



Food logic

The essentials for future foods



The logic for success

The world is rapidly changing, and so is the pattern of global food consumption. With the global population set to reach 9.6 billion by 2050, the food industry's role has never been more important. There are clear opportunities for those companies that can adapt to the new tastes and expectations of tomorrow's population.



70%
OF PEOPLE WILL LIVE
IN CITIES BY
2050

Source: *Bulletin of the WHO, 2010*

Social trends, such as population growth, urbanization, an ageing population, and more women in full-time employment, have a major impact on dietary habits and food production. In the next 50 years, more food will need to be produced than has been produced over the past 10,000 years.

More than half of all people now live in cities, and that figure has been forecasted to rise to 70% by 2050. This means a greater focus on ready-to-eat products and foods that are convenient and easy to prepare.

The elements in place

Meeting the challenges of tomorrow's markets requires the right processing logic. A well-coordinated approach is needed, with the essential elements in place and working together.

Alfa Laval's food industry offering is designed to support your company at every step to ensure flexible and profitable production. Alfa Laval understands your processes and can meet your needs with a broad and innovative equipment portfolio. Wherever you operate, our global channel partner network is on hand to support you – from equipment selection to securing long-term performance.

Four trends affecting food production

POPULATION GROWTH

By 2050, there will be 2.7 billion more mouths to feed. More food will be needed, and there will be increased pressure on producers to reduce energy and water consumption, and to get more from available resources.

Source: *UN World Population Prospects, 2012*

AGEING POPULATION

In 2050, over 20% of the world's population (around 2 billion people) will be over 60 years old – more than twice the number in 2013. This will lead to increased demand for functional foods, convenience foods, and health-related food products.

Source: *UN World Population Ageing, 2013*

RISING LIVING STANDARDS

By 2050, 6.4 billion people will be living in cities. Urbanization, and the greater affluence associated with it, drive demand for ready-to-eat foods and greater variety, including healthy options.

Source: *Bulletin of the WHO, 2010*

MORE WOMEN AT WORK

There is a strong trend towards families where both parents work, which means less available time for meal preparation. This is another factor driving demand for ready-to-eat and convenience foods.

Source: *A.T. Kearney*

INNOVATIVE FOOD PRODUCTS WILL BE ONE OF THE
KEY DRIVERS
OF REVENUE GROWTH OVER
THE NEXT

3

YEARS.

*Source: KPMG Food and
Beverage Industry Outlook
Survey, 2013*



On the pulse of the industry

All of Alfa Laval's equipment and services for the food industry are developed with the aim of addressing four key challenges for the sector.

- Supplying products to consumers at a competitive price
- Getting the most from raw materials
- Reducing waste and emissions
- Delivering safe and hygienic products

With these always as a guiding star, we are continually working on new ways to help you achieve flexible, profitable, and sustainable operations.

The spice of life

Consumers want more from their food – greater variety, better taste and texture, as well as new combinations. Gentle product handling is essential to preserve

sensitive ingredients such as meatballs, tomato pieces, and stabilizer complexes. Alfa Laval's hygienic equipment helps to create products that are as satisfying as they are innovative.

Future foods with confidence

Alfa Laval equipment enables hygienic and effective production of a wide range of foods. Our equipment meets the challenge of complex and demanding ingredients and processes.

SALES OF
PROCESSED
FOODS
ARE GROWING RAPIDLY.
ALFA LAVAL
EQUIPMENT SECURES
EFFICIENCY
IN A WIDE RANGE OF FOOD
APPLICATIONS.



Soups and sauces

Gentle handling is required to secure product quality and integrity. There are often sensitive or delicate ingredients in soups and sauces such as meatballs, herbs, and vegetable pieces.

Alfa Laval FrontLine is a top-of-the-line series of plate heat exchangers able to meet the highest demands of hygienic control. It is designed for heat-sensitive and high-viscosity products such as soups and sauces, allowing long running times and continuous production.

Dressings and condiments

Dressings and condiments often have complex suspended ingredients. Gentle and effective mixing is essential.

Alfa Laval offers a wide range of mixing, agitation, and blending methods. The Alfa Laval Hybrid Powder Mixer is a fast and efficient way to add dry ingredients into a product mix, even with high solid content. Combining this method with the Alfa Laval Rotary Jet Mixer cuts mixing time even further, with gentle product handling.

Tomato-based products

Tomato processing results in heavy wear and tear on equipment. The high acidity and salinity demand special expertise and knowledge when it comes to materials and design.

The Alfa Laval Unique SSV Long Stroke Valve ensures minimal pressure drop and mechanical shear. For highly concentrated tomato paste, the full-bore Alfa Laval ball valves minimize pressure drop and are fully pigging prior to Cleaning-in-Place.



NOW



2050

THE WORLD WILL NEED **70%** MORE FOOD TO FEED A GLOBAL POPULATION OF 9.6 BILLION IN 2050.

Source: UN, 2013



Soy-based products

Soy is an important food worldwide. Soy products put high demands on tank cleaning, as soy-mix is aged for long periods in tanks, leading to build-up of residues.

Alfa Laval tank cleaning machines perform an efficient, high-impact cleaning pattern that removes all residues. Cleaning time is faster than with traditional equipment, and the effective cleaning pattern reduces water consumption significantly.

Baby food

Cleanability of equipment and process lines is critical. This is especially the case for ready-made baby foods and infant formula.

Alfa Laval Unique Mixproof valves provide outstanding hygiene. The SeatClean and HighClean versions have additional cleaning capabilities for solids and sticky products respectively. The Alfa Laval Rotacheck+ is a monitoring device that offers an intelligent validation of tank cleaning results.

Equipment for every need

Alfa Laval supplies a broad scope of flow equipment for any food application or process line, from small-scale productions pasteurized in the jar to continuous batch production. Whatever the complexity or demand, Alfa Laval has equipment to match it.

Soups and sauces

When it comes to soups, tradition is king. Consumers want the old favourites, but with improvements in taste and texture, and in healthier versions (such as with reduced salt). With sauces, convenience is paramount. Consumers are looking for new formulas as well as new flavours, healthy options, and gourmet products.



