Innovative Coker Unit
De-heading / Un-heading
and
Isolation Valves
What sets Z&J apart from others?

Experience with specialty valves and equipment for different industries

- Refining
- Petrochemical
- Chemical
- Glass
- Steel
- Power
Zimmermann & Jansen

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

Zimmermann & Jansen

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Zimmermann & Jansen

Leader in Valve Technology

- Speciality Engineering and Manufacturing
- Critical/Severe Service Conditions
- Large Diameter Designs
- High Temperature Service Conditions
Zimmermann & Jansen

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**
Zimmermann & Jansen
Automatic Coke Drum De-heading

Bottom Valve
Zimmermann & Jansen

Z&J Double Disc Through Conduit Gate Valve
Zimmermann & Jansen

- Wedge ball arrangement
- Hard faced seats (body and discs)
- Seat purge connection (upstream and downstream)
- Two independent discs
- Throughway
- Guide plates
- Body purge connection

Patents pending
Zimmermann & Jansen

Throughway

Disc cage

Upstream disc

Downstream disc

Upper Disc
Lower Disc
Disc Cage
Valve internals ready for assembling
Zimmermann & Jansen

Z&J Coker valve

Breaking through large coke particles

[Diagram of a cutting edge and scraper]
Zimmermann & Jansen

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

**Expansion Bellow**
- Single Wave
- Stainless Steel

**Seat Rings**
- Floating
- Overlay - Hardfacing

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

**Bellow Void Area**
- Packed w/Kaowool blanket
Zimmermann & Jansen

Expansion Bellows
Zimmermann & Jansen

Resent 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
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