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

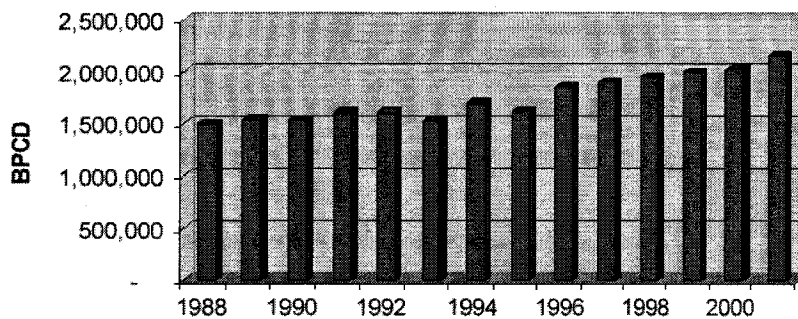
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Industry Statistics

Coking Capacity in the US

US coking capacity comprises approximately 1/2 of the overall world coking capacity



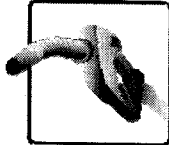
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What sets Z&J apart from others?

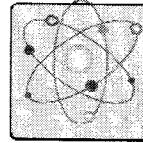
Experience with specialty valves and equipment for different industries



Refining



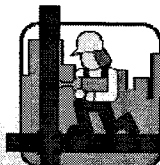
Petrochemical



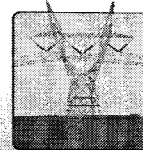
Chemical



Glass



Steel



Power

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Company Profile

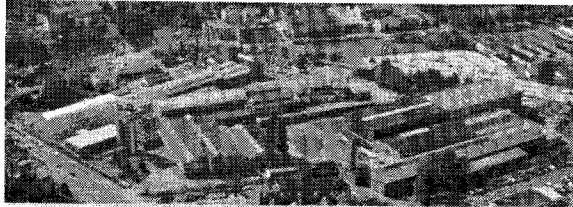
- 125 years of experience in specific valve applications
- In house design & engineering facilities
- Certified fabrication facilities – fully integrated
- Certified quality management system
- Field and shop service capabilities
- Extensive testing facilities

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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**

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Design Philosophy

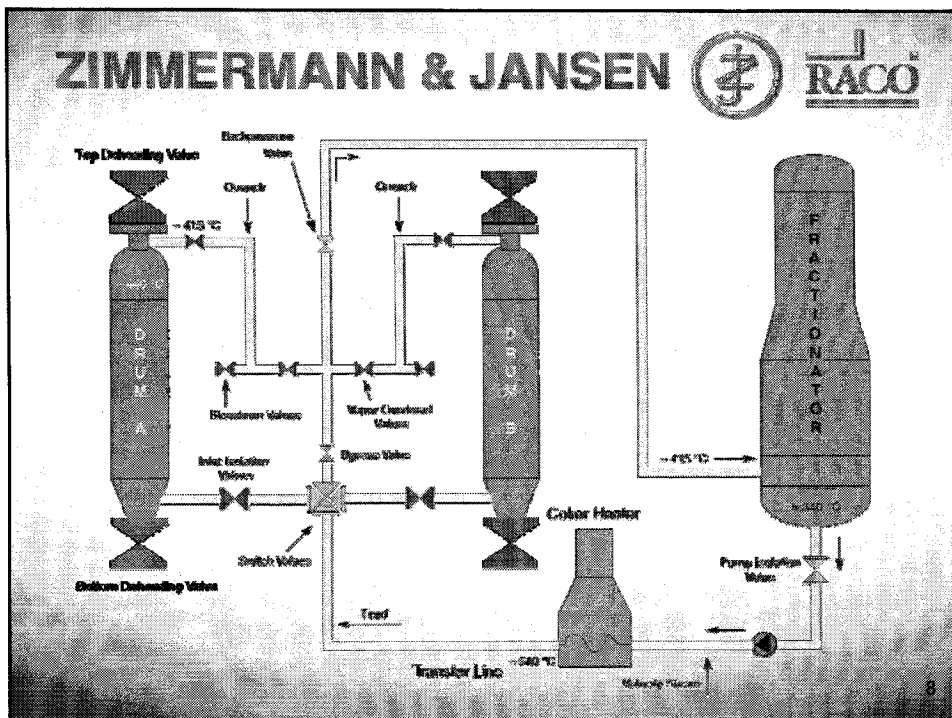
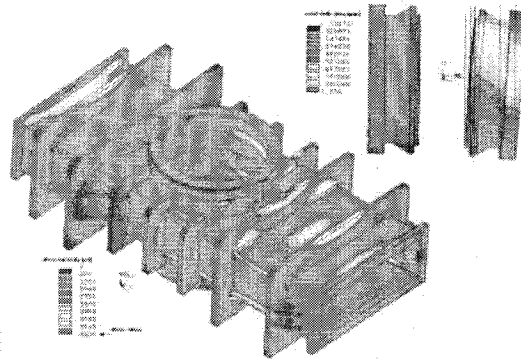
Z&J utilizes the latest and most advanced design and engineering methodologies available on the market today.

