

**Double Disc Gate Valves
for Transfer & Decoke Lines
in Steam Crackers**





Double Disc Gate Valve (DDGV)

Main Features of the ZMK Double Disc Gate Valve

- Double disc metal seated isolation valves typically in sizes up to NPS 100" (2540 mm)
- Different kinds of actuation available (electric, hydraulic, pneumatic, manual)
- Customised design, acc. to governing standards and customer's specification
- Proven design continuously optimised for safe and reliable operation in compliance with international standards such as EN 13445, ASME B16.34 and API 6D
- Design for harsh environment e.g. MDMT lower than -40°C (104°F), design temperature up to 625°C (1157°F), design pressure up to 18 bar (261 psi)
- Double-block and purge functionality in one valve
- Tight shut-off designed for zero leakage according to API 598 or ISO 5208
- Since the throughway is designed like a tube type passage in open valve position, it is ensured that the pressure drop across the valve can be neglected
- Steam purge in between the discs as well as in the valve body is required to always ensure that no coke fines resp. condensate can accumulate inside the valve during opening and closing, as well as in closed or open position
- Furthermore, metal-to-metal seating ensures there is no coke accumulation in the valve body
- The seat surfaces are solid hard metal to metal seats to minimise corrosion and wear, this ensures a long trouble free operation while providing absolutely tight shut-off

Mechanical Linkage

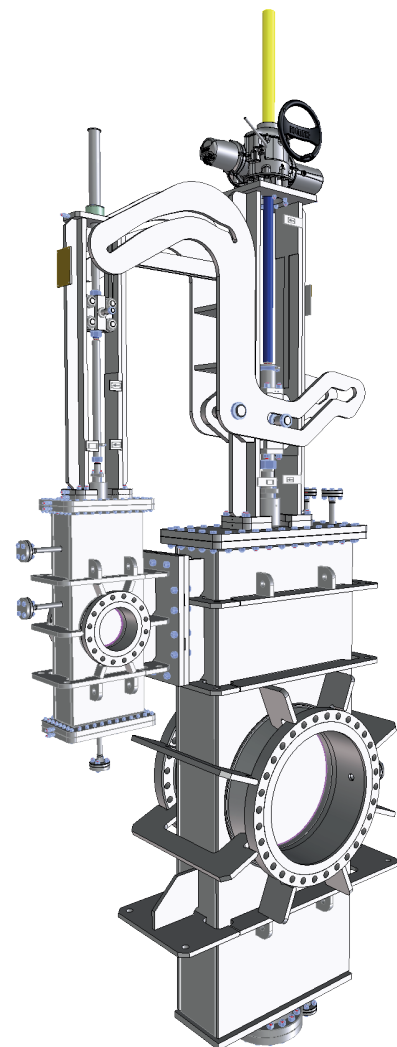
- Small Decoke Valve (SDV) is mechanically connected to the Transfer Line Valve (TLV) by a linkage lever
- The TLV will be operated by an electric actuator and the SDV is operated in a defined way by the mechanical linkage
- Customer's specification and the specific Hot Steam Standby (HSS) conditions as well as the control sequence for the switchover will be considered
- Due to the specific design of the linkage lever it is ensured that there will be no process gas backflow during switchover from the running process to Hot Steam Standby
- No release is required
- Linkage systems are a customer-friendly solution to operate the switchover from running process to Hot Steam Standby mode
- Consulting, services and upgrades of existing solutions

