CASE STORY

Full insight with Packinox Performa

Western European refinery

One of Western Europe's largest oil and gas companies has been using Packinox heat exchangers in catalytic reforming units in its refineries for decades. With Packinox Performa, process operators have full control over the ratio of recycle gas to liquid feed. This ensures optimum operation, especially under transitory conditions during start-ups and shutdowns.

The challenge of biphasic flow

The mixing of liquid naphtha and the recycle gas is a central step in catalytic reforming. Finding the optimum balance between the flow rates of liquid feed and recycle gas is crucial for efficient operation. If the gas flow is too high, costs for compression will be unnecessarily high. If the gas flow is too low, the risk of coke formation increases, and the gas will not be able to lift the liquid correctly through the heat exchanger, causing poor performance.

New tool helps set the optimum gas flow

The engineers at one of the customer's refineries contacted Alfa Laval with a request for a tool that could help them optimize the flow of recycle gas in a Packinox heat exchanger operating in their catalytic reforming unit.

Such a tool would be particularly helpful during start-ups and shutdowns when operating conditions fluctuate.

The development team at Alfa Laval had already started working on a mathematical model that would allow for comparisons between real operating data and a theoretical simulation of the process.

The refinery's process specialists supported the development with sets of operating data, including start-up data, which allowed the engineers at Alfa Laval to set the optimum ranges for the different parameters and refine the method by which insufficient lifting is detected. After five months of development and testing, Packinox Performa was ready and implemented in the control system of the refinery.

Continuous optimization

Packinox Performa continuously monitors the operating parameters in the Packinox unit and calculates the minimum required gas flow, making it easy for process operators to avoid insufficient lifting.

In addition, Packinox Performa analyses the operating data and issues weekly dashboards with thorough information on the condition of the Packinox heat exchanger, as well as recommendations on future maintenance actions

Setting new standards

The customer is very satisfied with the results after implementing Packinox Performa.

“Packinox Performa has given us a window into the lifting process, making the operation of our catalytic reforming unit easier,” says one of the customer’s process specialists. “We now have full control over the lifting process, also at start-ups and shutdowns, and we can easily optimize the recycle gas/naphtha ratio.”

Six months after its launch, Packinox Performa has been installed in five of the customer’s refineries.

Availability

At present, Packinox Performa is available for heat exchangers used in catalytic reforming and aromatics production. Performa will soon be available for other applications, such as hydrotreatment and long-duration energy storage.

Fast facts

The plant

A catalytic reforming unit (CRU) in a refinery in Western Europe.

The challenge

To develop a tool that would allow the customer to monitor and optimize the recycle gas/naphtha ratio.

The solution

A new tool implemented in the customer’s control system.

The benefits

- Easy start-ups and shutdowns
- Maximum operating reliability

ALOnline

Digital services for maximum uptime and performance

Explosion forming

High-strength plates with long, reliable lifetime

HyperCut

Unique plate design that increases reliability and reduces pressure drop

Spray Bar

Effective mixing of the liquid feed and the recycle gas

ALOnsite™

Qualified support at your facility

Learn more about Alfa Laval Packinox heat exchangers at: www.alfalaval.com/packinox.