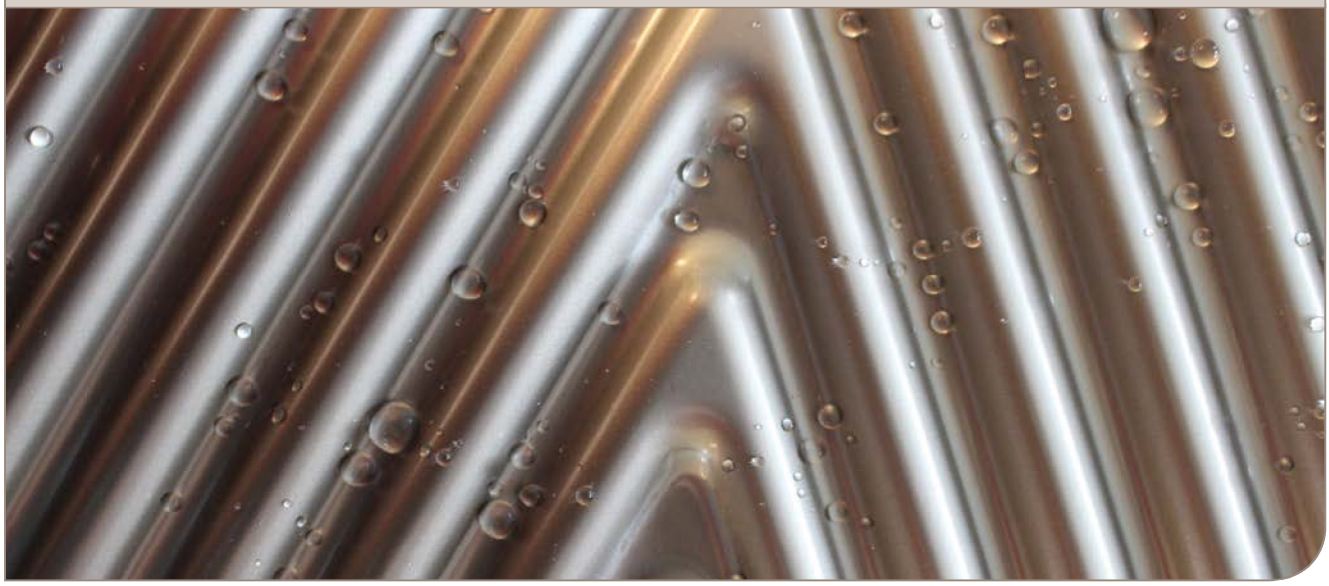
Antifouling Coating

Repellent coating for crude oil



The Antifouling Coating from Alfa Laval effectively repels build-up of hard-to-remove deposits, such as paraffin wax crystals and other solids, on crude oil coolers. This increases productivity and mean time between maintenance.

Application

Cooling of crude oil is essential before oil storage and transport to minimize the evaporation of light hydrocarbons, which creates a potentially explosive atmosphere in tanks. Fouling in the dry crude cooler, however, can lead to loss of performance, production stops for cleaning and increased operating costs. Reducing mean time between maintenance or cleaning is therefore critical to productivity.

Onsite fouling mitigation strategies, such as daily hot runs to dissolve wax build-up, help restore cooling efficiency but only work for a limited time. Designing crude oil coolers with co-current flow to increase the wall temperature is another strategy but increases the heat transfer area and thereby decreases the shear stress. Regardless of strategy, plates require routine reconditioning, depending on the operating conditions and crude oil characteristics.

Antifouling Coating from Alfa Laval

The Alfa Laval Antifouling Coating is a proven repellent coating that prevents the adhesion of waxes and other residues on crude oil contact surfaces. This strong, flexible ceramic coating has specifically been developed to withstand harsh operating conditions, including plate wear and tear due to frequent plate handling during crude oil production.

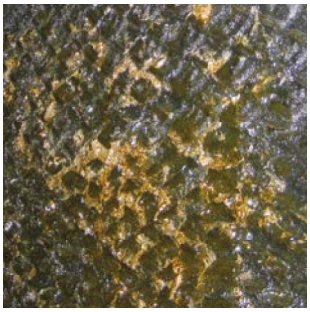
With excellent thermal conductivity properties, the Alfa Laval Antifouling Coating effectively reduces build-up on plate surfaces, cutting cleaning requirements and ensuring more uptime. It minimizes the need for hot runs and costly maintenance and enables the use of counter-current flow, thereby reducing the cooler weight and footprint.