Special Benefits of the ZMK Mechanical Linkage

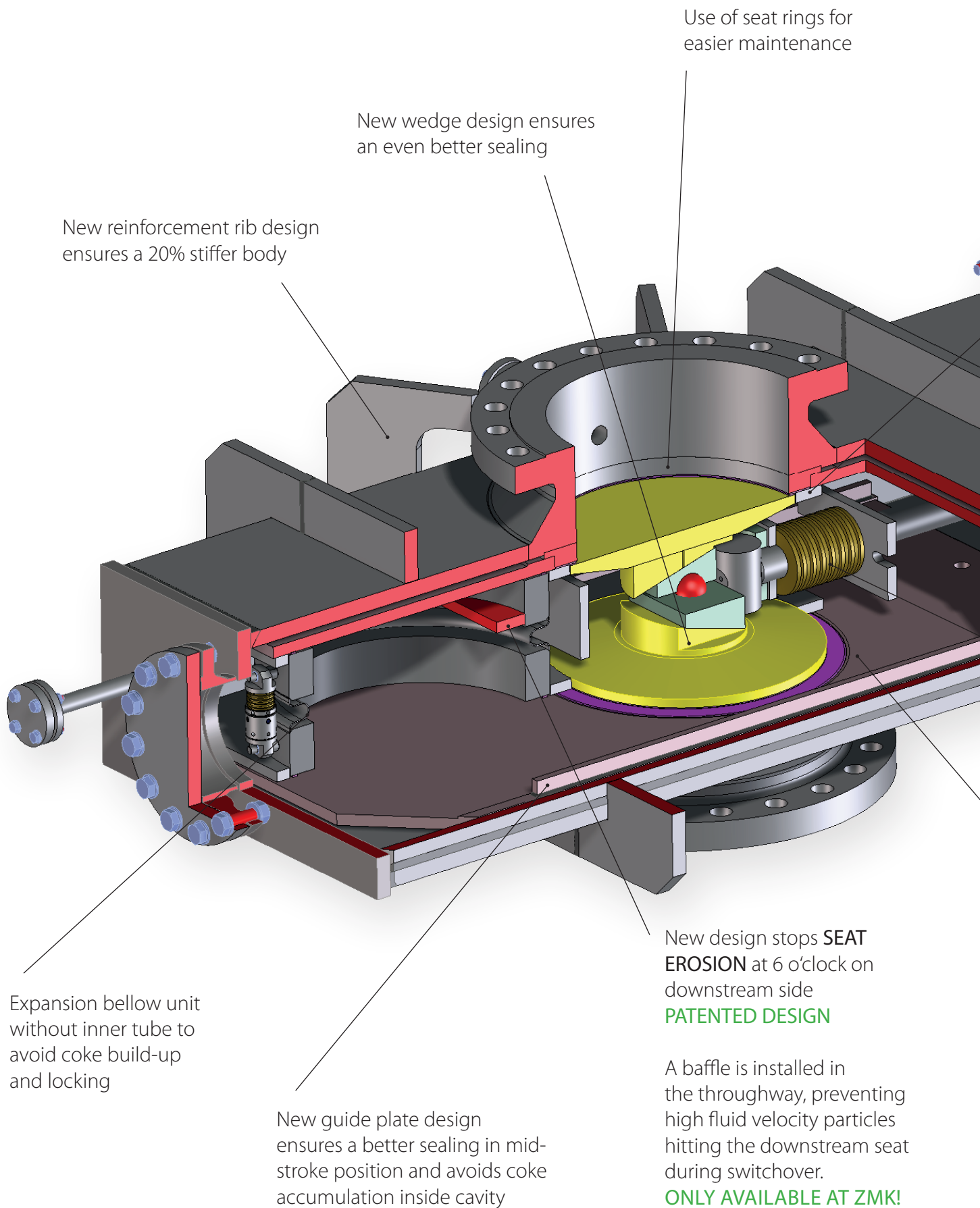
- Mechanical linkage, designed on the basis of thorough understanding of system dynamics
- Our linkage curves are individually calculated and flow optimised, using a special in-house calculation software

