

Case Study: Batch annealing furnace sealing solution

Problem

Poor service life of existing seals resulted in extensive maintenance and downtime costs. When the existing seals started to leak, the top layers of steel coils showed visible signs of discolouration and therefore had to be scrapped, meaning the customer incurred further costs.

Extensive maintenance and downtime costs

Application

Single stack batch annealing furnace with mixture of hydrogen and nitrogen gas under vacuum.

- Media: mixture of hydrogen and nitrogen gas at 800°C (1472°F)
- Temperature: 180-240°C (356-464°F) at seal
- Pressure: 80 kPa (1.16 psi)
- Seal size: 20.5 mm section x 17 mm depth x 10 m length (0.8" section x 0.67" depth x 32' 10" length)

Existing solution

Elastomeric based solid D-profile seal

James Walker solution

A unique construction of TorrLid® 162C that can seal effectively in static duties under vacuum at relatively high temperature was supplied. Due to the use of an elastomeric core, it provides excellent resilience that enables a number of open and closures of the chamber without compromising sealing performance. A wire mesh overbraid improves robustness and ultimately the service life and a layer of red-coloured silicone rubber provides excellent sealability. TorrLid 162C demonstrates excellent resilience, temperature resistance and sealability under vacuum conditions.



Results and benefits

The customer has reported increased service life of batch annealing furnaces up to 12 months, effectively sealing from one shutdown to another.

This has reduced the amount of maintenance work required and the associated costs, whilst also ensuring more efficient maintenance resource utilization in the plant. Furthermore, the cost associated with scrapping the top layers of steel coils has also been reduced.

Increased service life of up to 12 months



Improved operational safety



Reduced maintenance costs



Improved maintenance planning



Reduced scrapage