



Compabloc – the world’s most compact reboiler

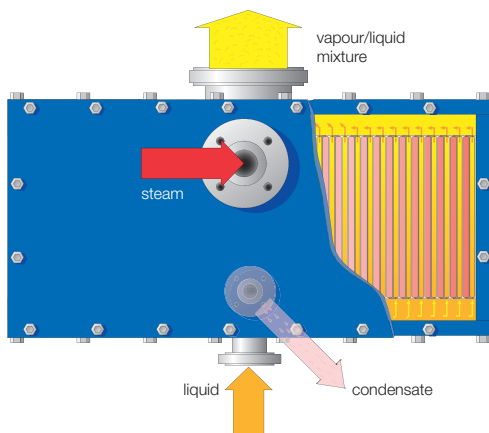
Saving both money and space at Rhodia

Case story

The Rhodia petrochemical company operates 110 factories worldwide. When the company needed a new reboiler for its petrochemical plant at Paulínia, Brazil, Rhodia turned to Alfa Laval for a solution.

The result was the installation of a Compabloc thermosiphon reboiler at the base of a stripping tower that separates alcohol from water. Deciding on the extremely compact Compabloc solution instead of installing a traditional shell-and-tube reboiler enabled Rhodia to save both money and space.

The reboiler installed in the Paulínia plant is a good example of the Compabloc thermosiphon reboiler concept – the most compact reboiler solution available on the market today. The installation is also a good example of how well Compabloc welded heat exchangers are suited for condensing and reboiling duties. As Adriana Tardin, process engineer at Rhodia’s Paulínia solvents plant, points out, “When people saw the Compabloc reboiler just before start-up, they never thought it would work – it simply looked too small.” They were soon proved wrong, however. The Compabloc reboiler was installed in May 2001 and has been in constant round-the-clock operation ever since, with no downtime whatsoever.



The Compabloc thermosiphon reboiler



The Compabloc thermosiphon reboiler installed at the Rhodia factory in Paulínia takes up significantly less space than a traditional shell-and-tube. Close-up on next page



Size comparison: Compabloc versus shell-and-tube reboiler with similar capacity

The process

In a solvent production line a waste stream is produced that contains a small amount of alcohol. Environmental restrictions prohibit returning this particular kind of waste to the ecosystem, which meant that a recovery solution had to be found. This also made it possible to recirculate the recovered alcohol, thus saving money at the same time. The Compabloc is installed as a thermosiphon reboiler at the bottom of a stripping tower to supply heat for the separation process, which results in a flow of alcohol at the top of the stripping tower and clean water at the bottom.

Compabloc benefits

Process operator Claudio Thiele explains, "The Compabloc reboiler has a smaller hold-up volume than a shell-and-tube, which means the start-up process is quicker. The Compabloc also reacts more rapidly to changes in control parameters, which makes operation both simpler and more efficient."

The corrugated pattern in a Compabloc creates a maximum of turbulence, which results in excellent heat transfer efficiency. The heat transfer coefficient in a Compabloc reboiler is normally 2–3 times higher than that in a shell-and-tube. As a result, the heat transfer area for an alternative shell-and-

tube in this specific case would have been 24 m², compared with 11 m² for the Compabloc reboiler installed here.

The Compabloc design is always the most compact solution available, with a Compabloc reboiler only taking up about 20% of the physical space needed for a traditional shell-and-tube installation. This in turn means considerably lower installation costs.

Minimal service requirements

The Compabloc reboiler is of the welded type and has been in operation since May 2001. No cleaning at all was necessary within the first year. If and when inspection or cleaning procedures are needed, these are simple tasks that require little space and only involve a minimum of downtime compared with shell-and-tube reboilers of the same capacity. The flexible construction of Compabloc means that service is simple. If fouling does occur, it is easy to clean on site, simply by circulating the appropriate cleaning solutions through the unit. Chemical cleaning is extremely effective due to the high turbulence and low hold-up volume of the Compabloc unit. Mechanical cleaning is also possible using hydroblasting with a high-pressure water jet, after removing the bolted panels on both sides.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information direct.