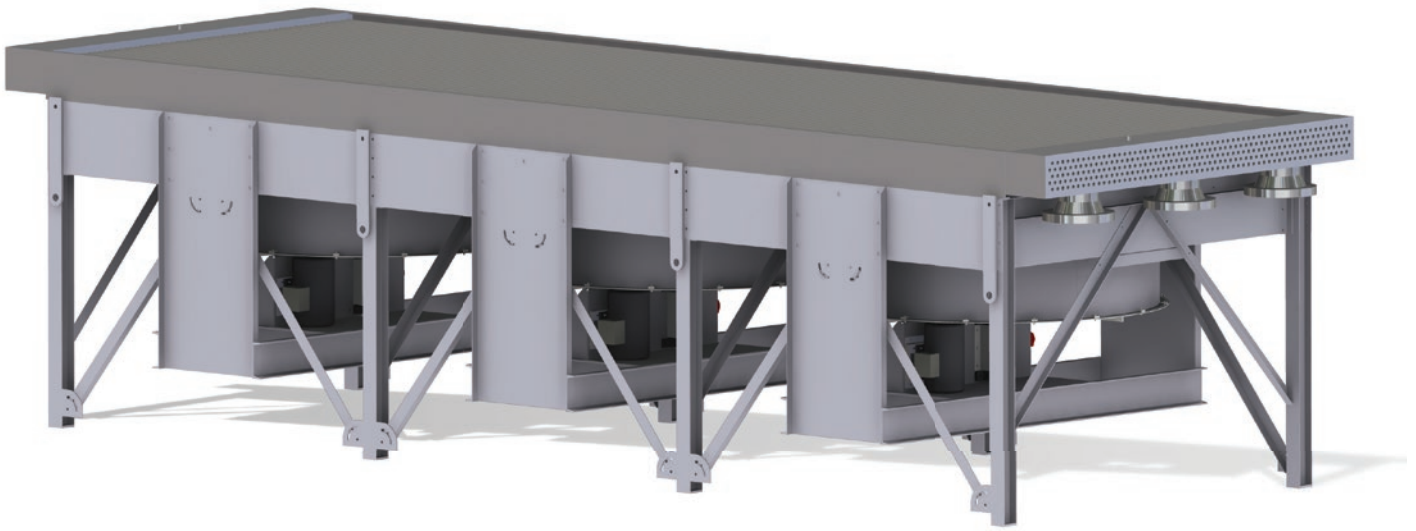




Complete cooling performance

Air cooled exchangers for the oil, gas and power markets





Air cooled exchangers for the entire supply chain

Alfa Laval ACE air cooled exchangers provide unmatched cooling performance for the entire oil, gas and power supply chain. For over 50 years, these air cooled exchangers have been custom-designed and manufactured for upstream, midstream and downstream applications. With custom coolers available for a wide range of capacities and duties, the Alfa Laval ACE product range offers robust, rugged and efficient cooling solutions that outperform other models, and consistently earn the confidence of our customers time and time again.

With the global strength and reach of Alfa Laval, the ACE air cooled exchangers are a key part of an even more comprehensive array of heat transfer products for cooling air, natural gas, oil and water. Alfa Laval's long-standing history in the heat transfer market, combined with additional investments and capability enhancements, help to ensure Alfa Laval ACE products will provide an even more robust, highly engineered air cooled exchanger solution.

With our global capabilities, we leverage worldwide resources to help reduce delivery times and overall equipment costs. We offer service and support around the clock for the complete Alfa Laval ACE air cooled exchangers range – helping to deliver peace of mind regardless of our customers' location.

Expertise and know-how:

- Dedicated sales team – expertly skilled in all air cooled heat exchanger configurations
- Flexible engineering team – producing detailed models and drawings
- Efficient operations team – focused on safety, quality, delivery and cost
- Optimized performance – advanced service and support resources for maximum uptime

Advanced capabilities

Alfa Laval ACE air cooled exchangers continuously meet and exceed our customers' expectations – and these proven solutions are supported by our advanced sales, engineering, operations and service capabilities.

