

Case Study: High temperature knife-edge gate valve sealing

Problem

The knife-edge gate valve is designed to handle very hot and dry abrasive slurries up to 1000°C (1832°F). The groove design consisting of tight groove corners, requires adaptable packing. It also requires the packing to be easily replaced and as the valve operates in reciprocating movement the packing must have a capability to minimize friction during operation.

High temperature, abrasion resistant and adaptable packing

Application

High temperature knife-edge gate valve.

- Media: hot ash, dry and hot abrasive slurry applications
- Temperature: up to 1000°C (1832°F)
- Shafts: shut-off plate sealed typically with three layers of packing
- Speed: low
- Gland pressure: up to 10 bar (150 psi)
- Packing sizes: Typically 10 mm (3/8") and 12.5 mm (1/2") square section

Existing solution

Typically graphite or glass based packing are used in such applications.

James Walker solution

A unique construction of Lionpak[®] 9601, capable of withstanding temperatures up to 1000°C (1832°F), with very good abrasion resistance to dry and hot slurries and excellent flexibility to enable it to adapt well to the groove corners (readily forming a circular section when required). Lionpak 9601 also contains a unique high temperature lubrication package to assist during valve maintenance.



Results and benefits

Exceptional sealability under very harsh conditions over long service life (1-2 years).

Reliability and long service



Improved sealability due to minimized friction during operation



Reduction of maintenance costs



Improved valve maintenance and seal replacement



Significantly extended valve operating time