

### Case Study: High temperature solution for molten salt valve application

#### Problem

The customer was using a hard and inflexible metallic-based packing, which was leaking on a frequent basis. The packing was also very difficult to remove from the valve stuffing box as it tended to “weld” to the stem and housing, resulting in very long and difficult maintenance periods and therefore, extended and unnecessary cost.

## Frequent leaking and high maintenance costs

#### Application

**Valves handling molten salt in a melamine production process.**

- Equipment: Globe valve, DN150 & DN200
- Media: Molten salt - mixture of sodium nitrite (NaNO<sub>2</sub>), sodium nitrate (NaNO<sub>3</sub>), and potassium nitrate (KNO<sub>3</sub>)
- Temperature: 420°C (788°F)
- Pressure: 8.5 bar (123 psi)
- Packing set size: DN150 - ID 32 mm/OD 52 mm/DP 70.5 mm; DN200 - ID 32 mm/OD 52 mm/DP 70.5 mm
- Configuration: 3+3 Lionpak 5301; 3 x DSPro spacers
- Valve operating (opened /closed) a few times per year

#### Existing solution

Aluminium foil-based packing

#### James Walker solution

A unique construction consisting of a combination set of Lionpak® 5301 pre-formed rings and high temperature DSPro spacers was fitted. Lionpak 5301 is constructed from high performance carbon and acts as a sealing element, with the DSPro spacers playing a protective role in the set and acting as a barrier to separate the molten salt from the sealing elements. The spacers also work as scrapers, removing any molten salt adhered to the stem.



#### Results and benefits

Since the installation of the Lionpak® 5301 and DSPro spacers, the customer has reported much improved sealability with no unexpected leaks. The service life of the parts has also increased to 12 months, meaning that maintenance can be planned to coincide with the annual shutdown.

Furthermore, the ease of replacement of the James Walker solution has resulted in improved maintenance efficiency.

## Service life of parts increased to 12 months



Significantly extended valve operating time



Improved operational efficiency due to less downtime



Reduced maintenance cost



Increased operational safety