Experienced sales resources

With decades of experience, our sales team has the expert knowledge to ensure the optimal air cooled exchanger is matched and designed to meet your specific duties. With a streamlined quotation process, and an in-house proprietary rating program, Alfa Laval quickly and efficiently customizes the right air cooled exchanger – providing our customers with fast, accurate quotes.

Cutting-edge engineering

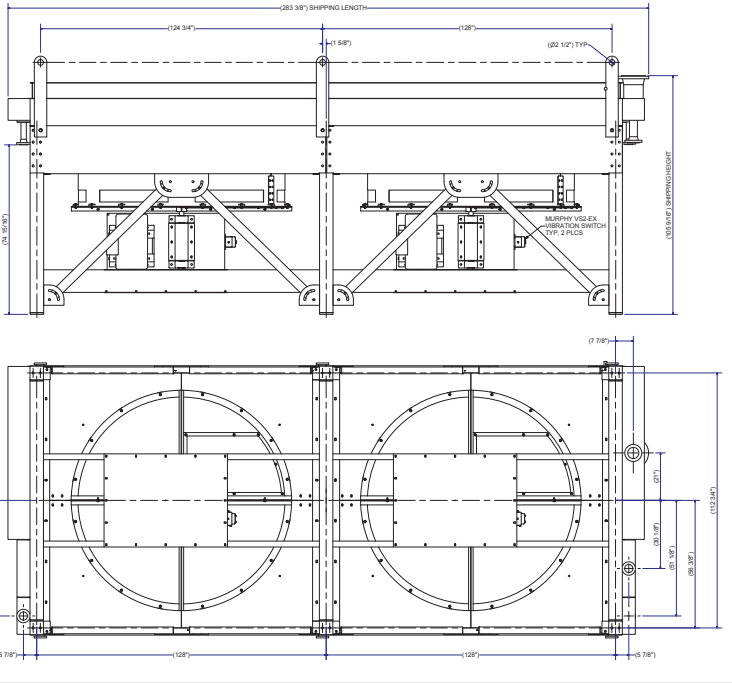
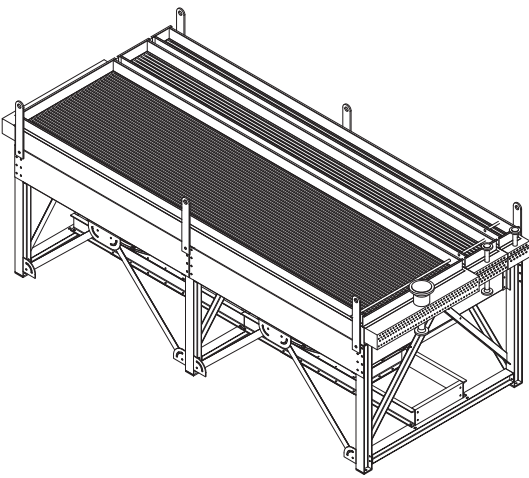
Our extremely flexible engineering team utilizes proprietary drawing and sizing technology to reduce lead times, and rapidly produce detailed 3D AutoDesk Inventor models and fabrication drawings – supplying customers with advanced engineering information.

Efficient operations

To meet the quick deliveries that our customers demand, we manufacture nearly all of the components that go into our coolers – including not only the structure and headers, but also the louvers and high-performance fin-tubes. With additional factory investments and enhancements, Alfa Laval will continue to advance our manufacturing capabilities to supply customers with high quality air cooled exchangers, while also helping to reduce their overall investment by leveraging our global purchasing and sourcing capabilities.

Unmatched service and support

The strength of Alfa Laval's worldwide service network enhances our dedication to the service and support for the ACE range of air cooled exchangers. With service and support available 365 days a year, our customers benefit from added peace of mind around the clock. Alfa Laval helps to extend performance, deliver maximum uptime and optimization, and offer a suite of innovative performance agreements and service solutions.



Extensive line of air cooled exchangers

Custom-designed to meet specific customer specifications, Alfa Laval ACE air cooled exchangers are engineered for the upstream, midstream and downstream markets. All models feature a rugged design with superior welding and construction quality ensuring ultimate cooling performance.



