



Spirals in Titanium

Zhejiang Hualian Sunshine Petrochemical, Shaoxing, China

Case story



Hualian Sunshine is the only manufacturer of Eastman polymer-grade terephthalic acid (E PTA) in the People's Republic of China. The company operates a 600,000tpa line using the Lurgi/Eastman/SK process license. The plant, engineered by Lurgi, officially started up in April 2005.

Crude terephthalic acid is converted from p-xylene in the oxidation unit, in the presence of a catalyst, air and weak acetic acid. A flow diagram indicating the main process units is shown in figure 1.

An Alfa Laval spiral heat exchanger made of titanium is used for heat recovery in the filtrate treatment and catalyst recovery unit. Cold filtrate is pre-heated by filtrate from the bottom of the stripping column before being recycled into the catalyst preparation system, so that both the catalyst and the solvent can be re-used in the oxidation unit.

As this process is prone to blockages because the filtrates have a high solids content, this spiral heat exchanger is the ideal way to keep cleaning requirements to a minimum. If the heat exchanger is simply flushed with acetic acid on a monthly basis, the equipment will operate continuously with no need for mechanical cleaning. This saves on both downtime and maintenance costs. The senior director of the Equipment Department, confirmed that Hualian Sunshine is very satisfied with the performance of the Alfa Laval spiral heat exchanger. He stated that it is not only easy to clean, but is also compact and provides excellent heat recovery performance.

Hualian Sunshine was happy to select Alfa Laval equipment on the basis of the company's considerable experience in designing and manufacturing spiral heat exchangers in exotic materials such as Alloy C, titanium, etc.

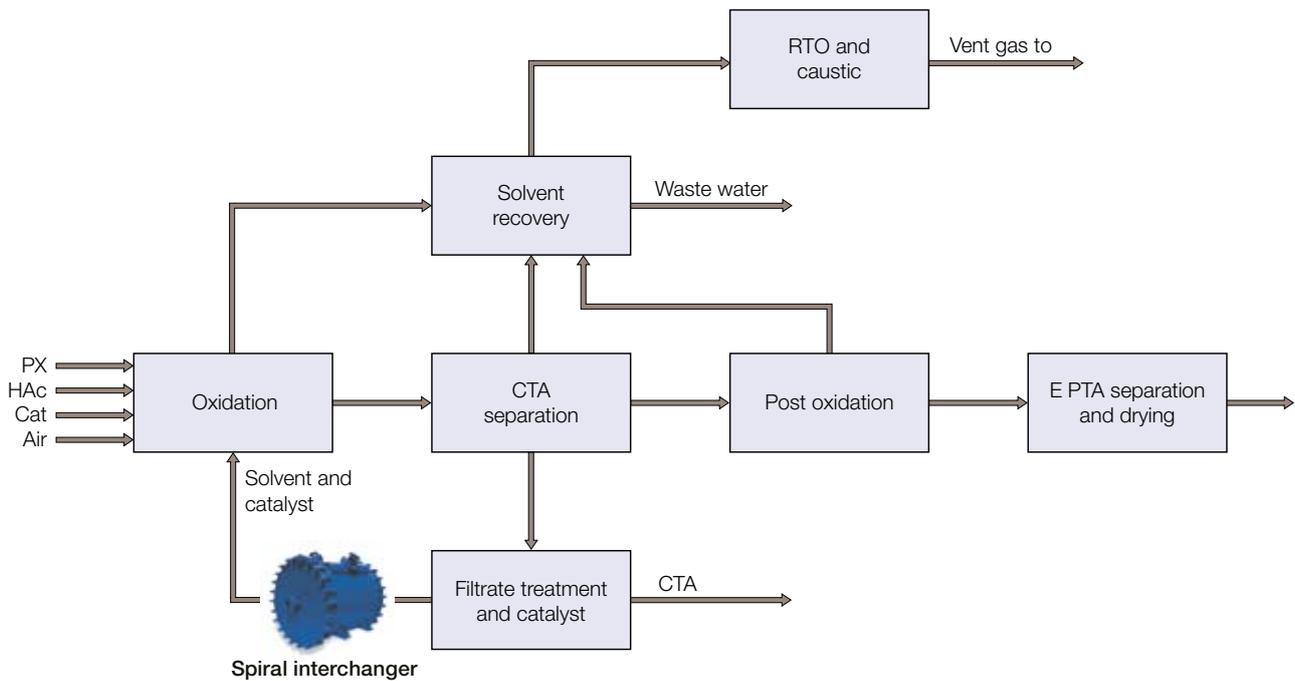


Figure 1. Simple flow diagram explaining the E PTA process

Alfa Laval spiral heat exchangers

Alfa Laval spiral heat exchangers are extremely versatile, and can be customized to provide a perfect match for the demands associated with a wide range of process fluids, thermal duties and industrial applications.

They are widely used for

- liquid/liquid heating, cooling or heat recovery, where one or both of the fluids may cause fouling
- vapour/liquid condensing, particularly at very low pressure and/or high volume flow

Plate materials

- Carbon steel
- 316L, 304L, 254 SMO, duplex and stainless steel
- Titanium
- C-2000, C-276, C-22 alloy

Specifications

Design pressure:

Full vacuum / 40 barg and above (560 psig)

Design temperature:

Min -100°C / max 400 °C (-148/752°F)

Capacity range:

1-500 m² PED and ASME (with or without U-stamp)

How to contact Alfa Laval

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