- **FEA / FEM**

- stress
- deflection
- temperature

- **Flow analysis**
- **Fatigue analysis**

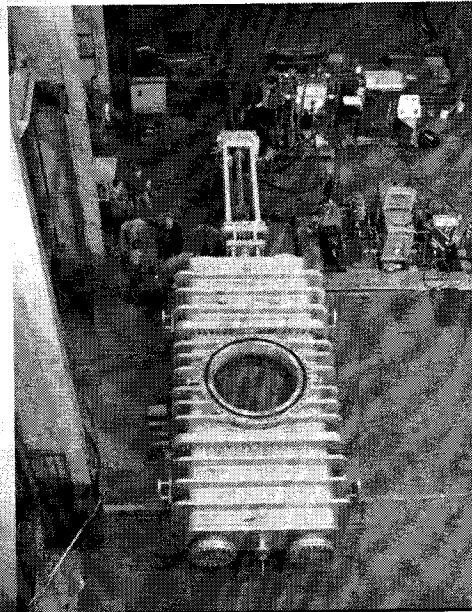
- **Various types of conventional calculations**



Automatic Coke Drum De-heading

Bottom Valve

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Z&J Double Disc
Through Conduit
Gate Valve

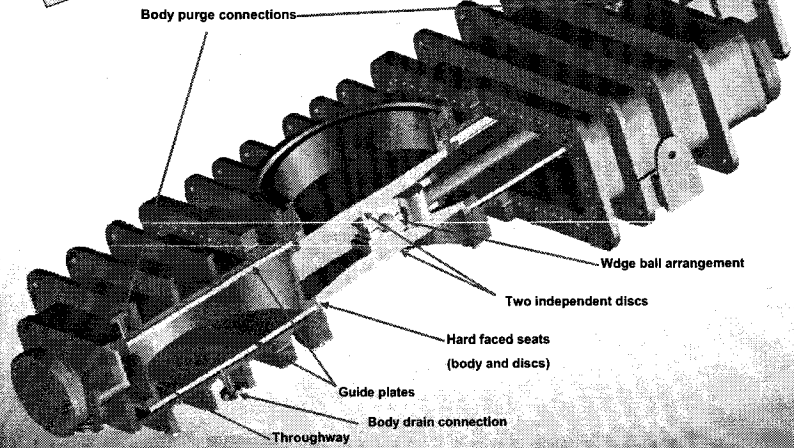
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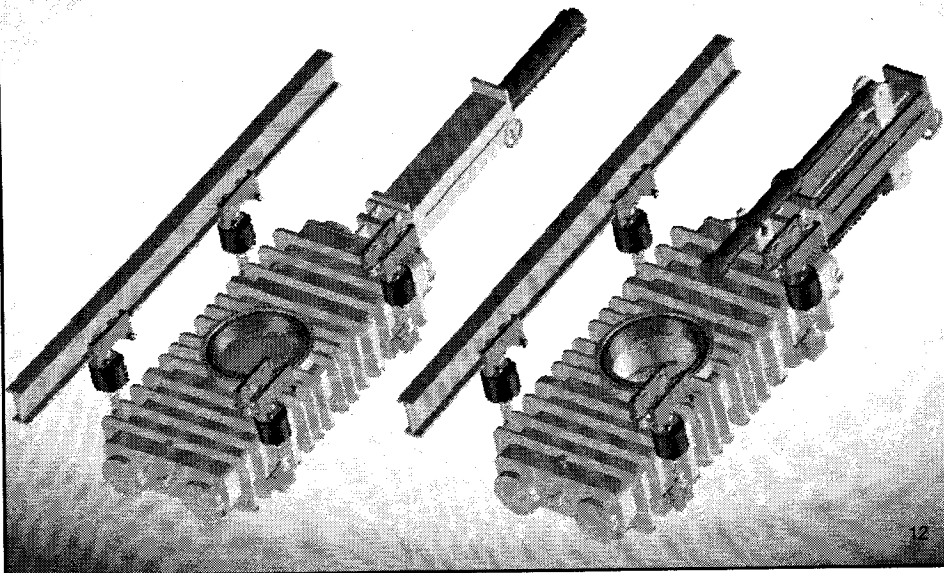
Patented

