**Performance Agreements**

We also offer Performance Agreements, tailor-made service solutions that ensure maximum uptime and peace of mind. These agreements are based on the use of your equipment and provide a range of services, including maintenance, repair, and technical support.

**Equipment upgrade**

With a wide range of advanced process solutions, we can help you achieve the best possible results. Whether you need to upgrade your existing equipment or add new modules, we can provide the solutions that meet your specific needs and operating conditions.

**Tailored service solutions**

Our Performance Agreements are tailored to your specific needs and operating conditions. We can help you in all development phases, from design to testing. Our global team of process experts helps you to optimize your equipment and ensure that it is performing at its best.

**A global partner to the industry**

Partnering with Alfa Laval gives you access to all the resources you need to succeed. We are here to support you from the first idea stage and throughout the entire lifetime of your plant. We supply complete process lines, modules or individual components, and our global team of process experts is glad to assist you with good advice and inspiration. Our service organization helps you to secure top-level performance that keeps you competitive throughout your equipment’s lifecycle.

**Extending performance**

With Alfa Laval as your service partner, we make sure your equipment and processes perform optimally. We focus on extending performance over the whole lifecycle of your equipment and reducing your service costs. Our Performance Agreements are based on the use of your equipment and provide a range of services, including maintenance, repair, and technical support.

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