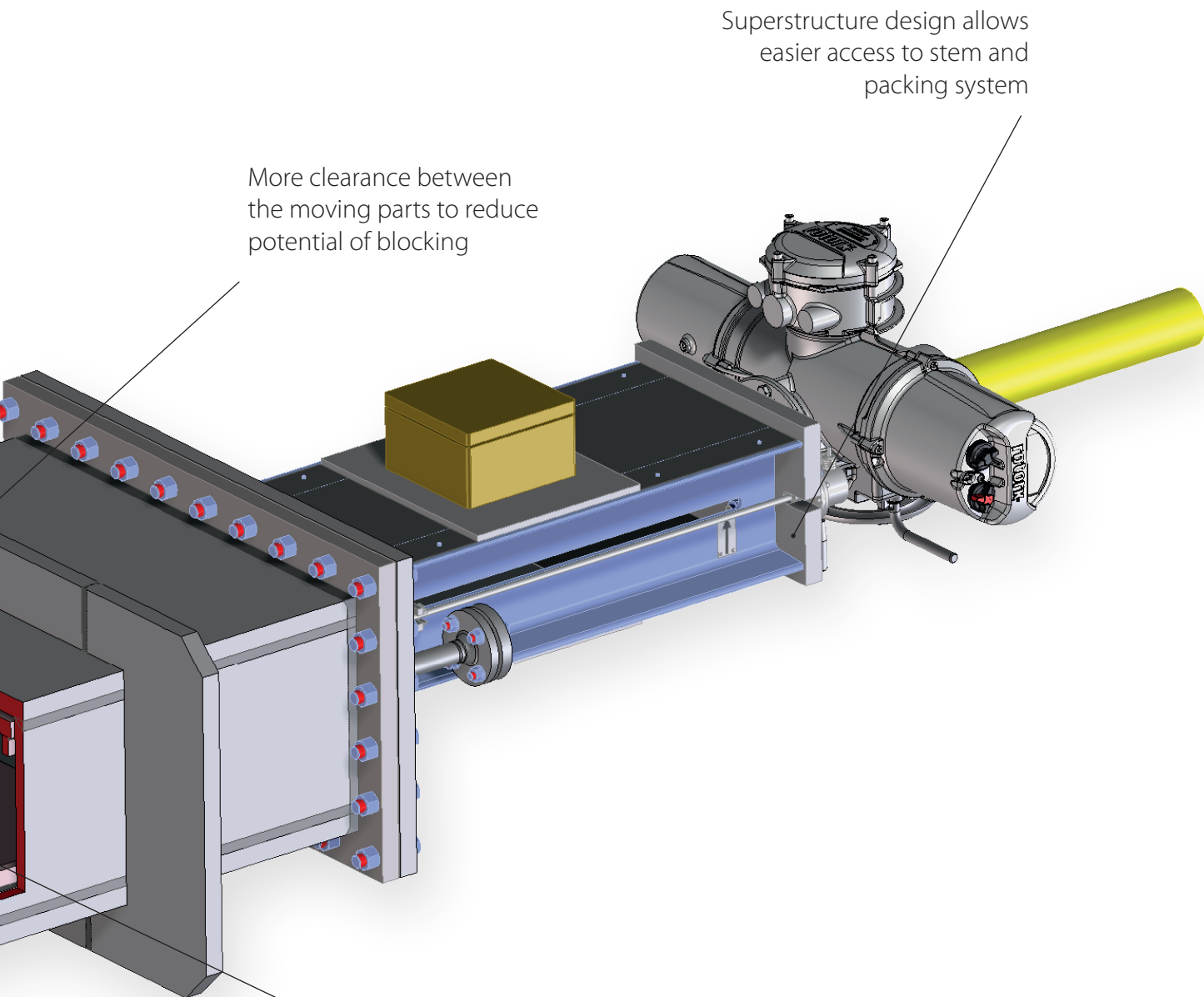
Electrical Linkage

- Mechanical lever system is replaced by an electrical control system
- Electrical linkage, designed on the basis of thorough understanding of system dynamics
- Enhanced safety features and robustness of design for reliable and safe operations
- Consulting, services and upgrades of existing solutions
- Replacement of mechanical linkage by electrical linkage



Special Benefits of the ZMK Double Disc Gate Valve



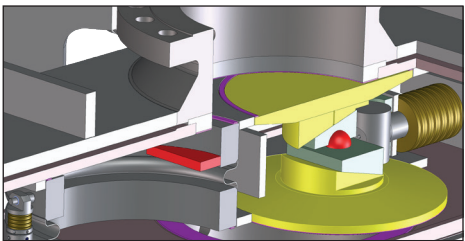


Superstructure design allows easier access to stem and packing system

More clearance between the moving parts to reduce potential of blocking

New coating for cup springs and shrink discs increases lifetime

Guide plate material with higher wear resistance. Can be remachined. Reduces maintenance costs