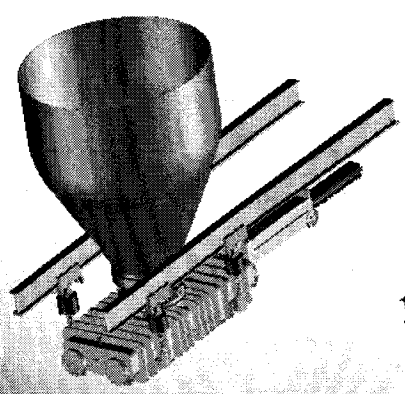


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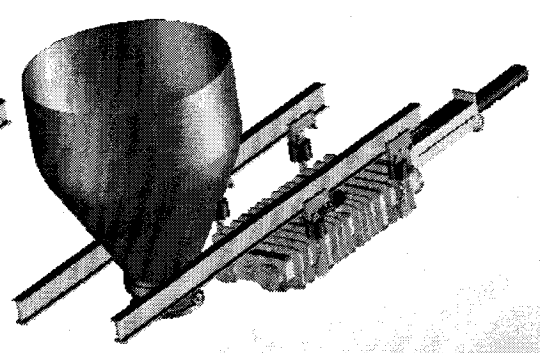


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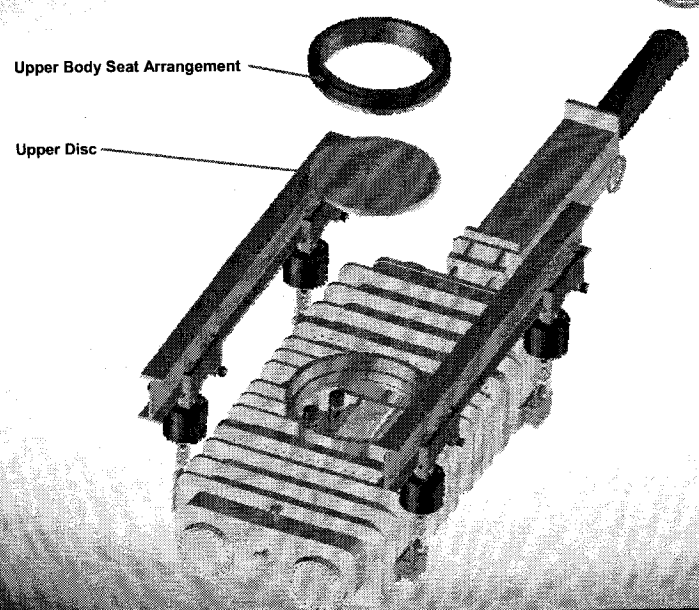




