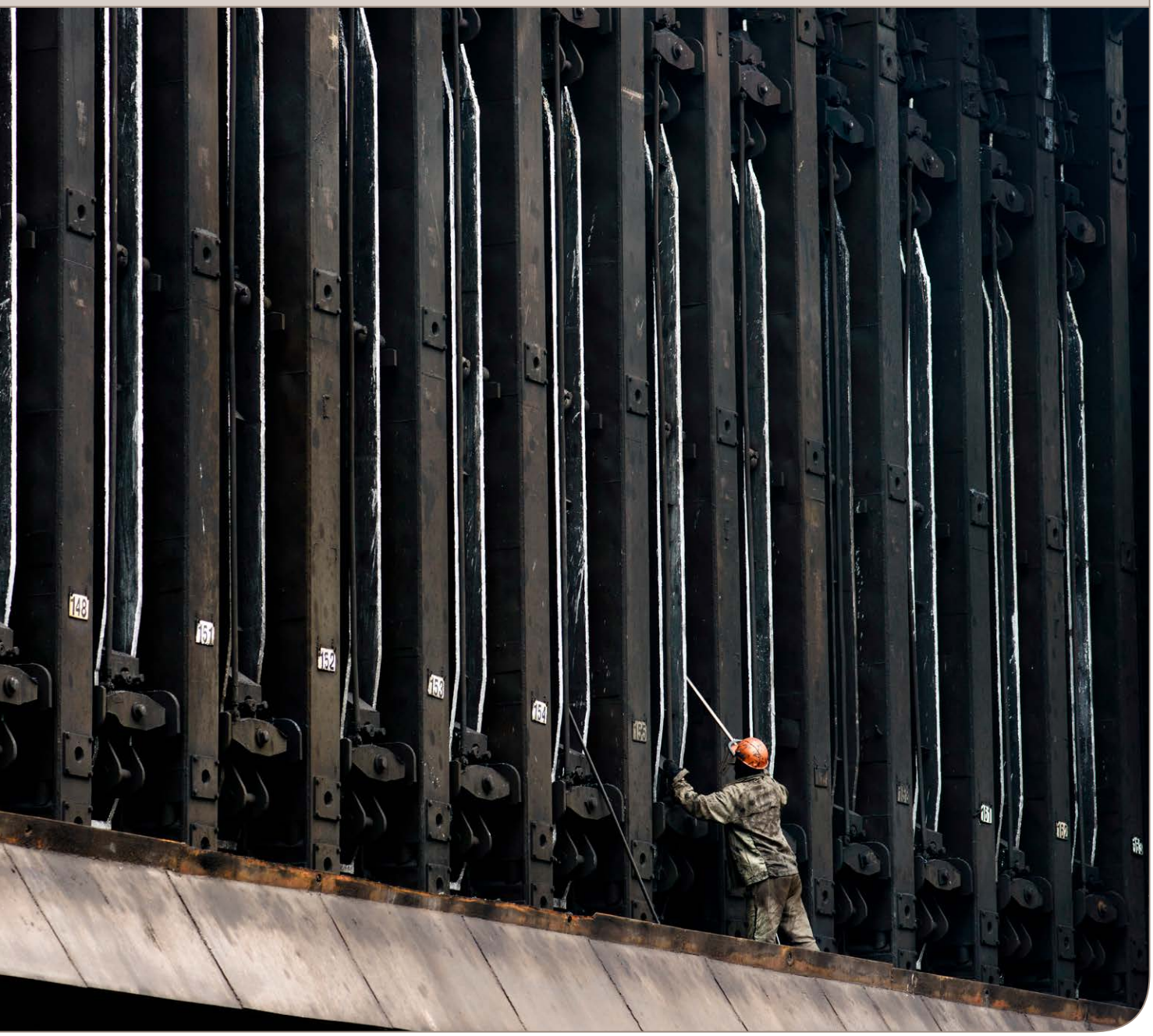
Cutting operating costs in coke oven gas plants

Alfa Laval solutions for coke producers



Uptime and performance

In times of fierce competition and increasing environmental awareness in the steel industry, energy efficiency is key to staying competitive. Ensuring reliable operation of your coke oven gas plant is more important than ever in securing a stable supply of clean fuel for your steelworks.