Alfa Laval FrontLine

Alfa Laval FrontLine is a range of gasketed plate heat exchangers that can be supplied with stainless steel frames and clip plates especially suited to challenging food-processing tasks. It can handle viscous products up to 5000 cPs and particles up to 5 mm in length.



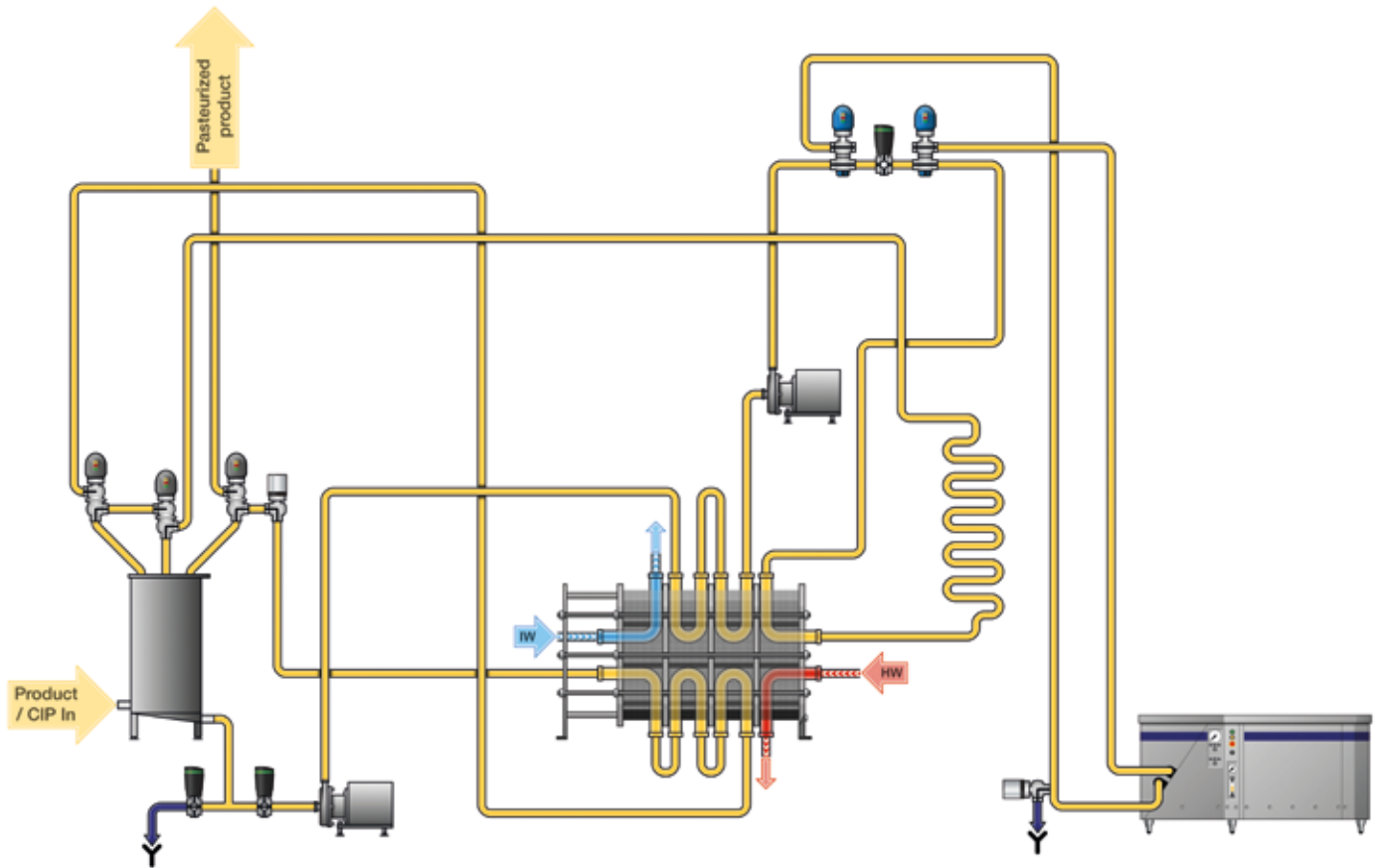
Alfa Laval LKH pumps

The wide range of high-efficiency Alfa Laval centrifugal pumps ensures that you can select the right pump for the specific task. With the optimal pump, you save energy and secure product integrity.

Combine for maximum efficiency

Using Alfa Laval FrontLine together with Alfa Laval LKH pumps optimizes their combined performance for the application. This gives higher efficiency and saves costs.

Soups and sauces



Schematic process chart

Alfa Laval rotary lobe pumps

Alfa Laval offers an extensive family of pumps with multiple rotor options. Whether the requirements are low shear or large particle handling, Alfa Laval has the right pump for every application.

Alfa Laval Unique Mixproof Large Particle Valve

Particles up to 45 mm in diameter can pass through the Alfa Laval Unique Mixproof Large Particle Valve. This avoids build-up and breakage of pieces in soups and sauces, as well as reducing pressure loss at high viscosity.

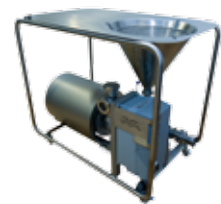
Alfa Laval Rotacheck+

With Alfa Laval Rotacheck+ you can monitor that a set number of cleaning cycles has taken place. The Cleaning-in-Place (CIP) process can thus be repeated the same way every time. Quick changeovers between batches can be achieved, reducing downtime and getting the most out of raw materials.



Dressings and condiments

Today's mealtime variety is reflected in more adventurous dressings and condiments. Spicy and exotic products are becoming more familiar on the table, while traditional foods are being reinvented with new ingredients.



Alfa Laval Hybrid Powder Mixer

The Alfa Laval Hybrid Powder Mixer features two pumps with one common drive, eliminating the need for additional pumps. Its design allows for up to 50% dry-matter content in the mix, ensuring speed and efficiency in most applications.



