

Case Study: Nuclear steam non-return valve

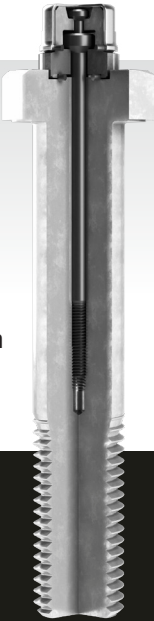
Problem

High annual maintenance costs due to frequent joint leaks

Due to high pressure on start-up the valve was suffering from heavy flange rotation. This reduced the gasket contact area by 50% and a few days after start-up, the joint would leak. The customer estimated annual repair costs of £15,000.

James Walker solution

The James Walker team undertook a flange management assessment, which led to a redesign of the gasket, replacing the kammprofile with a spiral wound gasket, as well as the addition of a secondary seal and the implementation of RotaBolt® RB2 Touch. The RotaBolt RB2 Touch ensures bolts are installed to the correct tension and offers a simple tactile check this is being successfully maintained. It features two tension settings within a single sensor for greater control and monitoring, so is ideal for applications such as this, where the rotation of the flange was proving problematic.



Results and benefits

After the installation of RotaBolt® RB2 Touch, the customer reported a 100% leak free start up rate. So successful was the implementation that the customer commissioned the services of James Walker to install RotaBolt technology on a second nuclear power plant experiencing the same issues.

100% leak free start up rate

Application

- Mannesmann steam valve.
- Pressure: 160 bar (16 MPa)
 - Operating temperature: 300°C (572°F)
 - Studs: 200 off 3" x 580 mm, material B7
 - Method of tightening: torque
 - Design load/stud: 150 tonnes
 - Gasket configuration: Kammprofile (material SS316 + SPG)



Existing solution

Several types of gasket were tried and tested by the customer to eliminate the leakage



Start-up leakage eliminated



Improved operational efficiency due to reduced downtime



Reduced maintenance due to simple tension control monitoring process