Alfa Laval has a long history of helping coke producers meet their challenges with our solutions for heat transfer and separation. We provide heat exchangers for the most demanding duties involving highly corrosive and fouling media. And our decanter centrifuges are a key component for producing high-quality coal tar.

Let our experts assist you from the initial idea stage and throughout the entire life cycle of your equipment. We make sure you get the optimum solution and can also help you adapt your equipment if your operating conditions change.

Qualified service is never far away when you choose to partner with Alfa Laval. Our global network of service centres and field service engineers make sure you get high performance throughout the entire life span of your equipment and minimum life cycle costs.

Contact us for a discussion about how we can help you achieve your goals or visit www.alfalaval.com/COG to learn more.

Major coke producer, Poland

Having suffered from low efficiency and high maintenance costs, one of Poland's largest coke producers substituted their existing DBO cooling system for six Alfa Laval spiral heat exchangers. The company was very satisfied with the results, and as a second step it modernized the entire benzol recovery plant with the help of engineering company Koksoprojekt. The new system comprises seven Compabloc BO steam heaters, three Compabloc BTX condensers and four spiral heat exchanger DBO/BO interchangers.

Optimize your heat transfer processes

Fouling is a major problem in most heat exchanger positions in the coke oven gas (COG) cleaning process, causing high maintenance costs and suboptimal performance.

Alfa Laval is one of the world's leading suppliers of heat exchangers. Our experts help you combat fouling and maximize plant efficiency by supplying heat exchangers customized to your specific operating conditions.

We provide fully welded plate-and-frame, spiral, semi-welded and gasketed heat exchangers for applications throughout the COG cleaning process:

- Direct or indirect primary cooling
- Ammonia desulphurization and light oil recovery (interchangers, lean coolers, rich preheaters and condensers)
- Final cooling (open or closed loop)

Alfa Laval spiral heat exchanger used as BO/DBO interchanger at Avdeevka, Ukraine

Benefits in COG cleaning

The designs of our Compabloc and spiral heat exchangers give you many benefits compared to traditional shell-and-tube heat exchangers when used in coke plants, including:

- Less fouling
- Better energy recovery
- Shorter cleaning stops
- Compact installations
- Lower investment costs

Minimize cleaning

Frequent cleaning of shell-and-tube heat exchangers is costly and causes lost production time.

Installing Alfa Laval compact heat exchangers cuts costs and downtime for maintenance. Thanks to their highly turbulent flow they are much less prone to fouling than shell-and-tube heat exchangers.

We tailor each heat exchanger to your process medium and duty parameters to minimize fouling. This ensures long service intervals and high thermal performance between cleanings.

Our heat exchangers are designed for quick and easy maintenance. They are easily opened and all the channels can be fully accessed and mechanically cleaned, meaning performance is almost as good as new after cleaning.

Save energy

Reducing steam consumption in your plant opens up new possibilities, e.g. for expansions or energy savings.

Removing the side panels on a Compabloc gives full access to all channels for cleaning

Because of their highly turbulent flow, Alfa Laval heat exchangers are extremely effective in all types of heat recovery duties (e.g. when used as interchangers), cutting steam consumption in your plant's heating stages.

Cut CAPEX and installation costs

This high thermal efficiency means Alfa Laval heat exchangers are much smaller than a corresponding shell-and-tube. This results in lower CAPEX, especially when exotic materials are needed due to corrosive media. It also means costs for installation and structures are kept low.

Anshan Steel, China

Anshan Steel cleans its coal tar using three Alfa Laval P2-320 decanter centrifuges with a total cleaning capacity of 8-9 tonnes per hour. The cleaned coal tar contains less than 0.3% particles (> 100 µm) and the water content is reduced from 5-6% in the feed to less than 2% in the finished product.

Improve your coal tar recovery plant

The market price for coal tar largely depends on how clean it is, and the price drops significantly if it contains water or solid particles.

This makes coal tar cleaning very important and any improvements in this process often result in a short payback time.

Traditional coal tar cleaning
Coal tar cleaning is traditionally performed in a series of settling tanks where solids sink to the bottom and water rises to the top, leaving the tar in the middle. This is an inefficient and time-consuming process resulting in low-quality tar.

Higher quality and smaller installation
Using decanter centrifuges as a complement to a settling tank raises the quality of the coal tar dramatically, leading to a higher market price. The output is ready for transport without further processing.