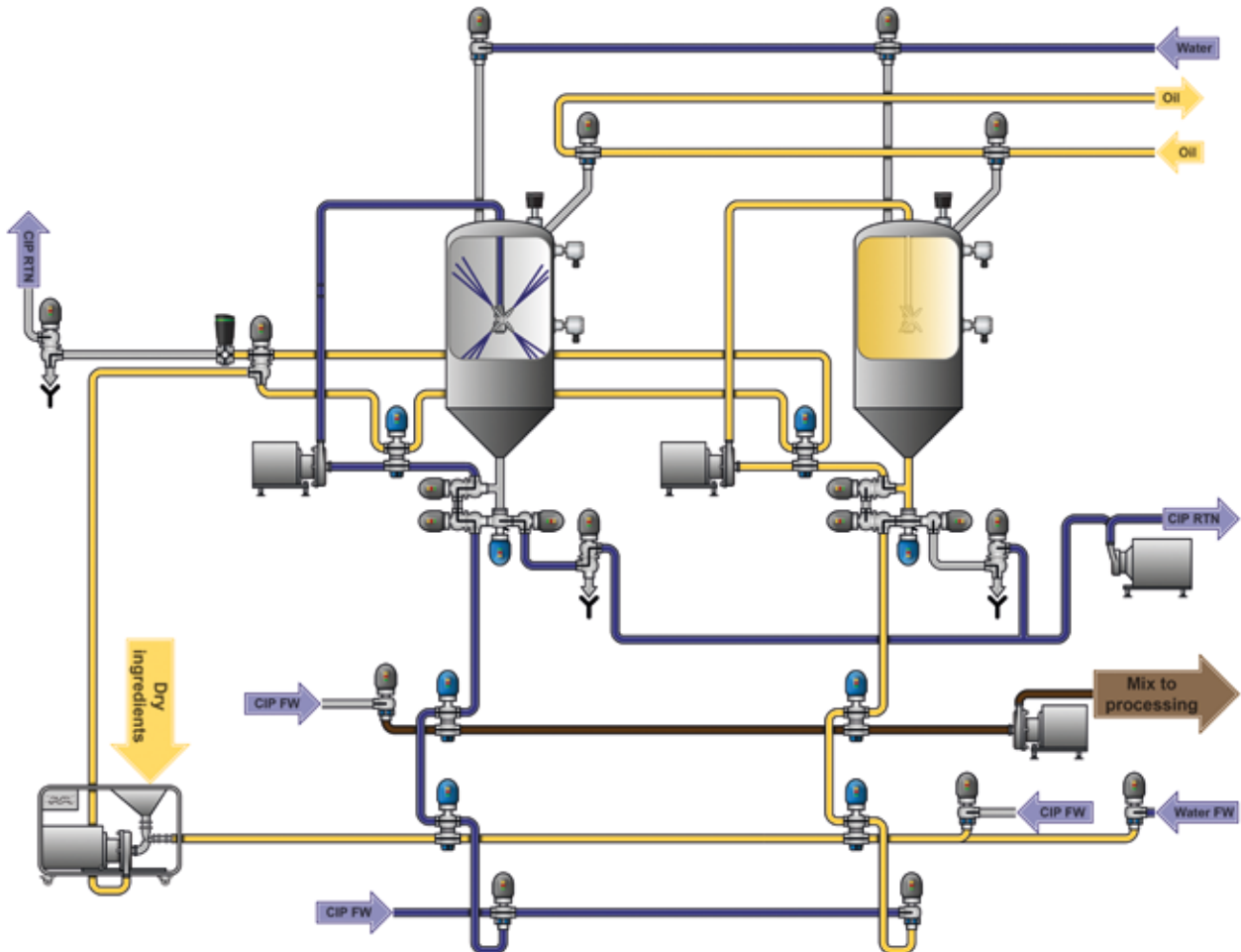
Alfa Laval Rotary Jet Mixer

Based on rotary jet head technology, the Alfa Laval Rotary Jet Mixer secures efficient distribution of liquid and dry ingredients into liquid solution in a mixing tank. Its unique design avoids breaking the surface, eliminating unwanted inclusion of air.

Combine for maximum efficiency

Combining the Alfa Laval Hybrid Powder Mixer with the Alfa Laval Rotary Jet Mixer in a connected mixing tank gives the optimum homogeneous solution at very high speed with gentle handling. The mix is distributed in effective patterns below the liquid surface, ensuring a quicker combined mixing, while minimizing recirculation in the mixing circuit.

Dressings and condiments



Schematic process chart

Alfa Laval LKH pumps

The wide range of Alfa Laval centrifugal pumps ensures you can select the right pump for every application, ensuring products and their sensitive ingredients are not compromised. The range of seals lets you match any ingredient requirement with intermediate flush on the double-seal versions.

Alfa Laval ThinkTop D30

The Alfa Laval ThinkTop D30 provides simple and reliable valve automation for less-demanding applications or for smaller process lines. Alfa Laval ThinkTop D30 makes production of dressings and condiments more cost effective, enabling a more competitive price for consumers. Setup is fast and easy with just one button to push.

Alfa Laval EnSaFoil agitators

Designed to ensure even product speed over the full length of the agitator's wings, Alfa Laval EnSaFoil combines highly efficient agitation with lower energy consumption. Shear is also reduced, which avoids damage to particles.

Tomato-based products

Tomato is the main ingredient for a wide range of products, particularly when it comes to ready-to-eat foods. New pastes with better texture are gaining popularity. Demand for healthier versions with reduced salt and sugar is increasing.