Alfa Laval ACE Model A

- Vertical, sloped section(s) and fan with vertical air ejection
- Sloped sections provide an optimized center of gravity for safer loading and transport
- Available aluminum fan guard for increased maintenance safety and weight reduction



Alfa Laval ACE Model C

- Vertical section(s) and fan with horizontal air ejection
- Economical and compact alternative to vertical air ejection models
- Maximum cooler section access and serviceability

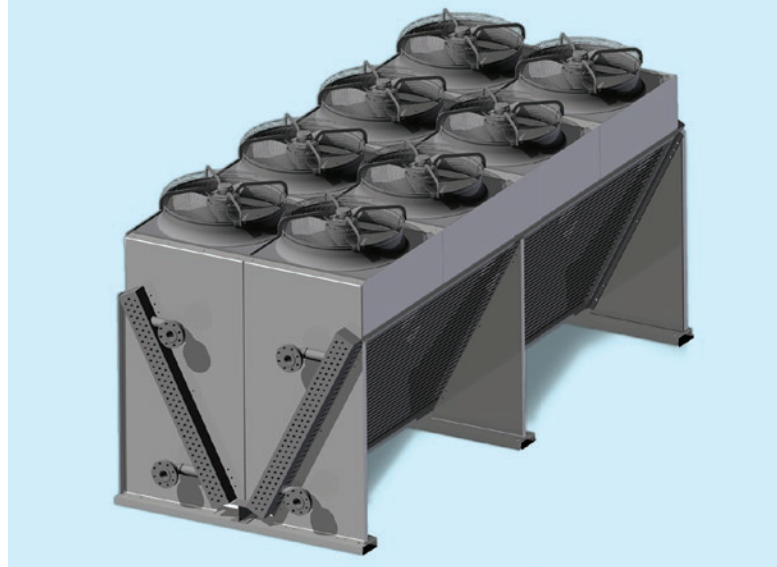


Alfa Laval ACE Model E

- Horizontal section(s) and fan(s) with vertical air ejection
- Available in single fan to four fan configurations
- Available aluminum fan guard(s) for increased maintenance safety and weight reduction
- VFD capable electrical drive design allows controlled power consumption

Alfa Laval ACE Model V

- Sloped sections with horizontal fans and vertical air ejection
- Modular, induced draft fan cells allow up to 60' section length
- Design reduces transportation and plot space costs as compared to horizontal section designs
- Standard VFD fans prewired to control system, installed on unit, reduce operating costs



Alfa Laval ACE Model J

- Vertical section(s) and fan with vertical air ejection
- Maximum cooler section access and serviceability
- Directional plenum allows efficient airflow transition from horizontal to vertical



Alfa Laval ACE Model T

- Horizontal section(s) and vertical fan(s) with vertical air ejection
- Available in single fan to five fan configurations
- Available aluminum fan guard(s) for increased maintenance safety and weight reduction
- Relatively narrow width enables increased transportability



