



## Performance Audit and CIP eliminate summertime production loss – and yield cool cash savings

Petrochemical plant, Saudi Arabia

Case story

To avoid production loss, one of the world's largest producers of ethylene, a petrochemical plant on the Arabian Gulf, needed every one of their 39 seawater coolers up and running at all times. But reliance on a fixed maintenance schedule made that a nearly impossible goal. Then Alfa Laval arrived on the scene with Alfa Laval Performance Audit service, that has so far saved the plant hundreds of thousands of Euros.

In Saudi Arabia temperatures regularly climb as high as 50° Celsius in the summer months, and seawater temperatures follow suit. So a local petrochemical plant with 39 installed Alfa Laval A45 heat exchangers (used as seawater coolers, which cool process water with seawater) needed all the cooling it could get.



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Samer Tyba, Alfa Laval Service

### Maximum efficiency without unscheduled downtime

If even one unit was fouled – or out of operation – during the summer, production suffered. But because the company did not monitor the performance of their seawater coolers, it was impossible to be sure exactly when they actually needed cleaning. Instead the units were routinely opened and cleaned each year on a pre-

determined date. That meant they were cleaned too often – or not often enough. And production loss in the summer months was an all too frequent occurrence.

Today however, Performance Audit and Cleaning in Place (CIP) by Alfa Laval ensures maximum efficiency without unscheduled downtime. In addition, the heat exchangers are opened less frequently now. This promises longer lifetime because every time a heat exchanger is opened, there is a negative effect on the gaskets and plates.

### Alfa Laval suggests just-in-time service and CIP

“The plant had been running our plate heat exchangers since commissioning in 2000 and we knew they were satisfied with the equipment,” says Samer Tyba,

Sales Group manager Alfa Laval Service, Saudi Arabia and Bahrain. “But we also knew they were opening the units yearly for cleaning whether it was needed or not. This cost the customer time and money and caused unnecessary wear and tear on both gaskets and plates. Not only that, but seawater can foul the plates quickly, so it was difficult to guard against efficiency loss in the summertime.”

When Alfa Laval opened a service centre in the area in 2007, they immediately approached the company with a suggestion to use Performance Audit:

1. To audit the units annually – without opening them.
2. Based on the results of the audits, determine whether or not the units need cleaning.

- Clean them with CIP, before fouling is severe enough to require manual cleaning.
- Assess cleaning success with another round of Performance Audit.

Colour	Performance level	Action
Green	High	No action required
Yellow	Medium	Time to plan cleaning
Red	Low	Schedule cleaning as soon as possible

Based on monitoring of actual operating conditions, followed by analysis of the data gathered, Performance Audit determines what action – if any – is required.

### More uptime

In 2008, the company signed a one-year Performance Agreement that included

assessing fouling with Performance Audit, performing CIP and, on the rarer occasions when severe fouling ruled it out, performing manual cleaning. The arrangement immediately resulted in more uptime since all units were in good condition before the critical summer period.

### Drastically lower maintenance costs

In addition, the company's maintenance budget dropped drastically because they were now cleaning only when needed and because they replaced manual cleaning with CIP. CIP requires only 24 man-hours as compared to the 150 man-hours required for manual cleaning.

Pleased with the results, the company renewed the Performance Agreement with Alfa Laval in both 2008 and 2009.

### Three-year Performance Agreement a mark of customer satisfaction

"Alfa Laval has saved the company a huge amount of money over the last 5 years by optimizing the maintenance schedule and increasing plant uptime," says Samer Tyba.



Samer Tyba

"This has been highly appreciated by the plant management. The new three-year agreement we signed with them in 2011 is a clear indicator of just how happy they are."

### Fast facts

#### The customer

Leading Saudi Arabian petrochemical manufacturer – the producer of more than 800,000 tons of ethylene yearly.

#### The challenge

- Avoid production losses by keeping 39 Alfa Laval A45 heat exchangers running reliably and performing optimally during critical summer months.
- Reduce maintenance costs.
- Eliminate unnecessary downtime caused by performing maintenance on a fixed schedule.

#### The benefits

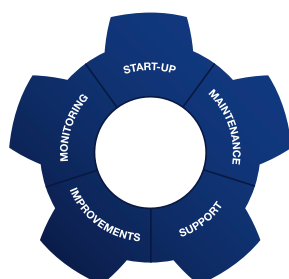
- Overall savings in the hundreds of thousands of Euros since 2008.

- Production losses avoided because optimal heat-exchanger performance in summer period is ensured.
- Reduced annual maintenance budget by minimizing the cleanings and reducing cleaning time from 150 man hours to 24 as a result of switching from manual cleaning to CIP.
- Lowered offline time by reducing cleaning period for each plate heat exchanger from seven days to one by switching from manual cleaning to CIP.
- Reduced wear and tear due to less frequent opening extends equipment lifetime and lowers expenditure on spare parts.

### Alfa Laval Performance Audit Plate Heat Exchanger

By monitoring the current operational conditions of a heat exchanger, Alfa Laval can determine actual performance in terms of heat load without opening the unit and then make recommendations about what type of service is required and when to perform it.

## 360° Service Portfolio and Performance Agreements



### 360° Service Portfolio

The Alfa Laval 360° Service Portfolio covers the entire lifecycle of your equipment, and brings you maximum uptime, high performance, low maintenance and operating costs.

### Alfa Laval Performance Agreements

Alfa Laval Performance Agreements are individually tailored service solutions that can include any of the services in our extensive 360° Service Portfolio. Based on your specific needs, they maximize your return on investments, ensure continual top equipment performance and make budget work easy.

### 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](http://www.alfalaval.com)