Alfa Laval Unique SSV Long Stroke Valve

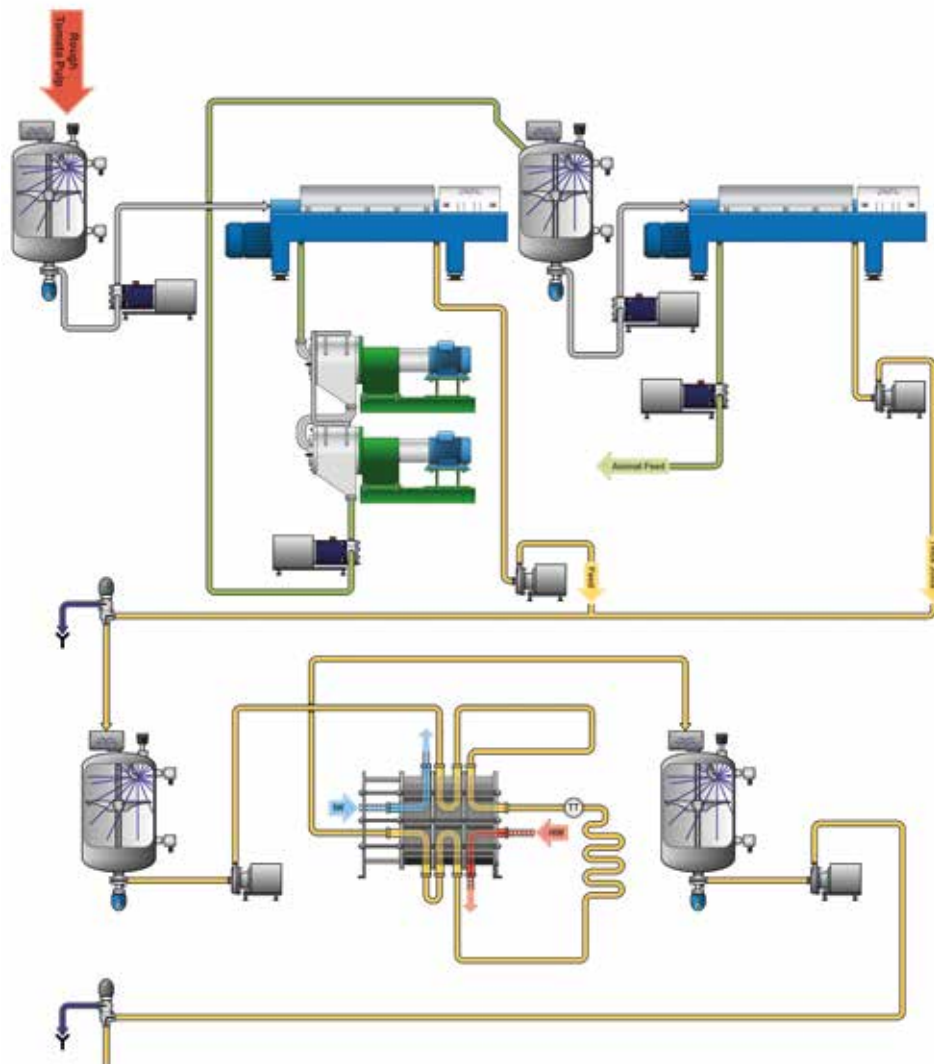
The Alfa Laval Unique SSV Long Stroke Valve ensures gentle handling of fluid products containing solids and delicate particles such as diced tomato. The design enables thorough cleaning of the valve seat during Cleaning-in-Place (CIP) and gives extended running times between CIP cycles.



Alfa Laval SRU rotary lobe pumps

Tomato-based products are particularly challenging due to their shear-thinning nature. The high volumetric efficiency and low shear design of the Alfa Laval SRU Rotary Lobe Pump makes it ideal for these challenging applications.

Tomato-based products



Schematic process chart

Alfa Laval installation materials

Alfa Laval installation materials are manufactured in the special AL-6XN alloy standard, which offers high resistance to the salinity and acidity of tomato-based products.

Alfa Laval rotary jet heads

The content of fibres, salt, and sugars in tomato-based products, combined with low pH, makes cleaning of process tanks a challenge. The high impact from the four jet nozzles of our rotary jet heads ensures cleaning is fast and efficient.

Alfa Laval ball valves

Alfa Laval ball valves allow for minimum pressure loss with high-viscosity products such as tomato paste. The full-bore opening allows a cleaning pig to pass freely.

RELIABLE ASEPTIC PROCESSING OF TOMATO-BASED PRODUCTS

Steriltom SRL is Italy's largest producer of tomato products for pizza and pasta sauces. When expanding its processing facilities in Piacenza, a new aseptic process line was needed to ensure reliable and cost-effective processing with premium product quality. Alfa Laval

Unique Single Seat valves were chosen for their ability to handle product acidity, viscosity, large particles, and seeds.

A total of 15 Alfa Laval Unique SSV Long Stroke units were installed in the new process line. These units combine gentle treatment of solids and delicate particles with outstanding cleanability.

CASE STORY:



Soy-based products

Soy-based products are increasingly popular, especially in the health and vegetarian food sectors. These include a growing range of drinks and desserts, as well as dairy-free and meat-replacement products.



Alfa Laval Rotacheck+

When producing soy sauce, the soy is aged and matured for months in ageing vats. The surface is often covered with a foam of cultures and proteins that can harden and be difficult to clean out. Alfa Laval Rotacheck+ is a simple, self-contained and self-teaching unit that ensures the cleaning cycle is carried out correctly.