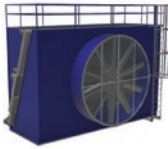

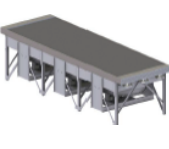

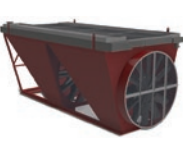

The optimal air cooled exchanger for oil and gas applications

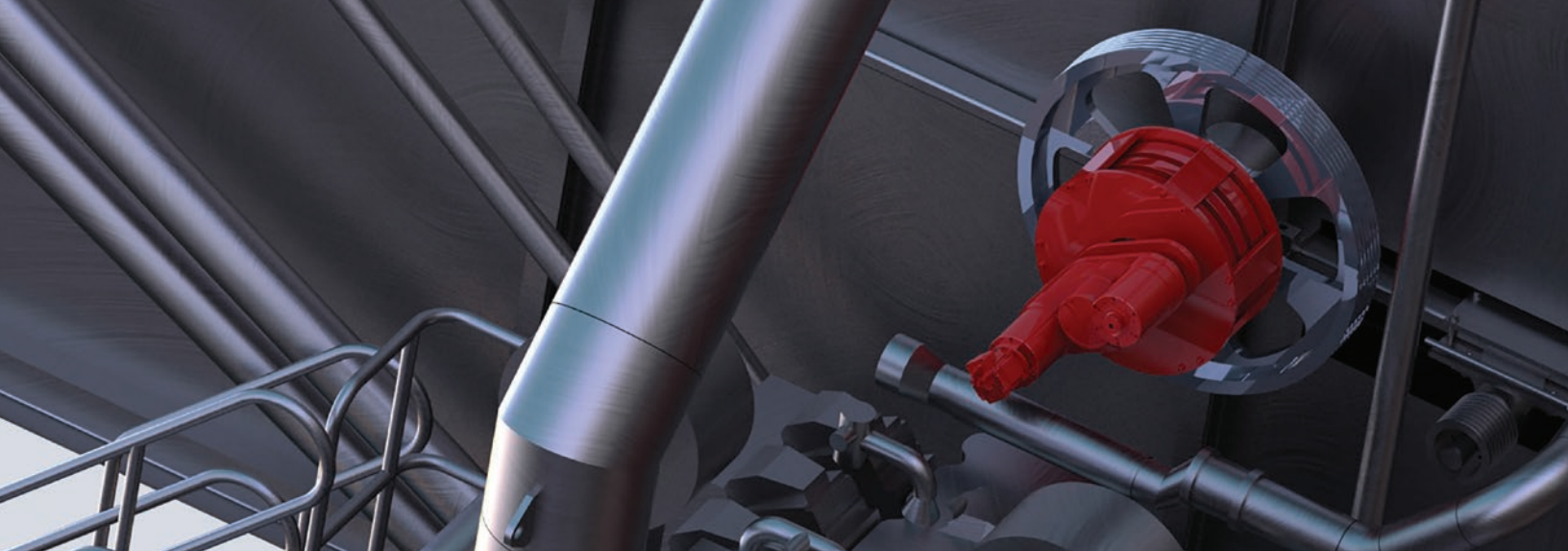
Applications:

- Heavy usage in industry
- Presence in industry

Configurations:

- Majority of models built
- Option for model

		Model A	Model C	Model E	Model J	Model T	Model V
							
Applications							
Upstream	Drilling		●		●		●
	Field Compression	●	●	●	●	●	
	SAGD		●	●			
	CPF			●			
	Upgraders			●			
Midstream	Compressor Stations	●	●	●	●	●	●
	Gas Processing	●	●	●	●	●	●
	Gas Fractionation	●	●	●	●	●	●
	LNG			●			●
Downstream	Refineries	●	●	●			●
	Petro-Chemical	●	●	●			●
	Power		●	●			●
	CNG	●	●	●	●		●
Configurations							
Forced Draft	Induced Draft	●	●	●	●	●	●
Engine Driven	Motor Driven	●	●	●	●	●	●
Air Ejection		Vertical	Horizontal	Vertical	Vertical	Vertical	Vertical
Hot Air Recirculation		●	●	●	●		
Painted	Galvanized	●	●	●	●	●	●
Fan Diameter Range		2'-14'	2'-10'	2'-34'	2'-14'	2'-14'	(4) 3'-(-1) 6'
Typical Engine Driven HP		50-1500 HP	50-400 HP		50-800 HP	50-4,500+ HP	



Alfa Laval ACE Vspeed

The Alfa Laval ACE Vspeed adjustable speed fan drive is a magnetically modulated, variable speed drive intended for both engine and electric motor driven fans. It was designed with field retrofits in mind. On most coolers, only the drive guard and drive sheave must be modified to accept the drive. A custom sheave may be provided to minimize installation time.

