Predicting gasket lifetime with Alfa Laval Condition Audit for plate heat exchangers

Petrochemical company, Jubail, Saudi Arabia

Knowing the right time to replace gaskets for critical plate heat exchangers ensures plant reliability, productivity and uptime. That's what one of the world's largest ethylene producers in Saudi Arabia discovered when Alfa Laval recommended an Alfa Laval Condition Audit for the company's 11-year-old gasketed plate heat exchangers.

This major petrochemicals company and long-standing Alfa Laval customer used 39 Alfa Laval plate heat exchangers for critical cooling duties at its plant. The heat exchangers operated for many years without requiring maintenance. However, production reliability is only as good as the quality and operating condition of equipment components.

Why an Alfa Laval Condition Audit?

Many factors affect the operating condition of heat exchangers. Process conditions and heat transfer media, for instance, may change. Opening the heat exchanger frequently also influences heat exchanger performance. These have a direct effect on the mechanical condition of the heat exchanger.

"Even if the gaskets are selected to meet design conditions, they can either last longer or require replacement earlier than expected depending on actual operating conditions," notes Tyba. "Gasket rubber also ages, which affects the sealing force as well as the service life of the plate heat exchanger."

"Conventional wisdom says, 'If it's not broken, don't fix it'," he continues. "Alfa Laval heat exchangers had delivered solid performance for so long that the customer didn't see a need to conduct maintenance."

According to the data in the Alfa Laval database, Tyba noted that it was time to verify gasket condition in order to ensure the operational reliability of the heat exchanger.

Preventive maintenance for more uptime

At Alfa Laval's suggestion, management at the plant agreed to conduct an Alfa Laval Condition Audit on one of the 39 heat exchangers during scheduled maintenance. An Alfa Laval service engineer was

on site when the unit was opened. Condition-based auditing tools were used to analyze the current condition of gaskets and plates as well as actual operating conditions.

The scope of work comprised internal and external inspection of the heat exchanger to determine the current condition of its:

- Channel plates, including detailed plate deformation analysis
- Gaskets, including a prediction of remaining lifetime
- Frame, including connection linings
- Bolts and bearing boxes
- Spare parts inventory

> "The Alfa Laval Condition Audit provided hard data that showed the gaskets were approaching the end of their service lifetime."
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> **Samer Tyba, Alfa Laval Service**

Long-term service for a long-time customer

Based on our experience and knowledge of material properties, Alfa Laval analyzed the data. The data clearly indicated that the gaskets were approaching the end of their service life, and that reconditioning of the plates was necessary. Alfa Laval provided the customer with a report including detailed findings with an explanation of the audit results as well as photographs showing the actual condition of the plates and gaskets. To secure production uptime, Alfa Laval recommended reconditioning these 39 plate heat exchangers operating at the plant. The customer agreed.

"Clearly the reliability of the entire plant was at stake if operations continued with the old gaskets," he continues. "The risk of an unplanned shutdown was very high considering that each plate heat exchanger has 591 plates. That's more than 23,000 plates that were at risk."

With hard facts and the ability to predict gasket lifetime, Alfa Laval is working on a preventive maintenance plan to optimize plant performance.

Fast facts

The customer

A major petrochemicals producer and one of the world's largest producers of ethylene with 39 Alfa Laval plate heat exchangers for critical cooling duties at its plant in Jubail, Saudi Arabia.

The challenge

Ensure uptime and reliability of the entire operation through preventive maintenance.

The solution

The team conducted an Alfa Laval Condition Audit. Based on the hard data of the audit, Alfa Laval recommended a preventive maintenance plan for 39 heat exchangers at the plant to ensure gaskets were changed at the appropriate time to prevent downtime.

The benefits

- Secured plant uptime and productivity
- Optimized maintenance plans
- Improved control of maintenance budgets
- Prevention of safety issues
- Peace of mind

Extending performance

with the Alfa Laval 360° Service Portfolio

Our extensive service portfolio offers all the services you need to ensure top performance, maximum uptime and operating efficiency from your Alfa Laval equipment throughout its life cycle. Our committed team's expertise and the availability of parts bring you peace of mind.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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