OAO Koks uses two Alfa Laval decanter centrifuges for coal tar cleaning at its Kemerovo plant

Another benefit is that a decanter centrifuge requires much smaller space than settling tanks with the same capacity.

The Alfa Laval P2 decanter centrifuge offers high performance, low operating costs and top reliability, even under the toughest conditions. It separates both water and suspended solids in the same unit, so-called three-phase separation.

The P2 range is designed for handling aggressive and erosive slurries. All critical parts are made of wear- and corrosion-resistant materials, and the conveyor is protected by tungsten carbide tiles. This ensures both low maintenance costs and high reliability.

Alfa Laval Service – Extending performance

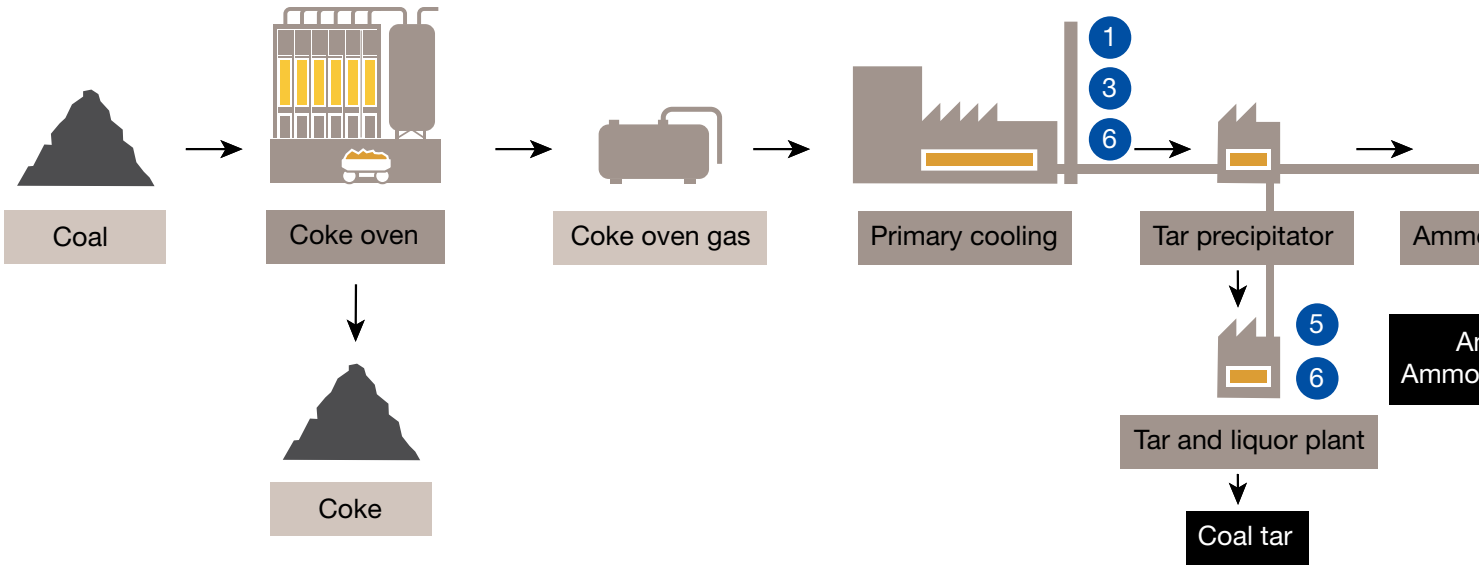
Alfa Laval's global service network keeps you competitive by minimizing costs and maximizing your return on investment. Alfa Laval Service offers a wide range of services to support you throughout the entire lifecycle of your equipment. Whatever your equipment's type or age there are options to safeguard or enhance its operation. The Alfa Laval 360° Service Portfolio offers full support – from planning, installation and commissioning to advice on the best replacement if the time comes. We also offer customized service agreements – Alfa Laval Performance Agreements.

Our global service network has a strong local focus and service specialists ready to assist you in nearly 100 countries.

JSW Steel, India

The performance of JSW Steel's existing, low-cost spiral heat exchangers in its Bellary Coke plant was deteriorating due to fouling, and the units could not be opened for cleaning. The problem was solved by exchanging them for Alfa Laval spiral heat exchangers. The new heat exchangers can be opened and service personnel have full access to all channels during cleaning. In addition the new units have a 35% smaller heat transfer area resulting in low CAPEX.