Alfa Laval ACE Vspeed benefits

Regulatory and environmental

- Provides a means for increasing overall compression package efficiency, aiding in compliance of growing governmental regulations
- Reduction in air cooler fan noise during sensitive time periods, especially at night, when ambient temperatures are lower and equipment requires less air flow

Reduced maintenance and downtime

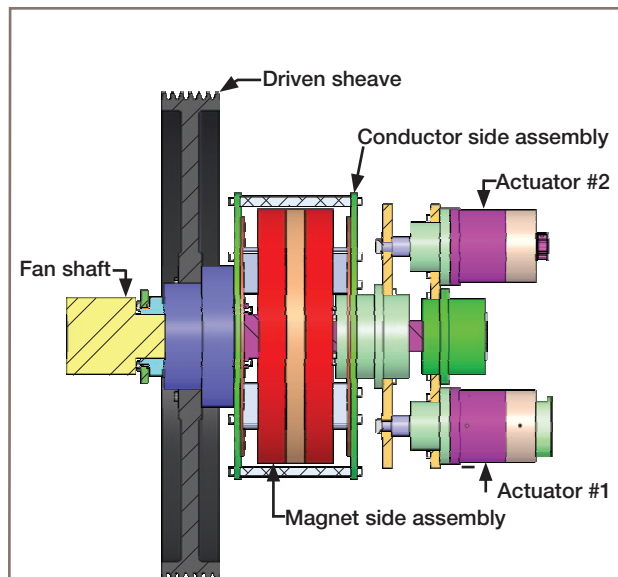
- Reduction in rotating component wear (belts, bearings, shafts, etc.)
- Eliminates the need for costly seasonal re-pitching of fan blades, reducing equipment down-time
- Minimizes pulsing and impact as the ACE Vspeed's air gap isolates the cooler from cyclical loads transmitted from the reciprocating engine crankshaft
- Requires minimal installation effort, which can be done by Alfa Laval's field service teams

System simplification

- In some cases, the ACE Vspeed eliminates the need for other temperature control devices, such as louvers and their associated actuators and controls
- For electric motor driven coolers, the ACE Vspeed can replace costly, high-voltage variable frequency drives that may not be easily suitable for stringent electrical area classifications

Increased efficiency and performance

- Decreased cooler driver energy consumption (fuel gas for engine driven coolers, electricity for motor driven coolers)
- For compressor units, the reduced parasitic cooler shaft power consumption can be redirected for improved compressor horsepower and capacity



The interaction between rare earth magnets (within a hub attached to the fan shaft) and nonferrous conductors (in a hub attached to the driven sheave) creates a flux field that transmits torque across an air gap from driver to load. The smaller the gap, the greater the torque transmitted.

By intentionally changing the air gap, the ACE Vspeed efficiently varies and controls the speed of the fan — the larger the air gap, the slower the fan speed.



Alfa Laval wet/dry hybrid auxiliary cooling

Our hybrid auxiliary cooling solution is a system designed approach created to maximize site water conservation while still enabling very low process outlet temperatures. To stay below a site's allowed water usage, typically influenced by cooling tower consumption, the Alfa Laval Niagara Wet Surface Air Cooler (WSAC®) is combined with an Alfa Laval ACE dry air cooler to maximize system efficiency by taking advantage of fluctuating ambient air temperatures.

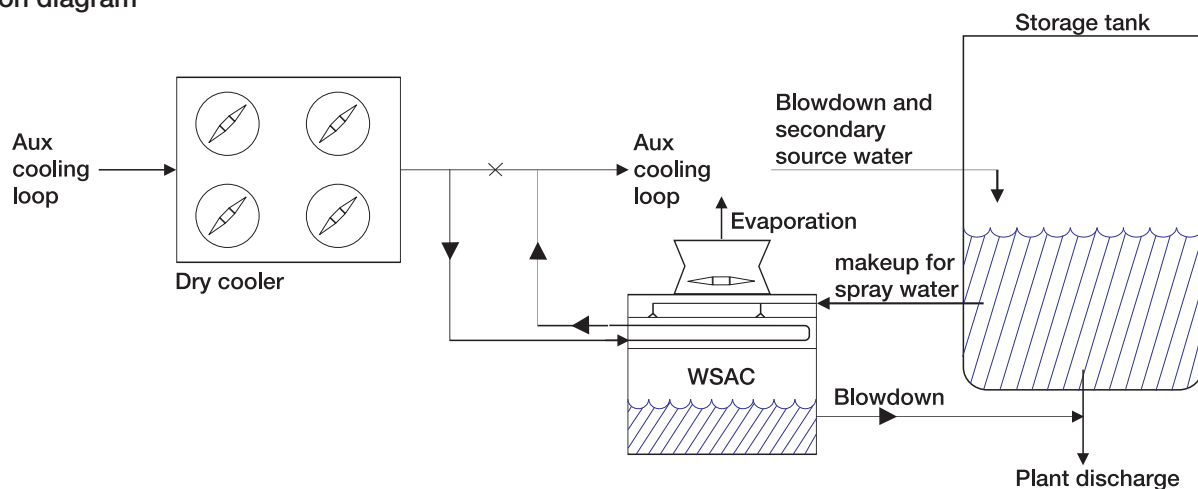
Our system approach allows for a consistently low process outlet temperature during all seasons by running dry during colder ambient periods; then utilizing available water only during the hotter summer ambient air temperatures. And unlike typical cooling tower solutions, poor quality water can be collected and used. Finally, total system responsibility for thermal performance is with Alfa Laval.

