



Compabloc retrofit boosts solvent distillation capacity by 30% and cuts emissions by 80%

Remat Chemie B.V., Helmond, the Netherlands

Case story



Retrofitting the Remat Chemie vacuum film evaporators with special double-pass Alfa Laval Compabloc heat exchangers and one spiral heat exchanger as a preheater boosts capacity and reduces emissions.

To meet rising demand for its solvent recycling services, the Dutch company Remat Chemie BV, one of the leading solvent management companies in Europe, decided to expand its vacuum film evaporators. The company turned to long-time partner Alfa Laval for solutions. Rather than investing in a costly new vacuum film evaporators, Remat Chemie installed a special double-pass Alfa Laval Compabloc compact heat exchanger and one spiral heat exchanger as a preheater in each of the two existing spiral condenser distillation columns. This drastically reduced costs, expanded capacity by 30%, and cut solvent emissions by more than 80%.

For nearly 70 years, Remat Chemie has been recycling all types of spent solvents such as alcohol, esters,

ketones and aromatic solvents. Recycling solvents helps customers realize significant savings as well as achieve their sustainability goals.

In the past, Remat Chemie enlisted the expertise of long-term partner Alfa Laval for numerous plant optimization projects. One such project involved expanding plant capacity with new spiral condensers. Alfa Laval recommended positioning the condensers in such a way so that the existing water pumps are able to provide sufficient cooling water pressure. This eliminated the need for Remat Chemie to invest in new pumps, thereby providing significant savings.

“We trust in the competence of Alfa Laval,” says Mark van Aerle, Operations Manager, Remat Chemie.

“ The experience we had in the past made us consult Alfa Laval again for the current plant upgrade.”

– Mark van Aerle,
Operations Manager, Remat Chemie

Upgrading for additional production capacity

Three years later, Remat Chemie needed to ramp up production capacity yet again. This time, Alfa Laval recommended installing a double-pass Compabloc condenser and one spiral heat exchanger as a preheater in each of the two existing columns.

The team at Remat Chemie was hesitant at first that these compact units could handle the critical condensing processes, but agreed to test the equipment in one of the vacuum film evaporators. Just two weeks into the trial, Remat Chemie was satisfied with how well the Compabloc performed as well as the 30% increase in capacity.

This capacity increase was achieved without having to build additional vacuum film evaporators or otherwise extend the plant footprint. What's more, the double-pass condensers eliminated the need for separate sub-coolers and vent condensers, which are required when using shell-and-tube units.

"Seeing is believing," says van Aerle. "Alfa Laval supplied us with good information throughout the entire process. This gave us confidence in the solution and, from a more practical point of view, allowed us to pre-fab all necessary piping without interfering with the process."

Good for business, good for the environment

Retrofitting the vacuum film evaporators with Alfa Laval Compabloc units and preheaters recovers solvent at the right temperature for storage and reuse, but also ensures that the remaining vapours have 80% less carryover of the solvents compared to the previous installation.

Measurable gains from a reliable partner

Working with Alfa Laval proved beneficial for Remat Chemie. By simply replacing the existing condensers with Alfa Laval Compabloc units and preheaters, the company realized a 30% increase in plant capacity – without having to make major structural modifications to the main steel structure or vacuum film evaporators. This reduced the cost of plant expansion, provided direct savings, minimized production losses and reduced overall costs.

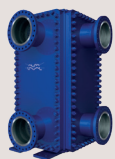
Additional optimization in the future

On the horizon, Remat Chemie and Alfa Laval are looking at other ways to optimize plant operation. One proposal under consideration is using Alfa Laval Compablocs as fractionator reboilers to increase throughput even further.



One of two spiral condenser distillation columns at the Remat Chemie plant.

Key Facts:



Design temperature
400°C (752°F), down to -100 °C (-148°F)
Design pressure
From full vacuum to 42 barg (600 psig)

Maximum heat transfer area

840 m² (8,985 ft²)

Material of construction

316L, SMO254, 904L (UB6), Titanium, C-276/C-22/C-2000

Duties

Heat recovery, cooling, heating, condensation, partial condensation, reboiling, evaporation and gas cooling.

Unique features

Compabloc is the champion of heat exchange thanks to unique Alfa Laval innovations that enable reliable, efficient performance, letting you save energy and improve sustainability.



SmartClean

Fast and efficient flushing of fouling material



C-Weld

Superior cleaning and extended performance



XCore

Advanced design for higher pressures



ALOnsite

Qualified support at your facility

Learn more at www.alfalaval.com/compabloc

SpiralPro

Design temperature

-100°C (-148°F) to 400°C (752°F)

Design pressure

Full vacuum to 100 barg (1450 psig)

Maximum heat transfer area

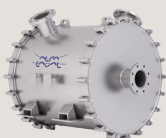
900 m² (9,688 ft²)

Material of construction

Carbon steel, 316L/304/316Ti, 2205 Duplex, Titanium, Nickel alloys

Duties

Liquid-to-liquid or steam heater



SpiralCond

Design temperature

-100°C (-148°F) to 400°C (752°F)

Design pressure

Full vacuum to 100 barg (1450 psig)

Maximum heat transfer area

2,500 m² (26,910 ft²) (for stacked columns)

Material of construction

Carbon steel, 316L/304/316Ti, 2205 Duplex, Titanium, Nickel alloys

Duties

Vacuum condensation or evaporation



Unique features

Built with unique features that prevent fouling, Alfa Laval spiral heat exchangers ensure efficient, reliable performance with high uptime and low maintenance requirements.



SelfClean

Design that prevents fouling



RollWeld

Automated, reliable channel closures



HighP

A custom solution for high-pressure duties



ALOnsite

Qualified support at your facility

Learn more at www.alfalaval.com/spirals

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.