



Alfa Laval helps Petkim take the heat off

Better cooling and higher production capacity in less space

Case story

Petkim, Turkey's largest petrochemical company with a total of 14 plants, exports to the United States and countries in the Middle East, Africa and Asia. Demand for Petkim's products is high, which makes optimizing production at each of the company's plants a must. So when product loss due to high summer temperatures, and insufficient heat-transfer capacity threatened to slow things down at Petkim's Aromatics plant, they turned to Alfa Laval.

Two challenges. Two Compablocs.

Petkim became aware of the Compabloc heat exchanger from Alfa Laval in 2004. They knew it offered a compact design and low maintenance and that it was already part of many successful



One of the two new space-saving Compabloc installations

Fast Facts:

The customer

Petkim is Turkey's largest petrochemical company.

Petkim:

- Has fourteen plants spread throughout the country
- Employs approximately 3700 people
- Supplies a significant portion of the petrochemicals used in Turkey and also exports to the US, Europe, Africa and the Middle East

The challenge

Petkim needed:

- Increased production capacity in their hydrotreater unit
- Increased cooling capacity in their atmospheric toluene column during the hot summer months
- Compact, low-maintenance solutions

The benefits

- No corrosion and no plugging
- Long maintenance intervals save time and money
- Increased cooling capacity
- Increased production capacity (12 additional tons per day)

installations in petrochemical plants and refineries similar to their own. So when Petkim realized they needed two compact solutions, offering top performance, Compabloc came immediately to mind. In 2007, Petkim installed their first two Compablocs, one in an atmospheric column in the hydrotreater unit (UOP, feed preparation) and the other in the toluene column (UOP, Sulpholane Process).

A question of capacity

In their atmospheric column in the hydrotreater unit, Petkim was using a shell-and-tube trim condenser/subcooler just below the air cooler in the upper part of the column. When new process specifications called for increasing the capacity of the condensing/subcooling duty, the shell-and-tube heat exchanger was unable to handle the increase, and there was simply not enough room to install a second one. In addition, poor quality



Trim condenser/subcooler for the hydrotreater unit



An old shell-and-tube installation

cooling water caused excessive fouling, which further limited the heat-transfer capacity.

Petkim chose to replace the shell-and-tube with a Compabloc unit that handles the required cooling duty with only a 2,1 kPa pressure drop in a limited space. There is also significantly less fouling with the Compabloc as a result of the high turbulence. This allows the capacity increase needed.

A question of temperature

In Petkim's atmospheric toluene column, the overhead is condensed in an air cooler and goes to a drum below. In the heat of the Turkish summer, however, high temperatures were causing serious problems with the condensing/cooling capacity. As a result, the required temperature was not reached and some of the toluene was being lost to flare after the drum.

There was no room for an additional shell-and-tube heat exchanger between the air cooler and the drum. And even if there had been, Petkim engineers had been disappointed in the performance of a shell-and-tube heat exchanger in a similar position: Among other problems, low water pressure in the 10-meter-high column meant the heat exchanger became quickly fouled and required frequent maintenance.

The Compabloc Petkim chose for the positions fits neatly into the available space and cools the condensed product to the required temperature even on the hottest summer days with a 4,5 kPa pressure drop. And no product loss.

Small and easy to install + lower capital outlay

In both positions, the Alfa Laval

Compablocs were able to perform the needed duties while requiring a minimal amount of space – both for the installation itself and for maintenance. The Compablocs were also relatively simple and cost-efficient to install because they call for much less installation area – approximately 1/3 of what is necessary for shell-and-tube heat exchangers.

Minimal maintenance. Times two.

In addition, the Compablocs are extremely reliable. They're unlikely to suffer from corrosion, leakage or plugging – or require much maintenance at all, for that matter. They're made of corrosion-resistant stainless steel, and they generate high turbulence that provides a self-cleaning effect that has eliminated the problem of frequent fouling, in particular, in the atmospheric toluene column.

The two installations have to-date been in operation for over a year and have yet to be shut down for maintenance.



About the Solution

The Compabloc welded plate heat exchanger from Alfa Laval is suitable for operation in chemically aggressive environments and for handling high-temperature fluids. With no gaskets between the corrugated heat transfer plates, maintenance is straightforward and efficient.

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.