Tantalum heat exchangers bring enduring benefits

**PQ Corporation, New Jersey, USA**  
**Case story**

PQ Corporation dramatically reduced maintenance costs and downtime by exchanging an existing graphite block heat exchanger for an Alfa Laval tantalum heat exchanger. The payback time is less than two years.

Specialty chemicals manufacturer PQ Corporation in New Jersey, USA experienced high maintenance costs for a graphite block heat exchanger handling hot sulphuric acid. Once a year, the 3 m (9 ft. 10 in) long heat exchanger had to be hoisted down from its position on the fourth floor, opened and repaired. The process was costly and caused considerable downtime.

**Extreme conditions ...**  
In early 2012, Senior Maintenance Coordinator at PQ Corporation Michael Pingitore and his colleagues started investigating alternative, more cost-efficient solutions that could replace the graphite block.

The options were few since the heat exchanger operates under highly corrosive conditions. The medium is sulphuric acid at a high temperature and concentration.

**... call for extreme materials ...**  
The different solutions typically used in these types of applications all have their drawbacks. Heat exchangers made of zirconium or special alloys would dissolve quickly. A glass heat exchanger would suffer from low heat transfer and be fragile, just like the existing graphite block.

From a chemical point of view, the best material to use under these conditions is tantalum. This metal is extremely resistant to corrosive media at high temperatures, but very expensive. The cost meant a heat exchanger in solid tantalum was out of the question.

**... and innovative thinking**  
When Michael Pingitore and his colleagues came across a new heat exchanger from Alfa Laval they recognized this could be what they were looking for.

Michael Pingitore presented the solution to plant management, and although the investment was significant they made the decision to move ahead quickly.

**Compact size**  
When the Alfa Laval heat exchanger was delivered, Michael Pingitore was so surprised by its small size that he had to go over his calculations once more. The new heat exchanger was only 30 cm (1 ft.) long compared to the existing one measuring 3 m (9 ft. 10 in).

But as soon as the heat exchanger was installed he was convinced. “The unit immediately proved that it met and even exceeded specifications”, Michael Pingitore says.
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.