Advantages

Having the flexibility to individually or simultaneously cool a process fluid using different heat exchanger technologies provides the following immediate and long term benefits:

- Our system's increased efficiency significantly reduces plot space and electrical power consumption when compared with pure dry air cooler solutions.
- The reduction in water consumption, using dry air coolers when possible or increased cycles of concentration, can minimize site permitting and regulatory challenges.
- Alfa Laval's ability to thermally design a complete hybrid solution provides a consolidated purchasing and engineering experience, and more focused operational and warranty support.

Application diagram



Industry leading technologies

The Alfa Laval ACE air cooled exchanger range is a key addition to Alfa Laval's complete heat exchanger portfolio. The range is part of an extensive line of heat transfer, separation and fluid handling technologies. These solutions help our customers to heat, cool, separate and transport products in a wide range of industries, in more than 100 countries around the world.

Heat exchangers

We manufacture a comprehensive range of heat exchangers that are designed to optimize energy utilization, while minimizing downtime. Our heat transfer solutions are efficient and durable – and suited for heat transfer and heat recovery applications.



Wet Surface Air Coolers (WSAC)

The Niagara range of Wet Surface Air Coolers are engineered-to-order closed-loop, evaporative coolers and condensers, used in oil, gas, power and industrial applications. Each WSAC cooler or condenser is custom-designed to fit the specific application, and are tailored to meet the unique needs of the most demanding applications.



Separators

From high-speed separators to efficient decanter centrifuges, filters and strainers, Alfa Laval manufactures advanced products to separate liquids from other liquids, solid particles from liquids, as well as particles from gases.



