# Full insight with Lifting Controller

**Western European refinery** **Case story**

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 the new Lifting Controller tool, 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.

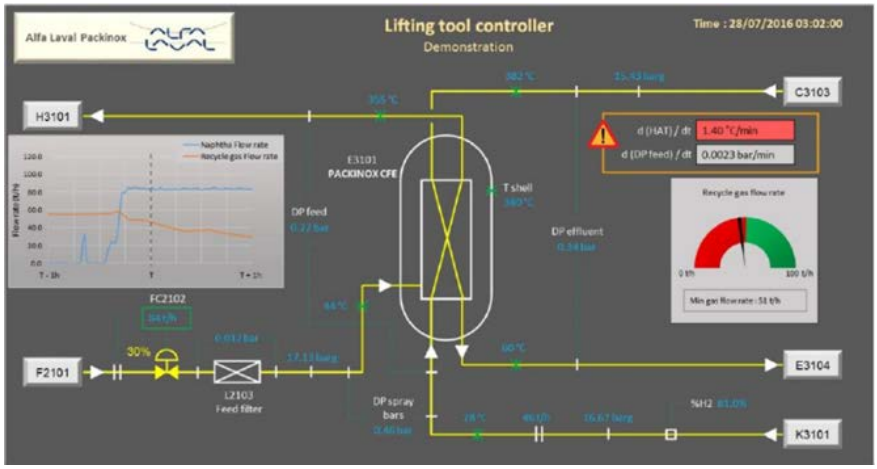
Such a tool would be particularly helpful during start-ups and shutdowns when operating conditions fluctuate.

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, the Lifting Controller software tool was ready and implemented in the control system of the refinery.

**Continuous optimization**

The Lifting Controller tool 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.




An easy-to-read indicator makes it easy for process operators to monitor and optimize the recycle gas/liquid feed ratio.

## Setting new standards

The customer is very satisfied with the results after implementing the Lifting Controller.

"The Lifting Controller 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, the Lifting Controller has been installed in five of the customer's refineries and on three exchangers in another company's refinery in India.

## Standard product

The Lifting Controller is available for all Alfa Laval Packinox heat exchangers and each installation is customized to match the specific unit and operating conditions at hand.

**Lifting Controller**
Optimum lifting and increased flexibility

**Wide Opening Design**
Maximum heat recovery

**Lifetime Follow-Up**
Continuous monitoring and optimization

**Spray Bar**
Effective mixing of the liquid feed and the recycle gas

**Explosion Forming**
High-strength plates with long, reliable lifetime

Learn more at www.alfalaval.com/packinox.

## 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 software tool implemented in the customer's control system.

**The benefits**
- Easy start-ups and shutdowns
- Maximum operating reliability