Valve in operating position

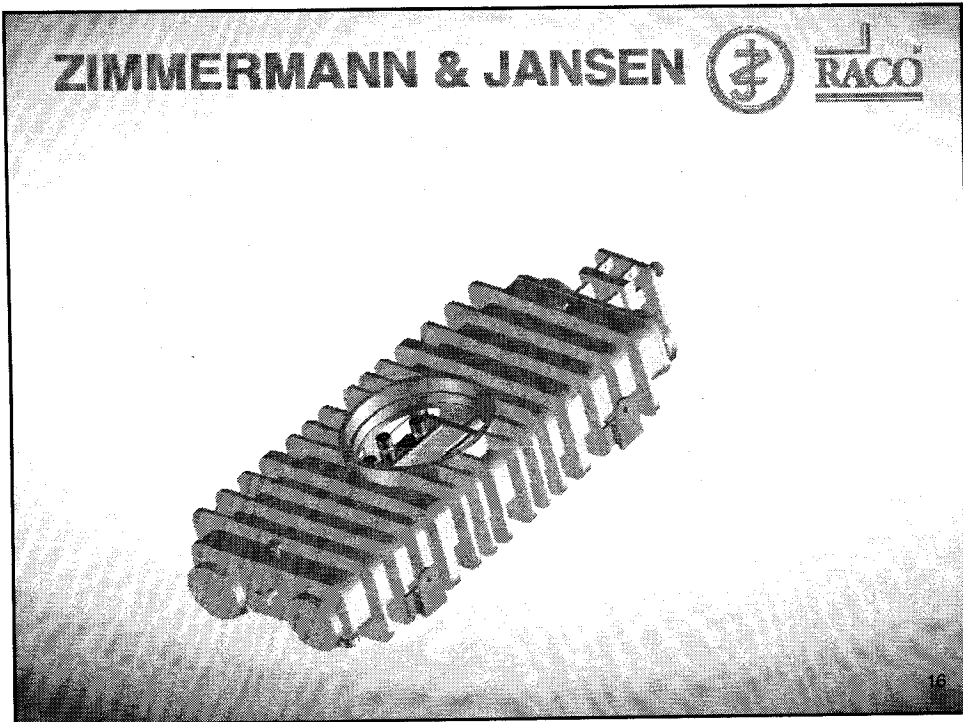
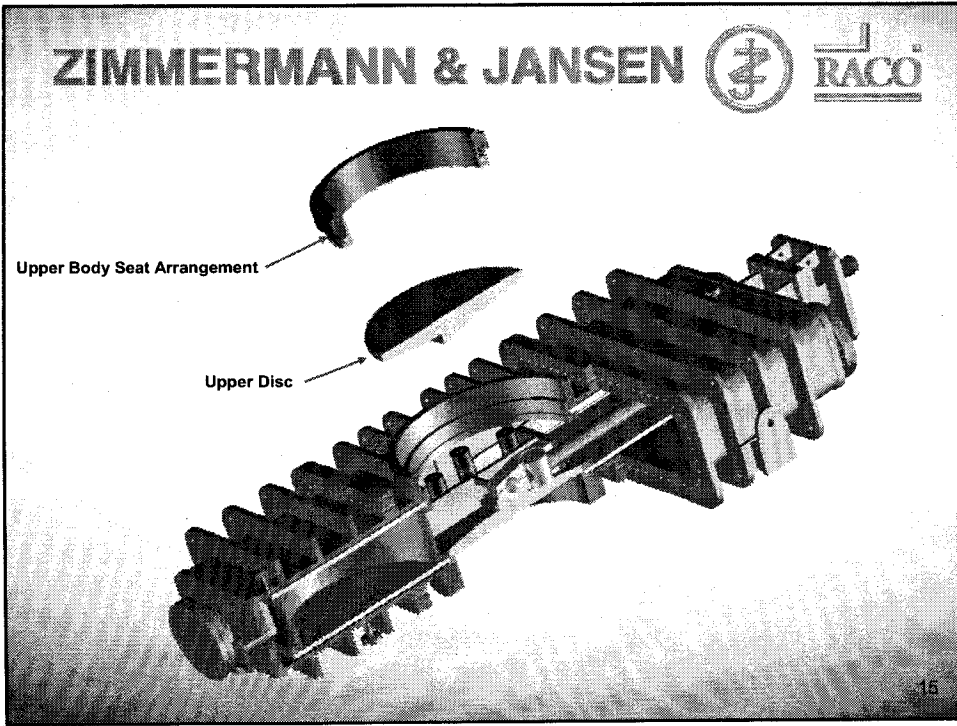