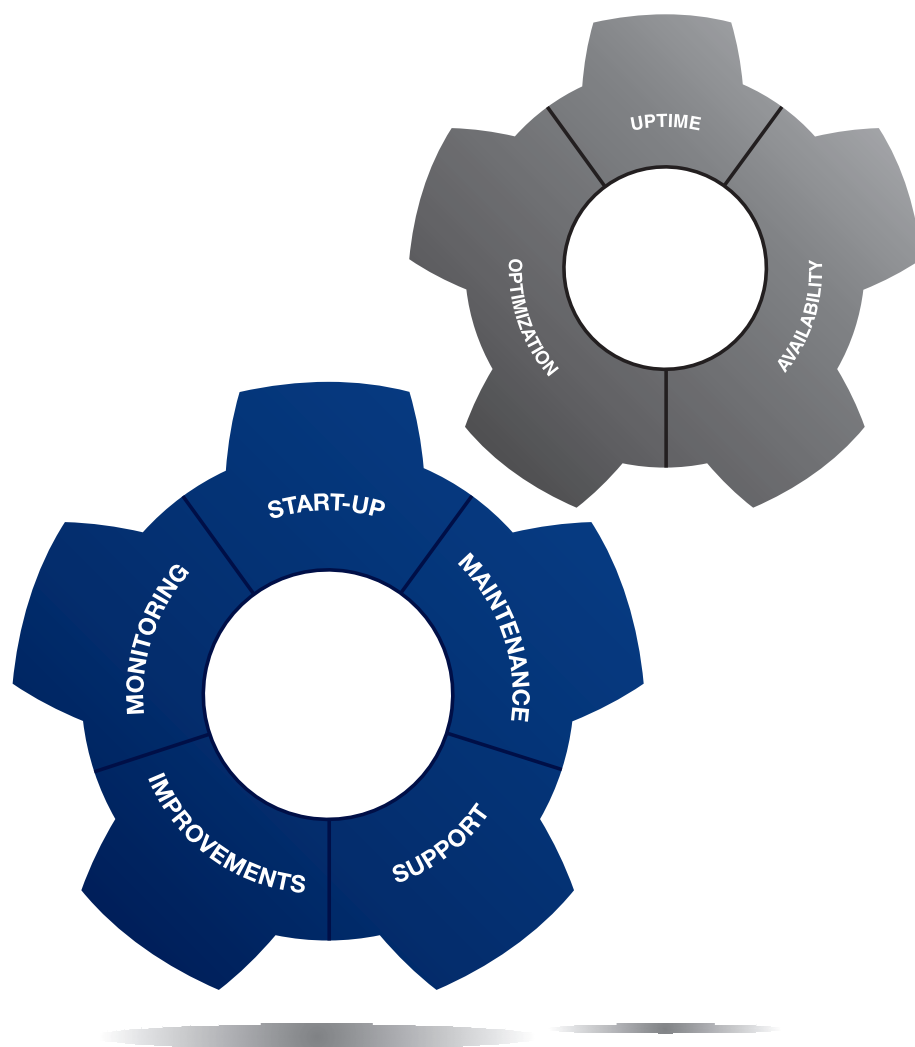
Extending performance

Alfa Laval's global service network keeps you competitive by minimizing costs and maximizing the return on your equipment investment.

With the knowledge, skills and support of Alfa Laval's global service network, you can rely on your equipment for as long as you own it. Our committed team secures performance that keeps you competitive throughout your equipment's life cycle. In short, we bring you peace of mind.

Expertise at your service

Alfa Laval has deep process and application knowledge, drawn from a vast experience for more than 130 years. You benefit from a long tradition of finding solutions for multiple applications worldwide.



360° service portfolio

Start-up

We bring your equipment into operation, smoothly and safely, while respecting global guidelines. We ensure your equipment delivers as it is meant to.

- Installation supervision
- Commissioning
- Commissioning supervision

Monitoring

Stopping problems before they occur saves time and money. Inspections and audits – or even continuous monitoring – can keep you informed of any performance changes.

- Condition (mechanical) audit
- Performance (thermal) audit

Improvements

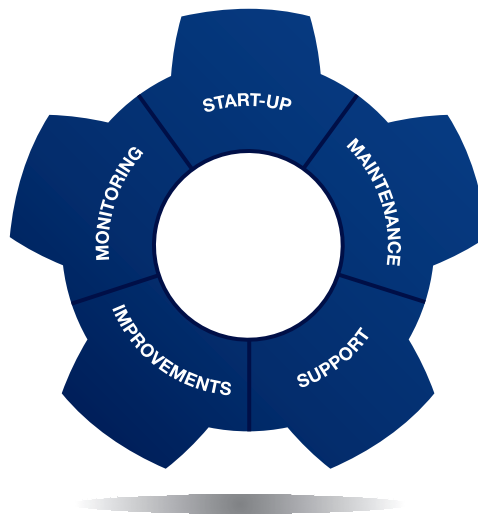
Performance can be taken to the next level to better match your evolving needs. We can improve your equipment, letting you take advantage of the latest technical developments.

- Equipment upgrades
- Redesign
- Replacement and retrofit

Maintenance

With proper maintenance at the right time, you can achieve higher performance and lower operating costs while maximizing your equipment's lifetime.

- Preventative maintenance
- Repair
 - Service kits
 - Service tools
 - Spare parts



Support

Assistance is always on hand. Many issues can be solved directly over the phone, and experienced troubleshooting specialists can be dispatched to your site when needed.

- Telephone support
- Training
- Troubleshooting
- Technical documentation

Service hotline: +1 918-251-7477

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

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com.

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