

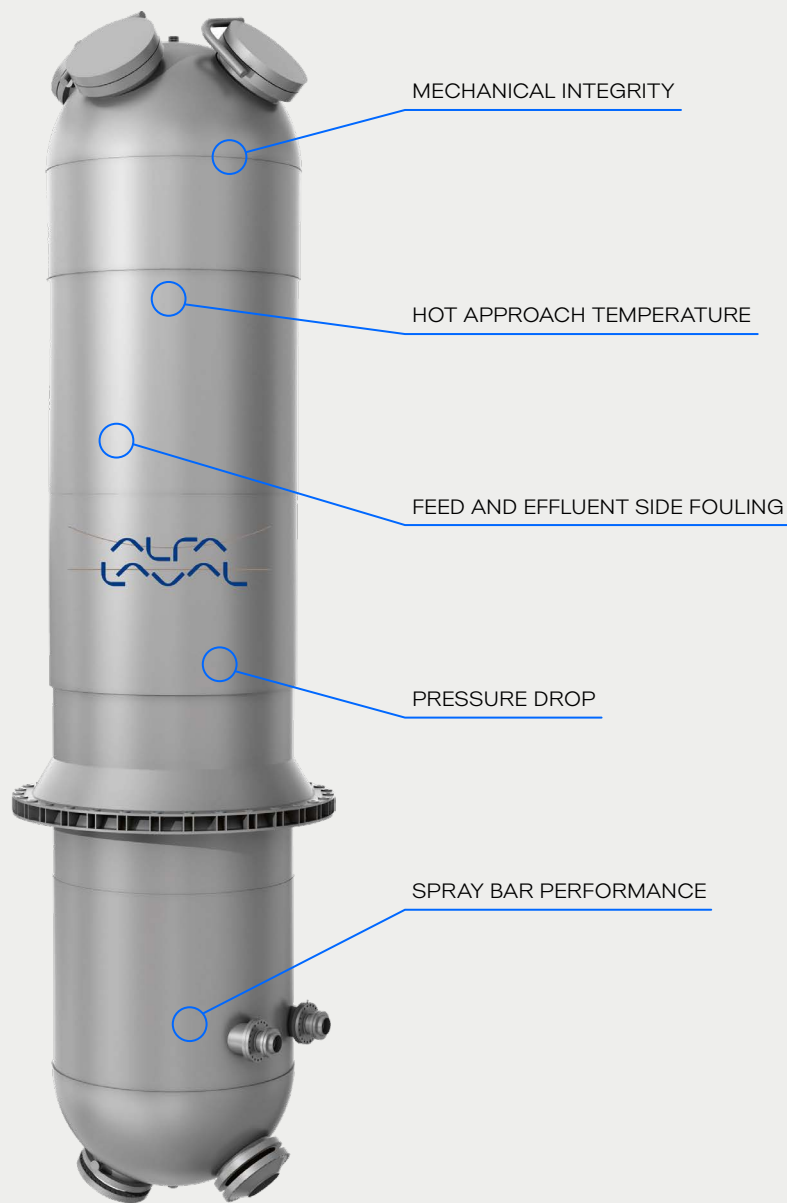
# Performance through connectivity



HAT = 20°C  
DP = 0.2 bar  
Q = 50 MW

T = 450°C  
DP = 1 bar

HAT = 41°C  
DP = 1 bar  
Q = 45 MW



# Empowering operations

Maximize the efficiency and reliability of your Packinox heat exchanger with Alfa Laval Performa Monitoring. This unique software supports operations greatly by providing a detailed, real-time view of your exchanger's performance and condition, including fouling predictions.

It gives you valuable insights into fouling and performance trends, enabling predictive maintenance and data-driven decision-making. Developed as the perfect complement to your Packinox heat exchanger, it helps you maintain long-term performance and energy efficiency, and both boost profitability and sustainability.

## Our service helps you:

- Enhance equipment performance
- Reduce energy consumption
- Lower maintenance costs
- Extend equipment lifetime

## How it works

Alfa Laval Performa Monitoring provides real-time operating data, in-depth analyses, and detailed weekly reports, offering a comprehensive view of your Packinox heat exchanger's performance and condition. The software also makes recommendations that help your staff optimize operations and implement predictive maintenance strategies that keep your Packinox performing at its best.

The software collects and processes four types of data:

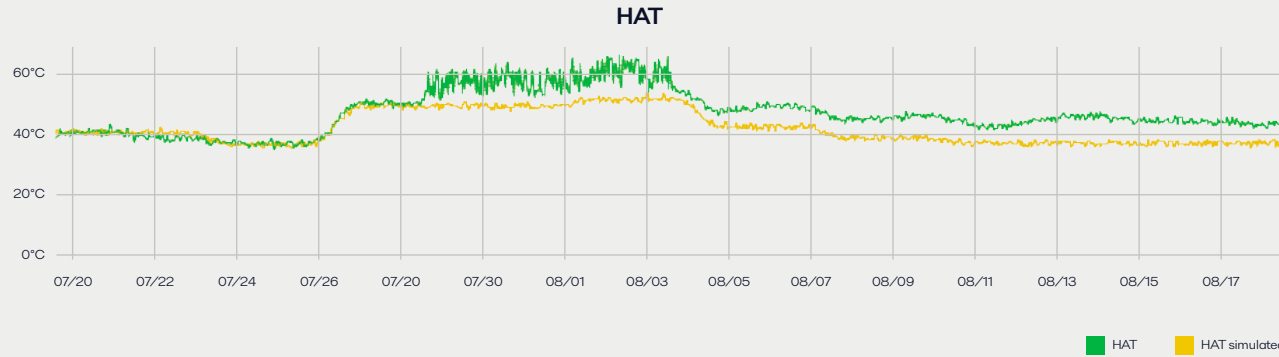
- Thermal and hydraulic performance – Compares actual operating data with simulated values to detect performance deviations early.
- Fouling – Continuously monitors fouling status and predicts future cleaning requirements.
- Mechanical integrity – Tracks critical parameters to ensure compliance with design limits. Deviations are immediately flagged to prevent damage.
- Lifting of the liquid feed – Enables operators to optimize the flow of recycle gas to reduce operating costs.