Valve in service position



Upper Body Seat Arrangement

Upper Disc

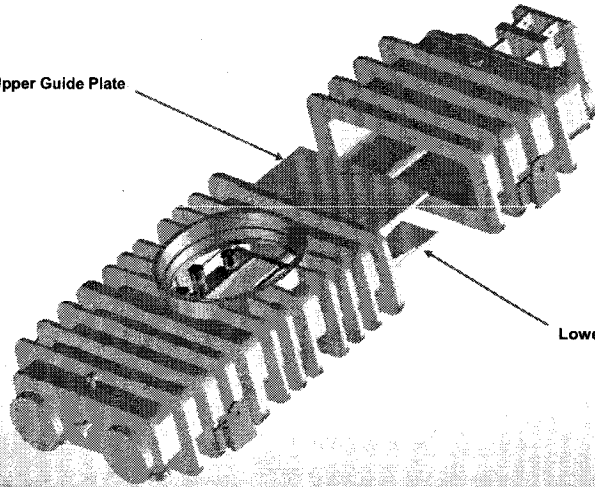


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Upper Guide Plate



Lower Guide Plate

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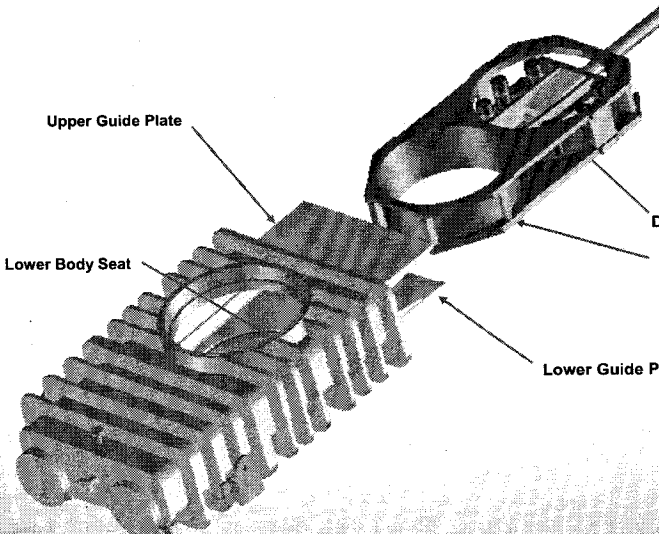
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Upper Guide Plate

