



Hot and cold water for free

Heat recovery in a styrene butadiene rubber plant in Asia

Case story

A mid-sized styrene butadiene rubber producer in Asia installed two Alfa Laval spiral heat exchangers and one Compabloc to recover waste heat from a stripping column. The heat is now reused in the plant and annual energy costs are estimated to be about 660,000 euros lower as a result.

Put waste heat back to use

Petrochemical companies across the world are competing in an increasingly tough business climate. Staying profitable requires plant owners to take every chance to reduce operating costs.

Recovering waste heat is a simple and straightforward way of cutting energy expenses. Using compact heat exchangers with high thermal efficiency allows you to recover heat from streams that have been deemed worthless before.

High thermal efficiency, a temperature approach as small as 2°C (3.6°F), and the ability to operate with crossing temperatures in a single unit means Alfa Laval compact heat exchangers deliver maximum heat recovery on minimum floor space.

New possibilities

Distillation and stripping columns are among the most energy consuming units in a petrochemical plant.

Heat in top vapours or gases is often treated as waste and cooled off. By installing an Alfa Laval compact heat exchanger you can recover much of this energy, put it back to use in your plant, or sell it externally, for example to a district heating network.



Heat recovered from stripping column

A mid-sized styrene butadiene rubber manufacturer in Asia installed compact heat exchangers from Alfa Laval to recover heat from stripping overhead process gas.

The gas has a temperature of about 100°C (212°F) and must be cooled down before further processing. Previously the heat was cooled off but now it is recovered in two stages.

Hot water loop

The first use of the recovered heat is for a hot water loop serving various heat exchangers throughout the plant.

The hot gas passes an Alfa Laval Compabloc where the loop return water is heated from 75°C (167°F) to 85°C (185°F). The water was previously

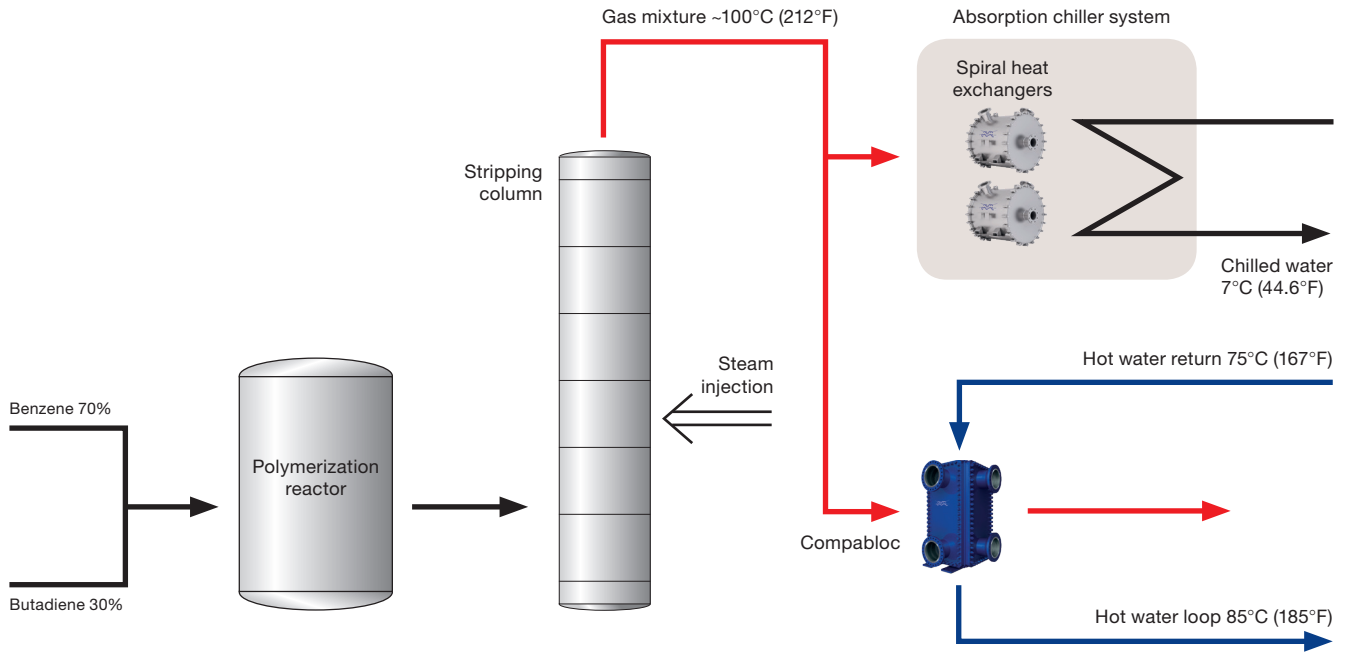
heated in a shell-and-tube using steam that had been throttled down from 10 to 2 bar. Using recovered heat instead saves the plant steam to a value of 500,000 euros per year.

Generating chilled water

The gas also passes two Alfa Laval spiral heat exchangers installed in parallel. The heat recovered here is used for producing chilled water in an absorption chiller.

The company replaced its traditional ammonia system with an absorption chiller in 2008. The previous system consumed 50 kWh of electricity per produced ton of butadiene rubber and the plant's engineers estimate the annual electricity costs dropped by 160,000 euros as a result of the revamp.

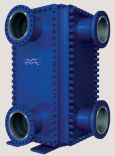
Process overview



Heat recovered from a stripping column is used for producing chilled water in an absorption chiller system and for heating the water in a

hot water loop serving various heat exchangers throughout the plant. The revamp resulted in a total annual energy saving of about 660,000 euros.

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

Learn more at www.alfalaval.com/compabloc

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

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.