Performa Monitoring is directly integrated into your control system (DCS) for streamlined data display and alarm handling.

## Ensuring thermal and hydraulic performance

Performa Monitoring collects thermal and hydraulic operating data, including hot approach temperature (HAT), pressure drops across the spray bars and the feed and effluent streams, as well as liquid and gas flow rates.

By comparing actual values with the results from a thermo-hydraulic simulation of the heat exchanger, deviations – such as incipient fouling – are detected at the earliest stage. Performa Monitoring provides clear status updates and actionable recommendations, enabling proactive maintenance planning



**Figure 1.** Performa Monitoring compares actual operating data with the results of a thermo-hydraulic simulation to assess the condition of the heat exchanger.

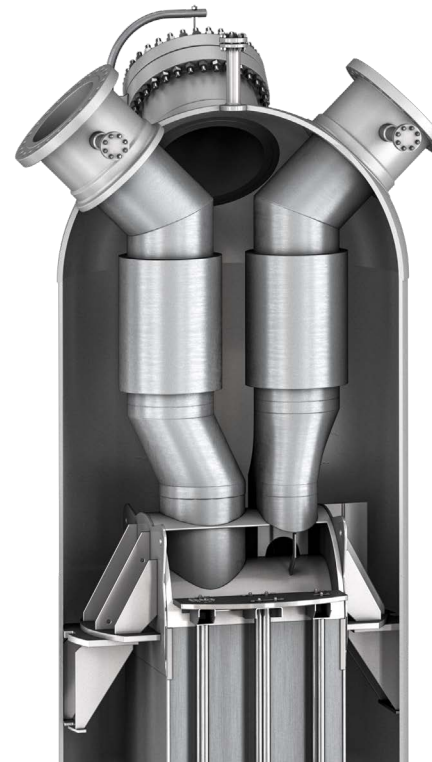
## Predicting fouling

Fouling in the spray bars as well as the feed and effluent channels is continuously tracked by Performa Monitoring. The system analyzes fouling trends and compares the recorded data with your Packinox heat exchanger's performance specifications to evaluate when cleaning is required. An easy-to-read indicator – green, yellow, or red – alerts supervisors if cleaning is needed and how urgently.

## Safeguarding mechanical integrity

Performa Monitoring ensures operation within design limits and immediately flags deviations to prevent damage. It monitors parameters such as hot approach temperature, the surface temperature of the upper section of the heat exchanger, and various pressure drops.

If any parameter exceeds design limits, Performa Monitoring sends an alarm to the DCS and flags the issue in the weekly dashboard report. For example, a sudden drop in surface temperature in the upper section of the heat exchanger may indicate a compromised expansion below, requiring attention.



**Figure 2.** The surface temperature is one of the parameters tracked by Performa Monitoring to ensure mechanical integrity. A sudden drop indicates a possible leak in one of the bellows.

## Setting the optimum gas flow rate

Proper lifting of the liquid feed through the heat exchanger is crucial for process performance in catalytic reforming and aromatics production. The recycle gas flow must be sufficient to lift the liquid-feed droplets through the heat exchanger, but excessively high flow rates lead to unnecessarily high operating costs for the compressor.

Perfoma Monitoring provides full insight into the lifting process, making it easy to set the optimum flow rate. The system monitors the upward flow of the liquid feed and informs operators of the minimum required recycle gas flow rate. This allows them to fine-tune the gas flow when operating conditions change without risking any process upsets. If insufficient lifting is detected, the system immediately triggers an alarm.

In the weekly dashboard reports, the number of alarms in recent days is presented along with the average ratio of actual to minimum gas flow rates. This information indicates whether the heat exchanger is operating within acceptable limits and helps identify potential opportunities to reduce the gas flow to save energy.





## Installation

To maximize security and flexibility, Performa Monitoring can be installed onsite without requiring internet access. Alternatively, it can be seamlessly integrated into your existing connected solutions. Performa Monitoring is also compatible with Axens and UOP digital solutions.

All historical data is securely stored in a database, allowing easy access for further analysis.

## Subscription

Performa Monitoring is available as an annual subscription. This gives you access to all future upgrades and technical support from our help desk.

## More information

Visit our website at [www.alfalaval.com/packinox/service](http://www.alfalaval.com/packinox/service) to learn more or contact us for a discussion on how you can benefit from Performa Monitoring.

### **This is Alfa Laval**

The ability to make the most of what we have is more important than ever. Together with our customers, we're innovating the industries that society depends on and creating lasting positive impact. We're set on helping billions of people to get the energy, food, and clean water they need. And, at the same time, we're decarbonising the marine fleet that's the backbone of global trade.

We pioneer technologies and solutions that free our customers to unlock the true potential of resources. As our customers' businesses grow stronger, the goal of a truly sustainable world edges closer.

The company is committed to optimizing processes, creating responsible growth, and driving progress to support customers in achieving their business goals and sustainability targets. Together, we're pioneering positive impact.

### **How to contact Alfa Laval**

Contact details for all countries are continually updated on our website.

Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information.