TEADIT® 24SH – Electrolytic Nickel Plant
CASE HISTORY

INDUSTRIAL SEGMENT
General Industrial

APPLICATION

Fluid(s)
Dilute Sulfuric Acid / Nickel Carbonate

Temperature and Pressure
Low Temperature and Low Pressure

SCENARIO
A customer who operates an electrolytic nickel plant had been experiencing huge leaks on a large amount of their flanged connections in dilute sulfuric acid / nickel carbonate service. The media leaking from the flanges had a serious safety and environmental impact due to the severe media, as well as very high costs for production/product loss and maintenance. The original gasket in the equipment was a rubber gasket which is not chemically compatible with sulfuric acid / nickel carbonate. Replacing rubber materials can pose challenges as rubber materials seal at very low loads and therefore are typically used in equipment with a limited amount of bolt load and gasket stress potential. After an investigation it was determined that the material was only able to last for a max of 30 days in service and the root cause of the failures was the incompatibility of the material with the media, which led to a chemical degradation of the gasket.

SOLUTION
After analyzing the application Teadit recommend the use of TEADIT® 24SH Expanded PTFE gasket material. TEADIT® 24SH is a multidirectional expanded gasket sheet, produced from 100% pure PTFE (Polytetrafluorethylene) and is a proven solution for difficult to seal applications in severe chemical service. Due to its excellent malleability and adaptability, it is particularly well suited to compensate for irregularities or damages on the sealing areas, as well as for all stress-sensitive joints. As TEADIT® 24SH is manufactured from 100% pure PTFE, it has the unique capability of being able to withstand chemical attack from most medias, except molten alkali metals and elemental fluorine. The combination of extreme chemical resistance and the ability to seal at low loads in stress-sensitive joints made TEADIT® 24SH the best solution for the customer's application.

CUSTOMER GAINS
The TEADIT® 24SH material provided excellent sealing in this application for the required cycle time of 90 days without leaks until the next required maintenance, though it was clear the TEADIT® 24SH would have been able to work for a longer time. This was a large improvement when compared to the previous gasket material which would suffer from huge leaks in less than 30 days of run time, therefore allowing the customer more continuous production time as well as eliminating the loss of product due to leaks. The success of Teadit's solution has also greatly benefited the customer by eliminating the risk of accidents and environmental contamination as well as reducing the necessary maintenance of the equipment due to leaks. Teadit's sealing solution also provided the customer a large cost savings. While the upgraded material cost the customer approximately $32k in additional investment, it provided a savings of approximately $600k due to reduced product losses (40 MT of nickel) and maintenance costs.