Coating of the plates can be done on:

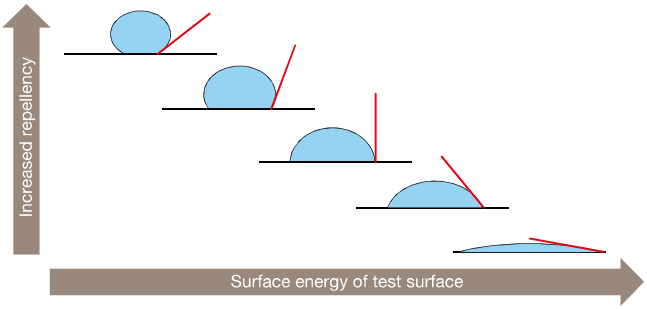
- New plate heat exchangers
- New plate packs
- Reconditioned plate packs

The effectiveness of the Alfa Laval Antifouling Coating has been proven during non-stop offshore production for 1,000 days in the North Sea. Without the Alfa Laval Antifouling Coating, the crude oil cooler required maintenance every six to nine months. With the Antifouling Coating, crude oil producers reduced downtime and production losses. Part of the Alfa Laval 360° Service Portfolio, the Antifouling Coating is an Alfa Laval Equipment Upgrade service for plate heat exchangers.

With Alfa Laval Antifouling Coating: Fouling is easily removed from the crude oil cooler plate.



Without Alfa Laval Antifouling Coating: Hard-to-remove deposits require frequent plate cleaning off-site.



Comparison of coated and uncoated plates: Alfa Laval Antifouling Coating is developed with a low surface energy that provides a larger droplet contact angle and reduced adhesion, which repels wax and other residues from plate contact points.

Features and benefits

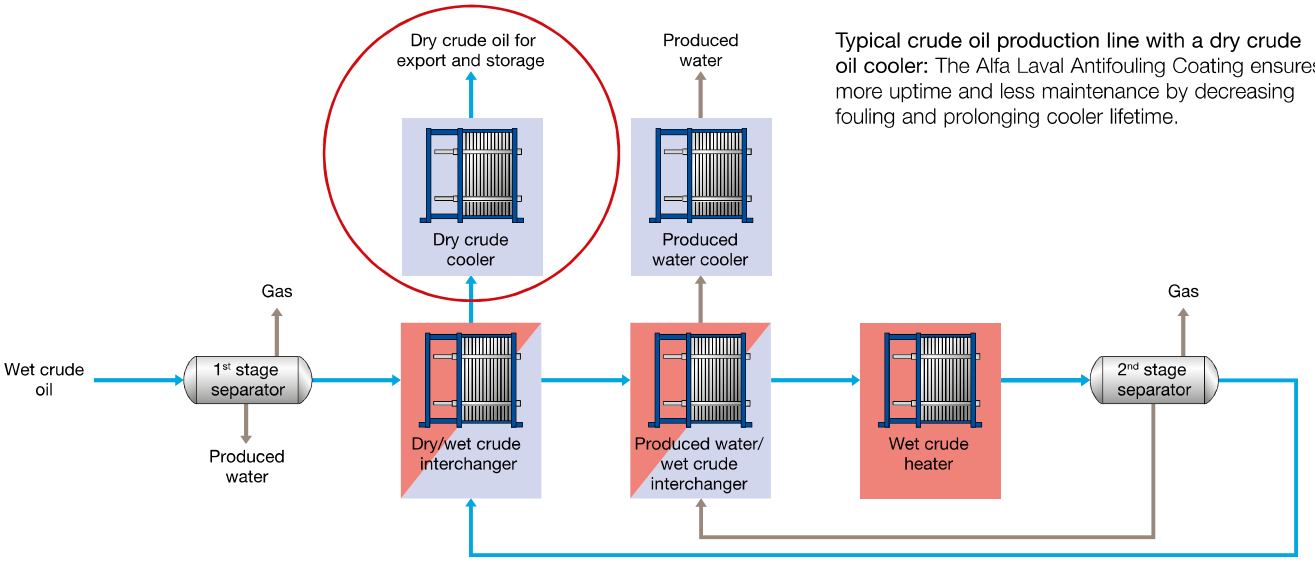
- More uptime due to longer intervals between maintenance
- Cost savings because frequent production stops for hot runs or other fouling mitigation measures are virtually eliminated
- Improved system integrity: No need to frequently open and handle equipment offshore
- Reduced cooler weight and footprint through the use of counter-current flow instead of co-current flow
- Keeps high thermal performance
- Longer equipment lifetime due to less handling of the heat exchanger
- Improved health and safety: No need for crew to open and handle the equipment
- Reduced environmental impact

How it works

The Alfa Laval Antifouling Coating is based on colloidal chemistry, which contributes to extremely stable systems, where one material is evenly distributed in another material. A silicone component in the coating provides a hydrophobic condition to the surface of the coating. This drastically increases the contact angle and reduces the surface energy and thereby reduces adhesion to plate contact points.

Technical data

Water cut	≤10%
Operating temperature	≤ 80°C (176°F)
Solids content	≤1%
Not applicable for CIP/chemical bath cleaning	
System pressure	≤30 bar (g)



Typical crude oil production line with a dry crude oil cooler: The Alfa Laval Antifouling Coating ensures more uptime and less maintenance by decreasing fouling and prolonging cooler lifetime.

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