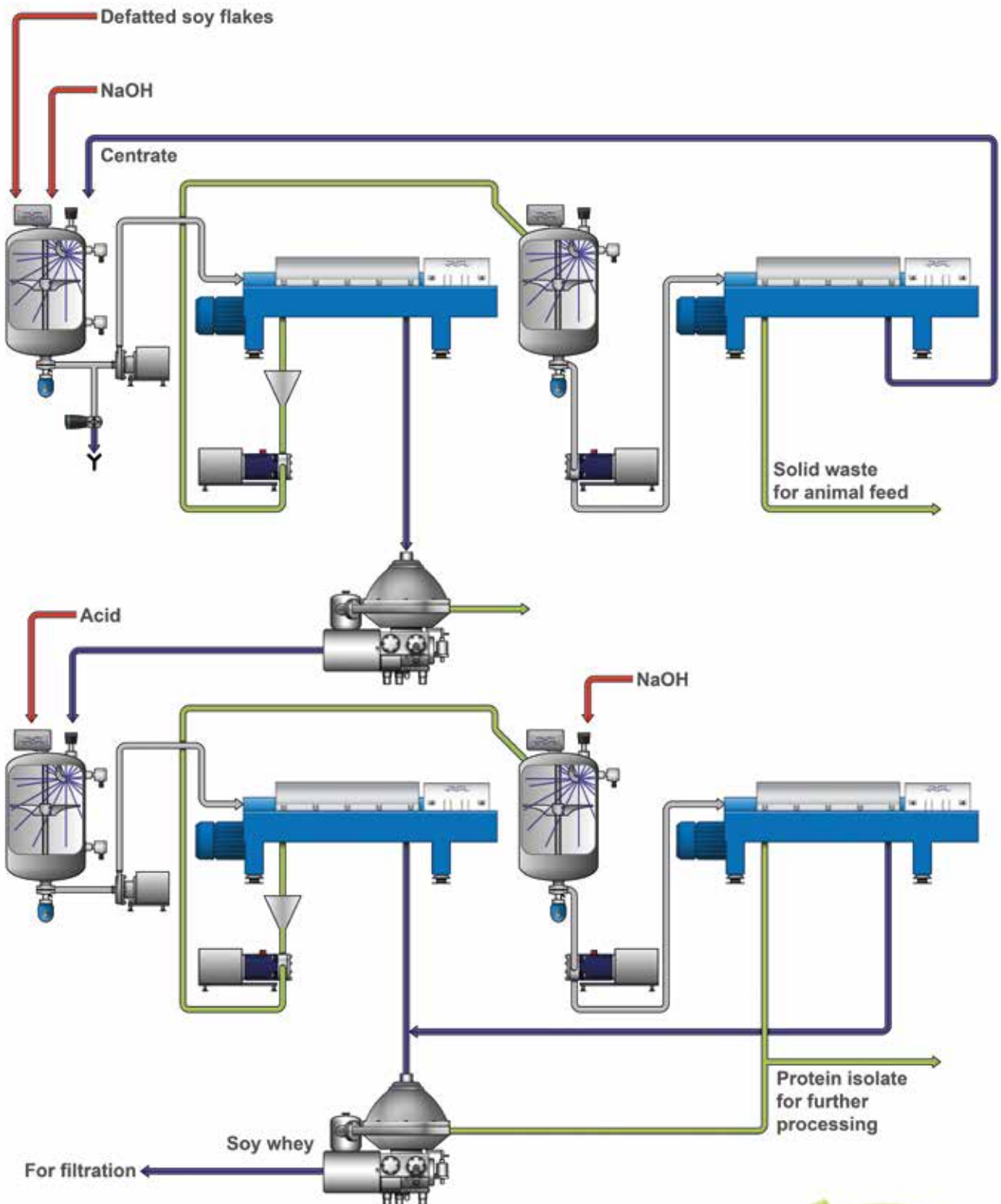
Alfa Laval Unique Control LKB

The Alfa Laval Unique Control is a combined valve control unit and actuator used with Alfa Laval LKB butterfly valves. In the event of air failure, the process will continue uninterrupted as fluctuations in air pressure do not affect the position of the valve.

Tank optimization and instrumentation

Reliable instrumentation secures optimal process control and monitoring – day after day, year after year. Alfa Laval's broad portfolio of tank optimization and instrumentation equipment makes it easy to monitor and control your process.

Soy-based products



Schematic process chart



Baby food

The baby food segment has evolved on a huge scale. In some regions, sales have increased by over 50% in the last five years. With more parents returning to full-time work, the convenience of these products has great appeal. The demand for new varieties is growing rapidly.



Alfa Laval Unique Mixproof and Single Seat valves

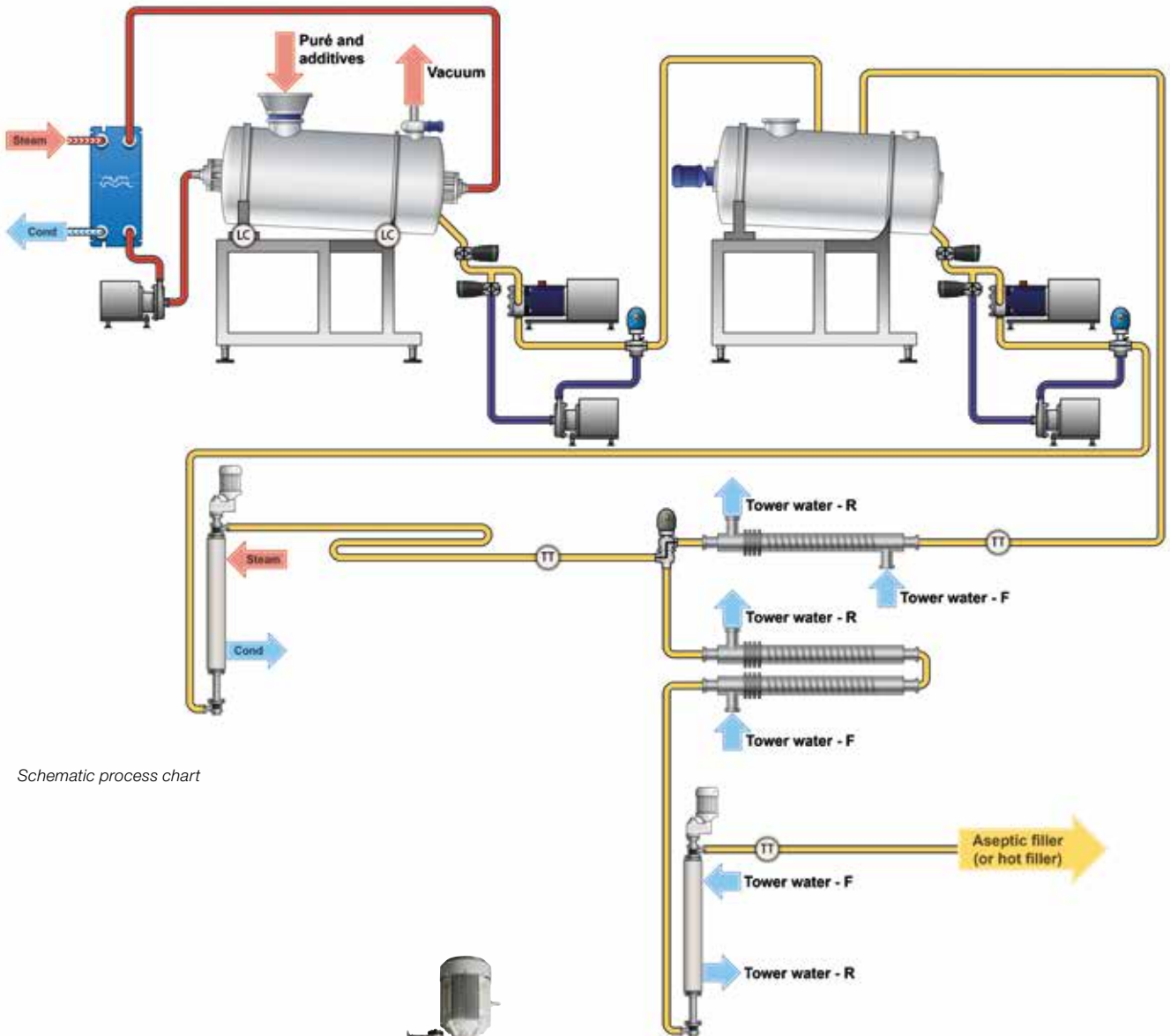
The Alfa Laval Unique range of single- and double-seat valves helps to minimize risk of contamination. Upgrades are available for most hygienic processes. Our SpiralClean option ensures thorough cleaning of the leakage chamber and/or the upper and lower balanced plugs, further enhancing safety and product quality.



