Compabloc helps Sayanchimplast save big

Compabloc makes an ingenious steam-saving revamp reality **Case story**

Sayanchimplast, a leading Russian producer of vinyl chloride monomer (VCM), is always on the lookout for new ways to make their processes more efficient. A prime example is the ingenious solution they designed for reusing process vapors to heat a reboiler in their EDC/VCM process. There was only one problem: the shell-and-tube heat exchanger in the reboiler position clogged up so fast that the redesign – and substantial potential savings – were in danger of being abandoned. Until Sayanchimplast talked to Alfa Laval about Compabloc.

Savings of €240,000 a year

Sayanchimplast produces vinyl chloride monomer (VCM) through thermal cracking of ethylene dichloride (EDC). A Compabloc was installed in the purification column of the EDC/VCM plant before the cracker approximately one year ago. It's used as a reboiler for the column still. The heating media is liquid EDC, a bottom product of the other rectifying column, with a temperature of 160°C.

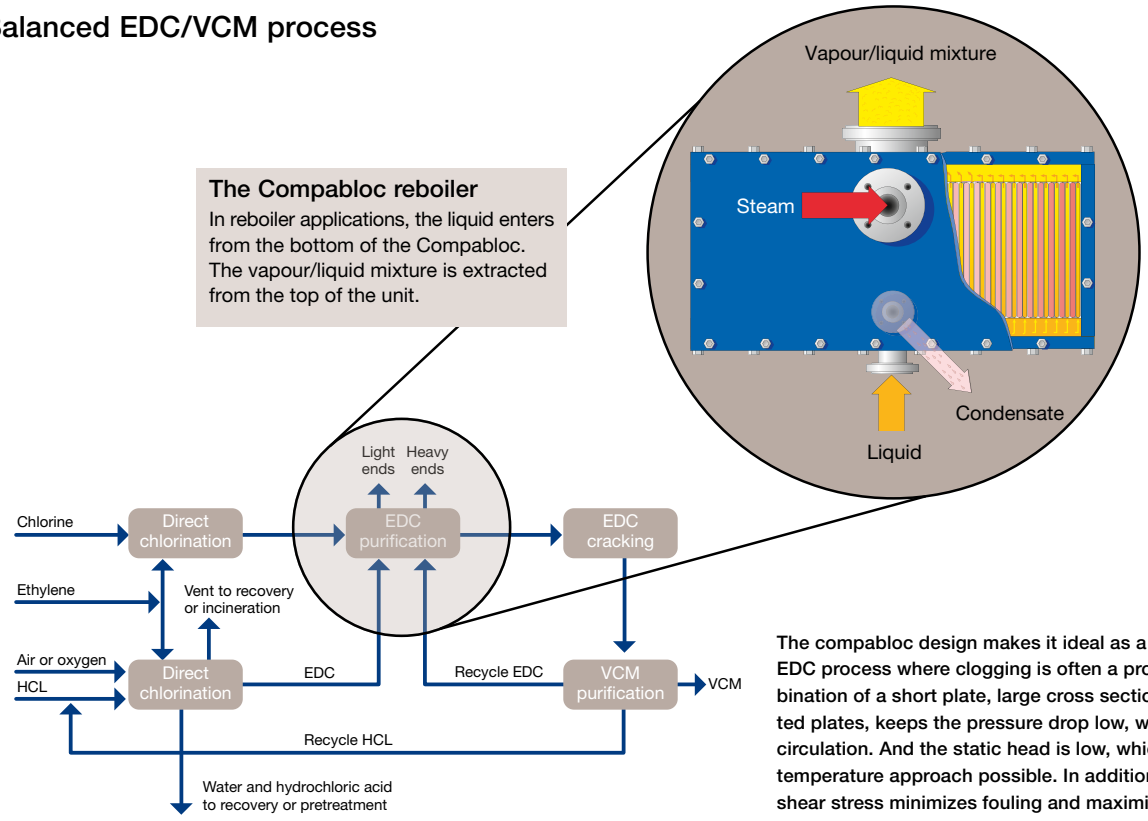
Originally, the column was heated by three parallel shell-and-tube reboilers. They used approximately 24,000 tons of steam per year – at a cost of approximately ten euro per ton, or €240,000 a year.

Sayanchimplast first tried to replace the steam with liquid EDC in one of the steam-heated shell-and-tube heat exchangers. However, clogging due to tar accumulation occurred so rapidly that they had to find a new solution – or forget all about considerable savings.

From all clogged up to clean as a whistle

At the time, Alfa Laval was already discussing the Compabloc heat exchanger with Sayanchimplast. But the company

Balanced EDC/VCM process



The compabloc design makes it ideal as a reboiler in the EDC process where clogging is often a problem. The combination of a short plate, large cross section and corrugated plates, keeps the pressure drop low, which gives high circulation. And the static head is low, which makes a close temperature approach possible. In addition, the high wall shear stress minimizes fouling and maximizes the K value.

had been hesitant to install what, for them, was a newer, less familiar technology in a key position.

Now, however, Sayanchimplast could see that Compabloc could rescue their ingenious, cost-saving revamp. With its short, corrugated plate, which promotes turbulent flow and a low pressure drop, Compabloc would put an end to the excessive fouling that plagued the shell-and-tube installation – and the unacceptable downtime that came with it. In addition, the solution proved to be more efficient than the shell-and-tube solution.

Fast Facts:

The customer Sayanchimplast is:

- Responsible for producing over 40% of the PVC output in Russia
- A leader of the Russian chemical complex and one of the 200 largest companies in Russia
- Strategically located near Irkutsk, in the industrial Baikal lake region

The challenge

Sayanchimplast needed:

- A reboiler that wouldn't clog when heated by process vapours
- To cut expensive steam costs
- A reliable solution

The benefits

- No tar accumulation
- Long maintenance intervals save time and money
- Approximately 24,000 tons of steam saved per year at approximately €10 per ton

Up and running for over a year

The Compabloc solution has been up and running for over a year now and has been taken out of service for cleaning only once. Sayanchimplast finds this a more than acceptable interval – especially compared to the almost immediate clogging of the original shell-and-tube heat exchanger. Sayanchimplast and Alfa Laval also worked closely together during a mutually satisfactory purchase and installation process. Valery Nevidimov, head of the technical department at Sayanchimplast has this to say about the collaboration:

"We got a very good impression of Alfa Laval as a partner. We discussed various things with them prior to the deal such as liquid level and choice of valves. Alfa Laval helped us locate problems and together we solved them."

Now they're convinced

Now that Sayanchimplast has firsthand experience with Compabloc they're far from reluctant to consider it for key positions in their plant. In fact, according to Alfa Laval Business Development Manager Viktor Tsukanov, Sayanchimplast is looking at Compabloc first for new installations:

"Now Sayanchimplast knows that Alfa Laval isn't just as good, it's better – in terms of reliability, efficiency, and maintenance," he says. Valery Nevidimov agrees: "We'll certainly consider Alfa Laval for new retrofit projects. We'll definitely look at Compabloc installations for cooling systems, for example."

About the Solution

The Compabloc from Alfa Laval is a highly efficient welded plate heat exchanger. Its corrugated heat transfer plates not only bring about more efficient heat transfer, but also minimize fouling and therefore the need for maintenance. This in turn reduces operating costs. Furthermore easy accessibility simplifies mechanical cleaning. With no inter-plate gaskets, design limits are extended and reliability – and durability improved.