



Swedish plant installs Alfa Laval Compabloc heat exchangers

Trouble-free operations at the SSAB Oxelösund coke oven plant



SSAB Oxelösund is the largest Nordic manufacturer of heavy steel plate, with an annual production in the vicinity of 580,000 tonnes. This Swedish company is also a world leader in the specialist field of quenched and tempered steels, and produces well-known brand names such as HARDOX and WELDOX. SSAB Oxelösund exports 90% of its production.

The five Alfa Laval Compabloc heat exchangers are installed in the benzene recovery part of the SSAB coke oven plant. Prior to installing the Compabloc units, SSAB had used other



Distillation column light oil preheater

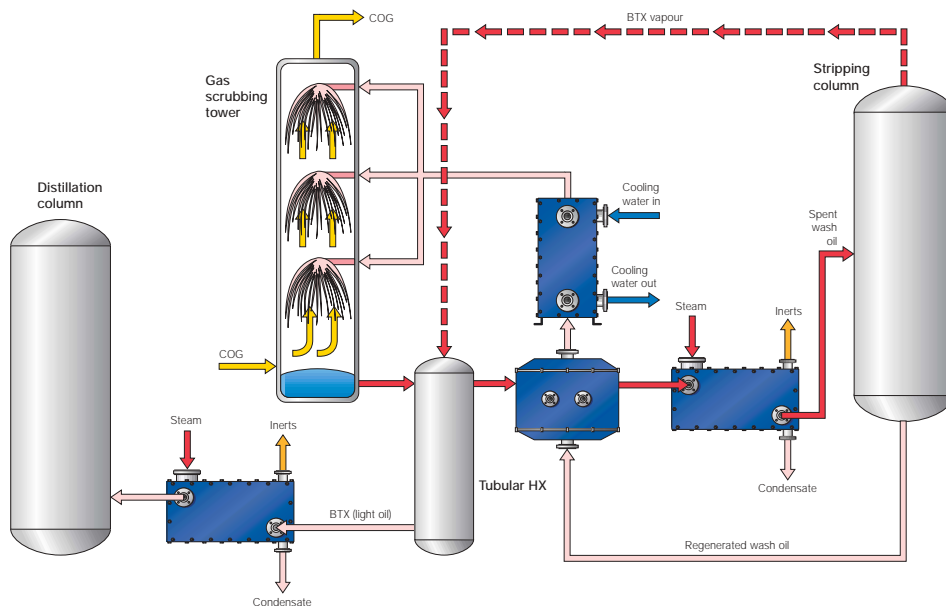
types of heat exchangers. However, the company decided to look for alternative solutions to try to reduce the intensive maintenance requirements. The choice lay between spiral heat exchangers and Compablocs. Spiral heat exchangers have a solid reputation within the coke oven gas process industry, so SSAB was initially hesitant to use the lesser-known Compabloc type. However, the company finally decided on the compact Compabloc solution because it was more cost-effective. This was an especially important issue because it was necessary to use titanium, for its corrosion-resistant properties. The result, according to maintenance engineer Helmut Moser, is that "The Compabloc heat exchangers just keep on running with only a minimum of maintenance."

Three of the Compabloc heat exchangers were installed to cool the regenerated wash oil before it enters the scrubbing tower. Sea water is used as a coolant. One of these heat exchangers was installed in 1994 and the other two the following year. To remove the BTX fractions (benzene, toluene and xylene) from the coke oven gas, wash oil is sprayed over the gas in a gas-scrubbing tower. The wash oil is regenerated in the light oil stripper where BTX fractions are removed. The vapours that come from the stripper contain BTX (mainly benzene). These are condensed and the condensate is then pumped to the distillation tower for further refining.

The fourth Compabloc unit was installed in 1999 and replaced the old traditional pipe oven, with coke oven gas as the heating media. This Compabloc was installed to preheat the spent wash oil going to the stripper, where the heating media is steam. The Compabloc has operated without any problems since start-up and no mechanical cleaning has been necessary.

At the same time as SSAB bought the fourth Compabloc, the company also purchased an identical spare unit for the pipe oven, a square brick building that is 7 metres in height, with a footprint of 25 m2. Helmut Moser comments, "Since the steam heater was running so well, we felt confident that we

wouldn't need the spare unit, so we started looking for another place to put it." The pipe oven had a second pipe used for heating the condensed raw benzene before going to distillation. According to Helmut Moser, the company has achieved energy savings of 30% in the distillation step by installing the spare Compabloc as a raw benzene heater. In addition, the Compabloc made it possible to obtain better quality benzene. This Compabloc has been in operation since 2002 and is running without any problems. As a result of the safe operation of the two Compablocs used as preheaters, SSAB has now disassembled the pipe oven and removed it from the site.



Five Alfa Laval Compablocs are installed in the light oil (BTX) recovery plant at SSAB Oxelösund in Sweden.

Key facts about Compabloc

The Compabloc is a high-efficiency all-welded compact heat exchanger designed for aggressive or hazardous process services. It is available in six sizes with heat transfer areas ranging between 0.7 to 320 m2 (7 to 3 450 sqft). The heat transfer area is made up of a pack of corrugated plates alternatively welded to form the media channels. The plate pack is supported by an upper and lower head and four side panels, which accommodate the connections. The 100% welded plate pack extends design limits and offers improved reliability. Because there are no inter-plate gaskets, compatibility concerns are eliminated, and maintenance and operating costs are reduced. Access for inspection and cleaning is fast and easy.

Plate materials

Stainless steel 316L, 304L, 317L, 904L
Avesta 254 SMO, AL6XN
Titanium, Pd-stabilized titanium
Alloy C276, C22, B2

Specifications

Design pressure min/max:	Vacuum/32 bar(g) (460 psig)
Design temperature min/max:	-30/350 °C (-20/660 °F)
Connections:	ANSI or DIN flanged
Codes of construction:	ASME (with or without AD-Merkblätter, Stoomwezen

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