Alfa Laval SX and LKH pumps

Alfa Laval offers a wide range of centrifugal and rotary lobe pumps with single, double, or flushed seals. This makes it easy to ensure an extreme degree of hygiene in an application where safety is paramount.

Baby food



Schematic process chart



Alfa Laval Contherm®

The Alfa Laval Contherm® range of hygienic scraped-surface heat exchangers is ideal for demanding process requirements. Contherm heat exchangers can handle viscous, sticky, abrasive, and heat-sensitive products that may contain fibres or particulates. Key uses include heating, cooling, crystallization and evaporation.

BABY FOOD

IS EXPECTED TO BE THE FASTEST GROWING PACKAGED FOOD CATEGORY OVER THE NEXT FIVE YEARS, ACHIEVING GROWTH IN EXCESS OF



A YEAR.

Source: Zenith International

Cleaning-in-Place

Mastering Cleaning-in-Place (CIP) is essential in the food industry. Efficiency is the key, both in terms of cleaning result and economy. CIP economy is dictated by cost and time. Reducing waste is critical; correctly configured equipment is necessary for optimal performance.



Heating of CIP liquids

Alfa Laval AlfaNova is a fusion-brazed, all-stainless-steel plate heat exchanger with superior corrosion resistance. The Alfa Laval AlfaNova can withstand extreme

temperatures and pressure fatigue conditions, as well as aggressive CIP liquids. Uptime and excellent heat transfer coefficients ensure low cost of ownership.



THE ALFA LAVAL TOFTEJORG TJ 20G ROTARY JET HEAD CAN SAVE UP TO

70%

ON CLEANING COST AND

50%

ON CLEANING TIME COMPARED WITH TRADITIONAL STATIC SPRAY HEADS.



ALFA LAVAL TOFTEJORG TJ 20G ROTARY JET HEAD

The Alfa Laval Toftejorg TJ 20G Rotary Jet Head provides high-impact cleaning with low flow. It uses 50-70% less cleaning fluid than traditional static spray heads and 20-30% less than rotary spray heads. Total cleaning time can typically be reduced by 50% compared with traditional static spray heads.