Process overview



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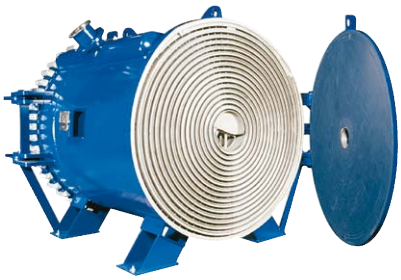

Spiral heat exchangers

- High thermal efficiency
- One-channel design with self-cleaning effect, minimizing fouling
- Opens on both sides, channels are 100% mechanically cleanable
- Available in many corrosion resistant materials

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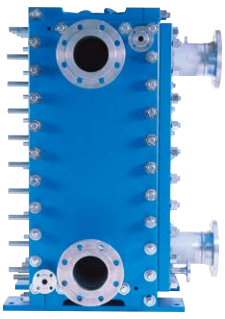

Compabloc

- High thermal efficiency
- Robust, fully welded heat exchanger
- Minimal fouling
- Opens on four sides, all channels are 100% mechanically cleanable
- Available in a wide range of corrosion resistant materials

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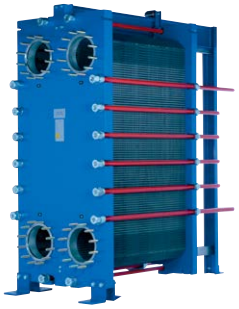
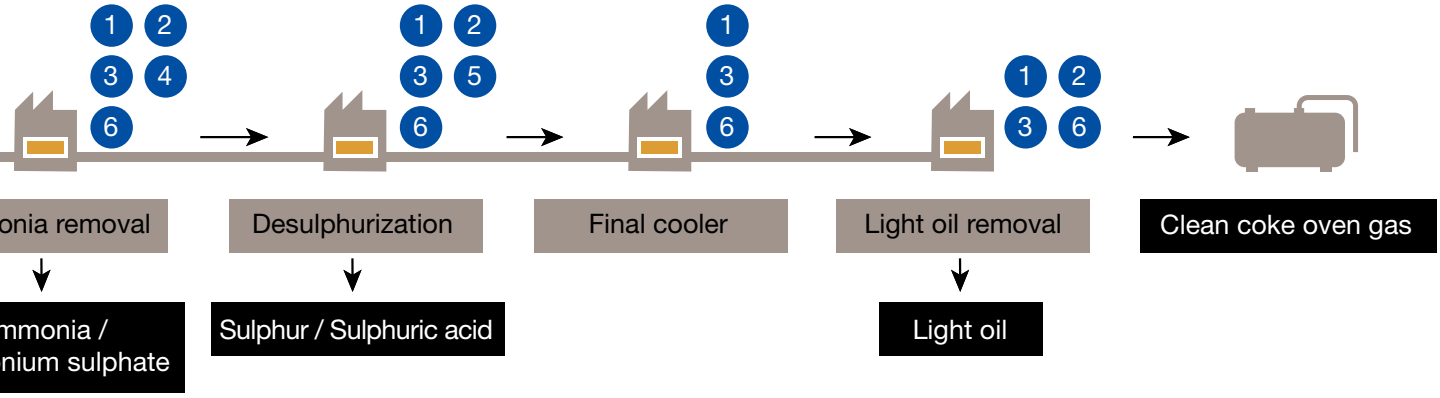


Gasketed plate heat exchangers

- High capacity and minimal fouling
- Available in many different materials
- Quick and easy service
- Robust design



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High-speed separator modules

- For separation of all types of process liquids or cleaning of oils
- High separation efficiency resulting in clean liquids
- Sturdy design for reliable operation

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Decanter centrifuges

- Excellent for cleaning coal tar
- Very high separation efficiency
- Separation of solids, water and tar in one unit (three-phase separation)
- Robust design with extra protection against erosion

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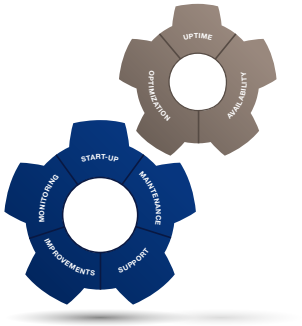

Alfa Laval Service

- Maximum performance and return on investment throughout your equipment's life cycle
- Adapt equipment as conditions change
- Reliable uptime
- Worldwide availability of parts and expertise

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

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com.

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