Patented baffle to prevent erosion

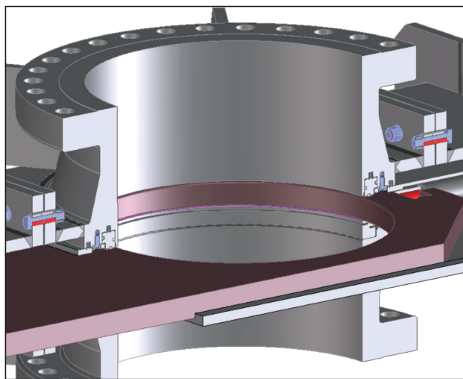


Erosion usually found without installation of patented baffle technology

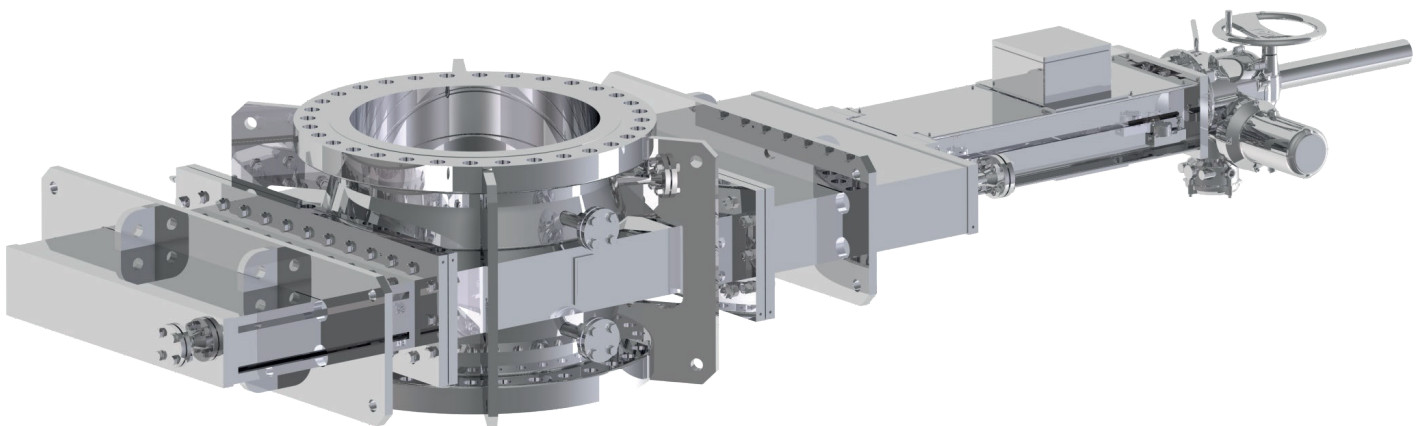
Single Disc Valves (SDV)

Special Benefits of the ZMK Single Disc Valve

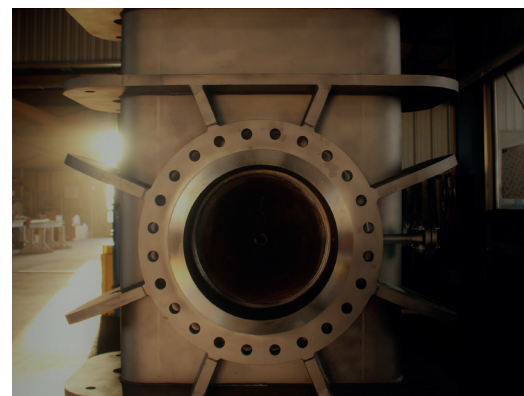
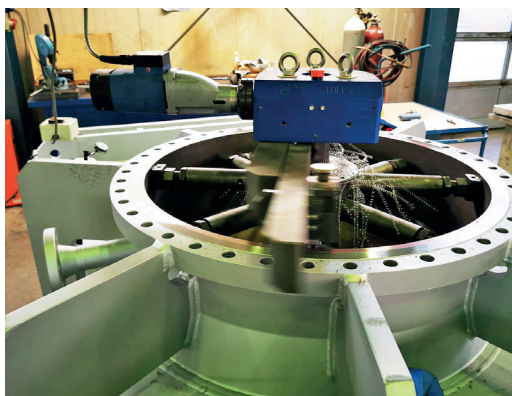
- Active seat force results in higher tightness
- New reinforcement rib design ensures 20% stiffer body
- New superstructure design allows easier maintenance
- New guide plate material with higher wear resistance
- Hybrid seat system (combination of soft and metal to metal seats)



ZMK Single Disc Valve in open position



ZMK Technologies GmbH, a lifecycle solution provider for challenging valve applications, provides customised special valves including actuation & controls. We provide the whole range of expertise in consulting and services needed for safe and reliable operation and maintenance of special valves.



Typical Applications and Products

- **Double disc gate valves** for transfer & decoke lines in steam crackers (olefins/ethylene production)
- **Single disc valves** for the transfer & decoke lines in steam crackers (olefins/ethylene production)
- **Slide-, butterfly-, guillotine-, diverter-, goggle- and vapour overhead isolation DDGVs** for FCC units
- **Double wedge valves** for the dehydrogenation process
- **Double disc gate valves** for unheading and isolation in Delayed Coker units
- **Maintenance**, repair and refurbishment of all types and makes of valves
- **Installation**, commissioning and start-up service
- **Service** activities to ensure a smooth and successful turn-around
- **Upgrades & Retrofits**



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