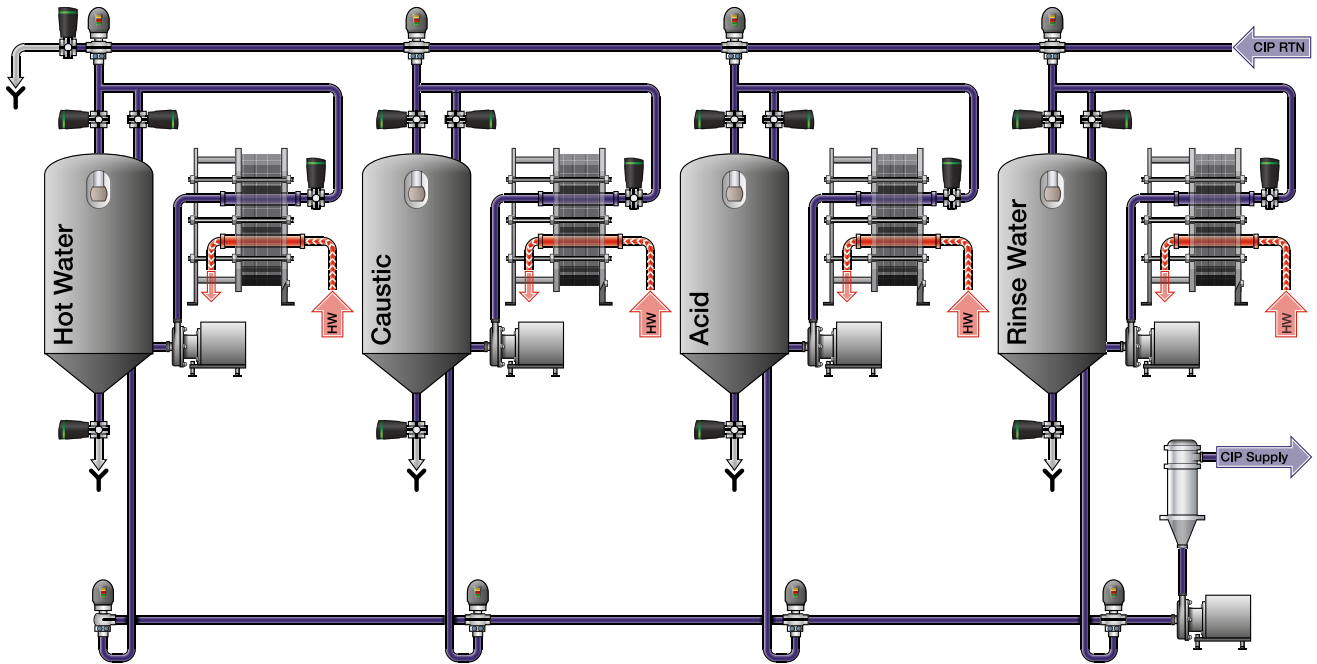
Alfa Laval Rotacheck+

Monitoring

Alfa Laval Rotacheck+ validates the CIP process of virtually any rotary jet head tank cleaning machine. Its unique built-in intelligence and

advanced analogue sensing technology ensure unprecedented levels of accuracy and reliability.

Cleaning-in-Place



Schematic process chart

Tank optimization

Alfa Laval Toftejorg rotary spray heads clean impeccably time and time again. Featuring a unique one-clip hygienic assembly, the self-cleaning spray heads are easy to install and inspect, and have a drainable slide bearing. They are EHEDG certified and compliant with 3A standards.

For cleaning jobs where more impact is required, Alfa Laval Toftejorg rotary jet heads offer the highest standards of efficiency, reliability, and hygiene. They provide a 360° high-impact coverage over a defined time period. Actual performance of the rotary jet heads can be verified by Alfa Laval Rotacheck Basic and Rotacheck+.



ALFA LAVAL TOFTEJORG SANIJET 25 ROTARY JET HEAD

The Alfa Laval Toftejorg SaniJet 25 Rotary Jet Head provides 3D-indexed impact cleaning over a defined time period. It is automatic and represents a guaranteed means of achieving quality assurance in tank cleaning.

Services that extend performance

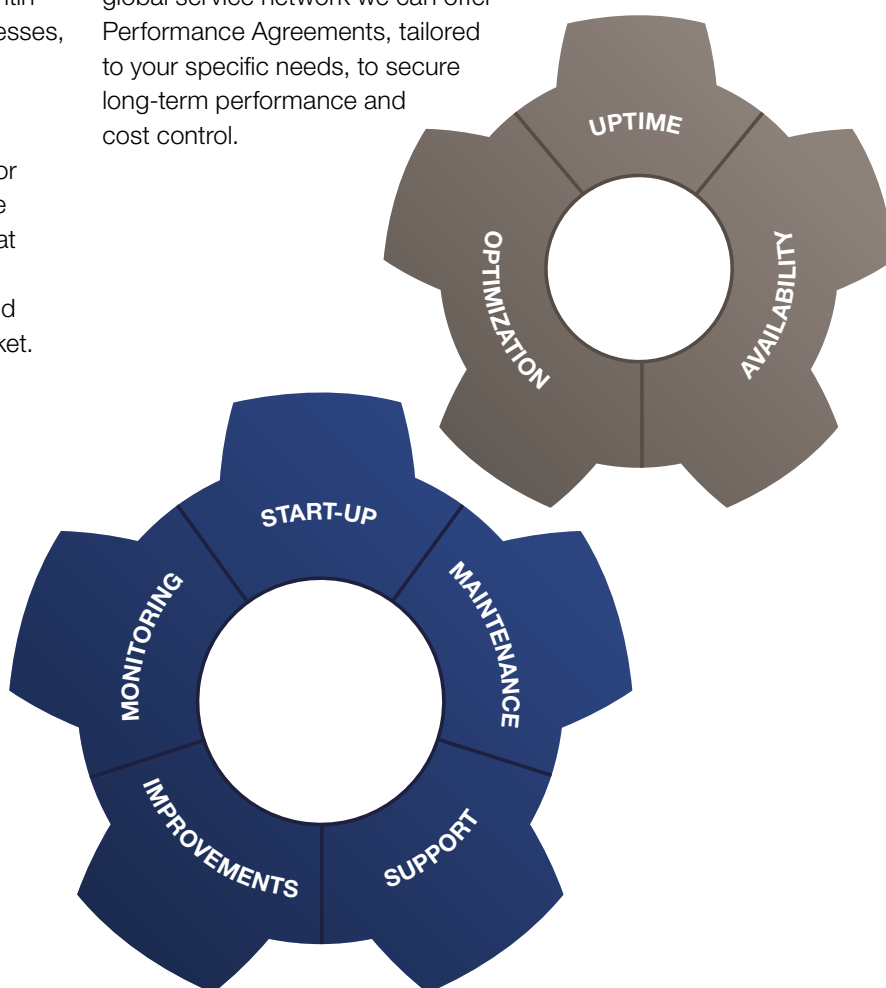
Alfa Laval's expert service is always on hand through our global network. Alfa Laval also offers a wide range of time-saving tools and resources to secure your performance, making it easy to configure, size, and optimize your equipment.

360° Service Portfolio

Alfa Laval Service offers a broad range of parts, equipment, and services covering the entire product lifecycle from start-up, support and maintenance to improvements and monitoring. We are committed to ensuring maximum uptime, continuous optimization of your processes, and high availability.

Alfa Laval service kits and top quality spare parts, designed for durability and performance, are always available. We secure that your equipment remains in compliance with certificates and legal requirements in your market.

Alfa Laval Service maximizes the reliability and uptime of your equipment. The result is superior performance throughout the equipment lifecycle to give you a competitive edge. Together with our global service network we can offer Performance Agreements, tailored to your specific needs, to secure long-term performance and cost control.



Alfa Laval test centres, training, and tools

Test centres

We carry out tests to optimize our customers' processes.

