



Compabloc saves energy in Ammonium Nitrate production

How an ammonium nitrate plant got more out of less

Case story

When a fertilizer manufacturer in Slovakia, built their ammonium nitrate evaporation system in 1999, there was one criteria above all others for the design. It had to be efficient. With that in mind, they discovered that Alfa Laval Compabloc heat exchangers could help keep both their evaporator cost – and their energy bill – down.

Their bottom line just got a lot hotter

At the plant, two Compablocs are used to save no less than 5MW of energy by means of reduced steam consumption in the second effect evaporator.

By using Compabloc heat exchangers for preheating incoming 80% ammonium nitrate with 95% concentrated ammonium nitrate, they were able to save large amounts of energy.

In fact, without the Compablocs it would not be possible to concentrate the ammonium nitrate without a substantial increase of the evaporator size and much higher steam consumption.



Two Compablocs serving as ammonium nitrate interchangers in the evaporation section of the ammonium nitrate plant. The result? Substantial energy savings

Fast Facts: .

The challenge

When they built their ammonium nitrate plant in 1999, the company was looking for the optimal solution in terms of a compact, robust and energy efficient solution.

The benefits

- 5 megawatts of steam energy saved
- Possible to concentrate the ammonium nitrate without a substantial increase of the evaporator size and without significantly higher steam consumption.

A perfect fit

The aim was to recover as much heat as possible from the concentrated ammonium nitrate. With this in mind, the selection of Compabloc heat exchangers was the logical choice.

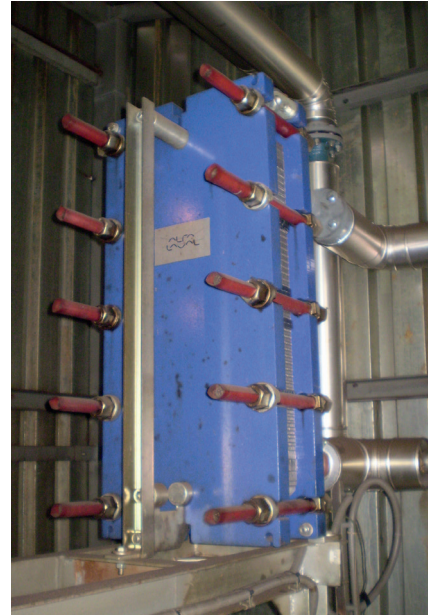
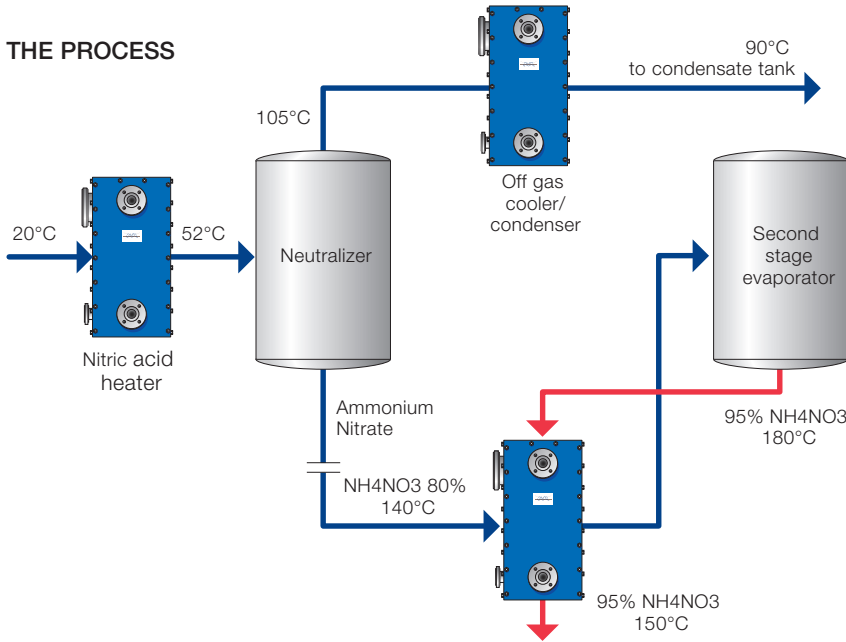
The corrugated plate pattern and counter-current flow of the Compablocs makes them extremely efficient and suitable for energy recovery.

The counter-current flow enables crossing temperature programs, where the cold

fluid can be heated to temperatures very close to those of the incoming hot fluid. The closer the temperature approach between two fluids, the more heat recovered.

“Alfa Laval Compabloc heat exchangers are a perfect fit because they can easily deal with crossing temperatures. In fact, one unit can often replace several shell and tube heat exchangers with down to five times less area requirements,” says Magnus Edmén, marketing manager at Alfa Laval.

THE PROCESS



Semi-welded Alfa Laval ammonia condensers in use since 2001.

Alfa Laval heat exchangers are used in several positions in the Ammonium Nitrate production process. In addition to being used as ammonium nitrate preheaters, there are also Compablocs used as nitric acid preheaters and condensers.



A Compabloc heat exchanger for preheating of Nitric acid.

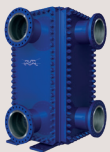


A Compabloc heat exchanger serving as Cyclohexane preheater.

Yes to compact solutions

In addition to the Compabloc heat exchangers, the company use Alfa Laval products for many other purposes in both their fertilizer and petrochemical plants. To name just two examples, semi-welded plate heat exchangers are used as ammonia condensers and Compabloc heat exchangers as cyclohexane preheaters.

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.

Learn more at www.alfalaval.com/compabloc

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

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.