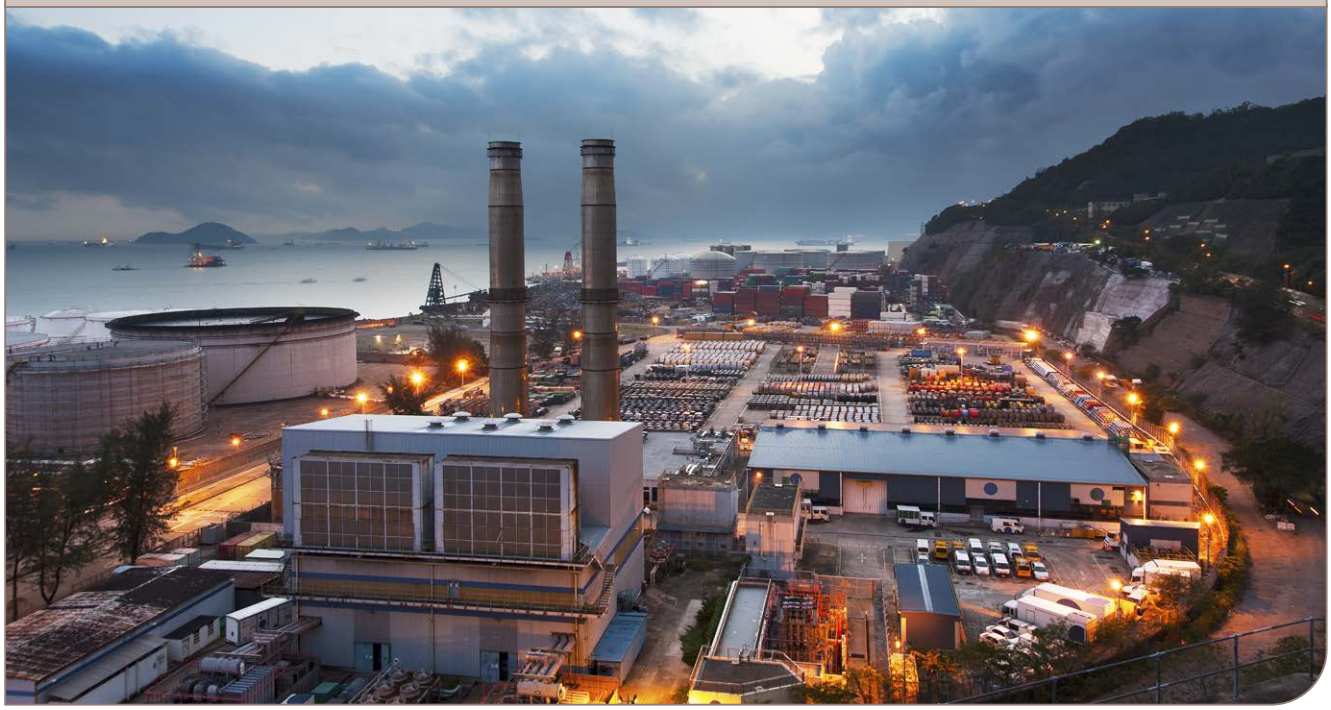
Alfa Laval DuroShell increases efficiency for French power plant

Combined-cycle power plant, France **Case story**



A 4% increase in overall plant efficiency was the result when a French energy company installed Alfa Laval DuroShell as a boiler feedwater preheater in its combined-cycle power plant in northern France.

A changing energy market

The power plant has an output of close to 800 MW, making it one of the largest combined-cycle plants in France.

The plant was initially a baseload plant, but due to changes in the European energy market, company management decided to start running it as a peaking plant instead.

Before switching to peaking operation, the plant was revamped in order to increase its efficiency.

Boiler feedwater preheater

One part of the revamp was to install a boiler feedwater preheater. This increases the plant's overall efficiency by preheating the feedwater entering the boiler using steam extracted between turbine stages.

There were two main challenges for the supervising engineers to overcome. First, the preheating unit needed to be installed in a small, elevated space, which meant it had to be compact and light.