Tests are offered in the following areas:

- Rheology and pumps
- Cleaning, mixing and valve optimization
- Scraped-surface heat exchangers
- Membrane screening and small-scale testing

Rheology and pumps

Knowledge of rheology is of great importance for sizing process equipment and hydraulic systems. It helps to ensure optimal equipment performance and energy efficiency for the specific process. We investigate the rheological properties of customer's specific product and use this information, for example, to ensure optimal pump selection.

Cleaning, mixing, and valve optimization

At this test centre, using the customer's specific product, we can optimize the performance of the customer's processes in the areas of cleaning, mixing and valve optimization.

Scraped-surface heat exchangers

Many heat exchangers reach their limits due to fouling when used with sticky fluids. Our portfolio of scraped-surface heat exchangers offers a solution. At this test centre, we can ensure that the right heat exchanger is chosen for the specific application.

Membrane screening and small-scale testing

Tests are carried out to find the right membranes and to optimize their performance using the customer's specific product.

Tools and support

Configuration tools

Computer-aided selection (CAS)

Alfa Laval's CAS software helps to achieve the lowest possible plant running costs, while streamlining maintenance and service procedures. CAS includes drawings, article numbers, and spare parts lists.

Computer-aided design (CAD)

Alfa Laval's CAD portal offers dimensional drawings of most Alfa Laval flow equipment, making it easy to use Alfa Laval products whether designing a process or a complete plant.

Ordering

Alfa Laval's world-class global network of channel partners ensures fast and easy ordering and delivery.

Documentation

Detailed documentation is available for all Alfa Laval equipment. Alfa Laval equipment has EHEDG certification or complies with hygienic design guidelines. Equipment that complies with 3A standards is also available.



Training

The Alfa Laval training programme offers an effective mix of eLearning, webinars and classroom trainings to ensure that competence in the area of interest is gained fast. Our product and application classroom trainings cover all levels, from basic to advanced to specialized, and include both presentations, exercises and hands-on elements. We can also provide tailor-made trainings to meet specific needs.

Discover more about our product offering and services at
www.alfalaval.com/food

Food component innovation

Pumping



Alfa Laval SRU rotary lobe pumps

Strong, sturdy, and reliable, Alfa Laval SRU rotary lobe pumps ensure gentle and efficient pumping while minimizing damage to ingredients, stabilizer complexes, and particulates.



Alfa Laval SX rotary lobe pumps

Alfa Laval SX rotary lobe pumps meet the highest demands when it comes to hygiene and low shear, offering the ultimate in cleanability and low product damage.



Alfa Laval LKH centrifugal pumps

The Alfa Laval LKH range of centrifugal pumps is available in a number of versions, including High Pressure, UltraPure, Multi-Stage, and Self-Priming, meeting most needs within the food industry.

Flow management



Alfa Laval Unique Control LKB

The Alfa Laval valve automation and control system features an integrated control unit and actuator. Used in combination with Alfa Laval LKB butterfly valves, it provides a reliable and intelligent solution for food processes, giving full control over the butterfly valve. The one-button setup procedure eliminates operator error.

Alfa Laval Unique Mixproof Large Particle Valve

Ideal for soups and sauces with larger particles such as meat or vegetables, the Alfa Laval Unique Mixproof Large Particle Valve is designed to handle viscous food products with a minimum of pressure loss and damage to the product, eliminating the risk of product blockage.



Alfa Laval Unique SSV Long Stroke Valve

The Alfa Laval Unique SSV Long Stroke Valve minimizes product shear. It is used widely in tomato-based product applications where shear thinning is an issue.



Installation materials



Alfa Laval AL-6XN alloys

Available in pipes and bends, Alfa Laval AL-6XN alloys guarantee resistance to corrosion for challenging foods with high salinity or low pH, such as tomato-based products.



Delivery options

Single pieces: Full product range is readily available from one to nine pieces.

Box of 10: Robust and labelled packaging secures the products.

Certification

Certificates (3.1) are now available in an online database at www.alfalaval.com/certificates

Heating and cooling



Alfa Laval FrontLine

With its optimized design, Alfa Laval FrontLine is the premier choice for hygienic processes that require high performance combined with gentle product treatment, long operating times, and superior cleanability. It handles viscous products up to 5000 cPs and particles up to 5 mm in length.



Alfa Laval BaseLine

Simple and sturdy, with low pressure (up to 10 bar) and a low-cost frame, the Alfa Laval BaseLine fulfils most heating and cooling tasks for lower viscosities.



Alfa Laval Gemini plates

Alfa Laval Gemini plates protect against contamination and deliver efficiency and simplicity in food transfer, providing additional safety in sensitive applications such as baby food.

Tank optimization



Alfa Laval Hybrid Powder Mixer

Versatile and mobile, featuring a two-stage pump design with one drive motor and an outlet pressure of up to 4 bar, the Alfa Laval Hybrid Powder Mixer handles complex CMC powders just as easily as other stabilizers and milk powders.



Alfa Laval Rotary Jet Mixer

An efficient liquid mixer, especially used in connection with the Alfa Laval Hybrid Powder Mixer, the Alfa Laval Rotary Jet Mixer ensures an even mix in the tank much faster than conventional agitators, while securing that powders will not layer in the tanks.



Alfa Laval TJ 20G

The Alfa Laval TJ 20G is a high-impact, four-nozzle rotary jet head cleaning device that rotates in endless patterns, ensuring full surface coverage and efficient cleaning of any critical component.

Instrumentation



Alfa Laval Flow Transmitter

The design of the Alfa Laval Flow Transmitter ensures no pressure drop, which is important for viscous food products. The smoothness of the product-wetted interiors is maintained, making it very easy to clean.



Alfa Laval Weighing Cell

Designed to be integrated with the tank legs, the Alfa Laval Weighing Cell offers high-precision, non-impact measurement that is ideal for mixing, dosing, level, and batch control for food applications.



Alfa Laval Temperature Transmitter

The Alfa Laval Temperature Transmitter allows for exact monitoring of process temperatures of sensitive food products that can be damaged by deviation from set parameters.

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 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, food-stuffs, 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

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