Innovative Coker Unit
De-heading / Un-heading
and
Isolation Valves

Industry Statistics

Coking Capacity in the US
US coking capacity comprises approximately \( \frac{1}{3} \) of the overall world coking capacity

- 1988
- 1990
- 1992
- 1994
- 1996
- 1998
- 2000

BPCD
- 500,000
- 1,000,000
- 1,500,000
- 2,000,000
- 2,500,000
What sets Z&J apart from others?
Experience with specialty valves and equipment for different industries

- Refining
- Petrochemical
- Chemical
- Glass
- Steel
- Power

Company Profile

- 125 years of experience in specific valve applications
- In house design & engineering facilities
- Certified fabrication facilities – fully integrated
- Certified quality management system
- Field and shop service capabilities
- Extensive testing facilities
Company Profile
World wide design, manufacturing and service in our Group of Companies

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Leader in Valve Technology

- Speciality Engineering and Manufacturing
- Critical/Severe Service Conditions
- Large Diameter Designs
- High Temperature Service Conditions
Design Philosophy

Z&J utilizes the latest and most advanced design and engineering methodologies available on the market today.

- **FEA / FEM**
  - stress
  - deflection
  - temperature

- Flow analysis

- Fatigue analysis

- Various types of conventional calculations
Automatic Coke Drum
De-heading

Bottom Valve

Z&J Double Disc
Through Conduit
Gate Valve
Gates and Wedges

- **Stem**
  - "Tee" Head
  - Floating

- **Discs**
  - Overlay - Stellite #6
  - Floating

- **Ball**
  - Centering
  - Floating

- **Wedges**
  - 2 piece
  - Floating
Valve internals ready for assembling
Main Advantages of the
Double Disc Through Conduit Gate Valve

- Real double block and purge performance within one valve body due to 2 independent discs.
- Active mechanical seating force due to central split-wedge-ball arrangement.
- Corrosion and wear resistant hard facing overlay on the seats; no adjustment and replacement of seats required.
- No deposits of solid particles in valve body due to goggle type valve gate guided between guide plates.
- All internals removable through bonnets.
- The sealing surfaces are completely covered in each gate end position. Depositing within the valve and on the seats is avoided.
- Open goggle plate part equipped with tube to provide throughway.
- Purge steam connections for continuous valve body and seat purge.
Coke Drum Valves
for
Top Un-heading
Inlet Isolation
Overhead and Blowdown

Expansion bellow device in open valve position
Expansion Bellows

Inner Sleeve Pipe
- Guiding
- Bellow Protection

Seat Rings
- Floating
- Overlay - Hardfacing

Seal Weld
- Located on one side only
- Valve is unidirectional flow

Expansion Bellow
- Single Wave
- Stainless Steel

Bellow Void Area
- Packed w/Kaowool blanket

Expansion Bellows
Recent Valve Installation - RuhRPumpen Top Un-heading
Recent Valve Installation – RuhRPumpen Top Un-heading
Recent Valve Installation – RuhRPumpen Top Un-heading

Final Considerations – Advantages and Benefits

Safety
- During deheading and unheading no personnel are required on deck due to fully remote operation.
- Real double block and purge - two independent discs.

Reliability
- Well proven valve design used in other severe services such as ethylene, FCCU, phosgene, etc.

Cost Reduction
- Low maintenance cost
- Cycle time reduction