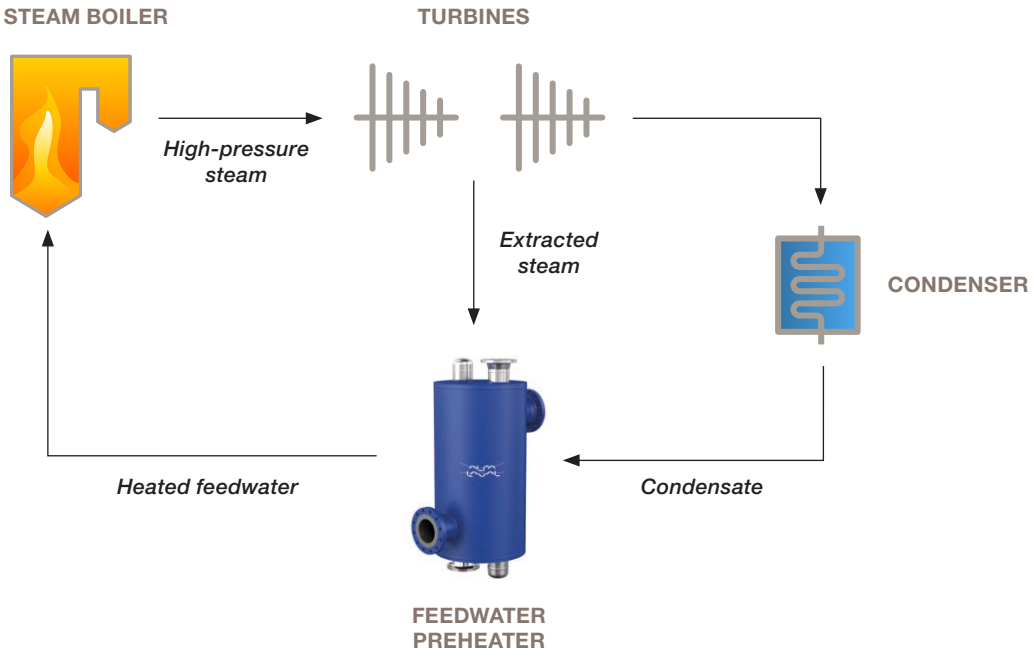
Second, there would be sudden and large temperature changes since the plant would only be in operation during consumption peaks. This could potentially cause fatigue in the preheater and unplanned downtime.

DuroShell – the perfect solution

Having reviewed a number of options, it became clear that Alfa Laval's DuroShell plate-and-shell heat exchanger stood out as the best solution to meet the challenging requirements.

The high thermal efficiency of a DuroShell makes it very compact, and the small size and lightweight design was crucial for the installation.

A single DuroShell unit can act as both condenser and subcooler, which reduces space requirements even further. Had the engineers opted for a solution based on bulkier shell-and-tube technology, two heat exchangers would have been required.



Another decisive factor was DuroShell's high resistance to fatigue. Thanks to its unique design, DuroShell can withstand fatigue much longer than shell-and-tube and conventional plate-and-shell heat exchangers.

DuroShell is also very easy to operate and control with traditional liquid-level control systems.

Good results

The engineers and management team at the plant are very happy with the results and there is a high likelihood that DuroShell will be the standard solution for boiler feedwater preheating in all of the company's thermal power plants.

Fast facts

The plant
A combined-cycle power plant in northern France with a capacity of close to 800 MW. It is operated as a peaking power plant.

The challenge
To increase overall plant efficiency when switching from baseload to peaking operation.

The solution
Among other initiatives, an Alfa Laval DuroShell was installed as boiler feedwater preheater.

The benefits
- 4% higher overall plant efficiency
- Compact, lightweight installation
- Condensation and subcooling in one unit
- Very high fatigue resistance

DuroShell RollerCoaster
Robust and efficient performance.

DuroShell PowerPack
Optimized flow distribution and fatigue resistance.

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