Lower Body Seat

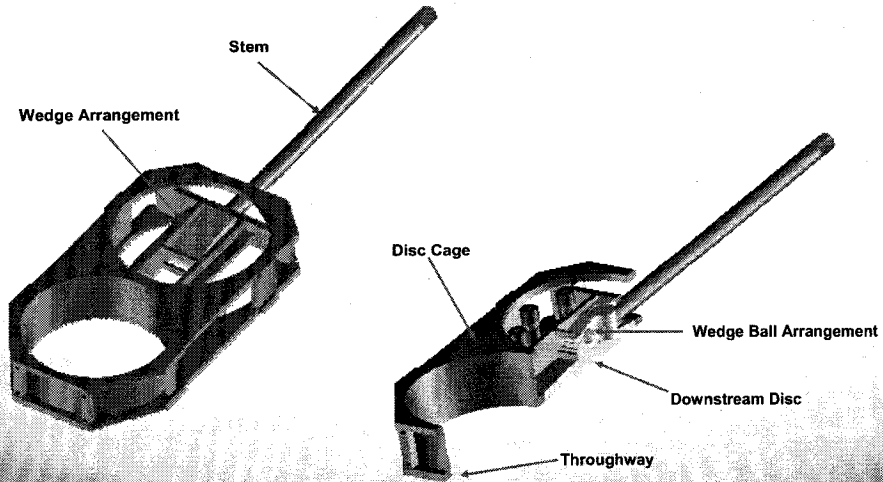


Downstream Disc

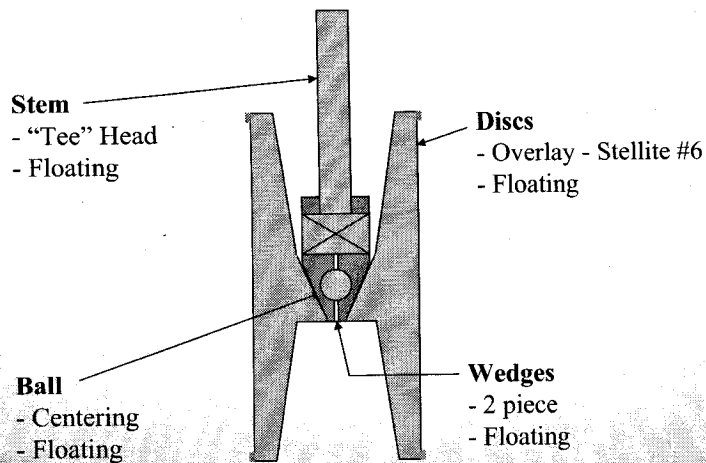
Disc Cage

Lower Guide Plate

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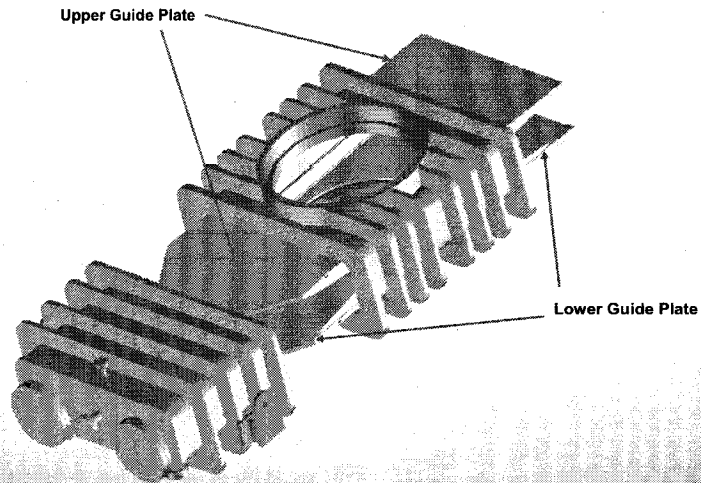
Gates and Wedges



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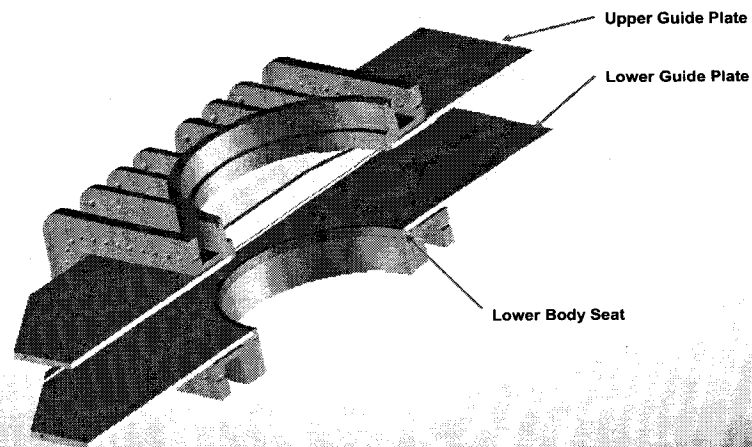


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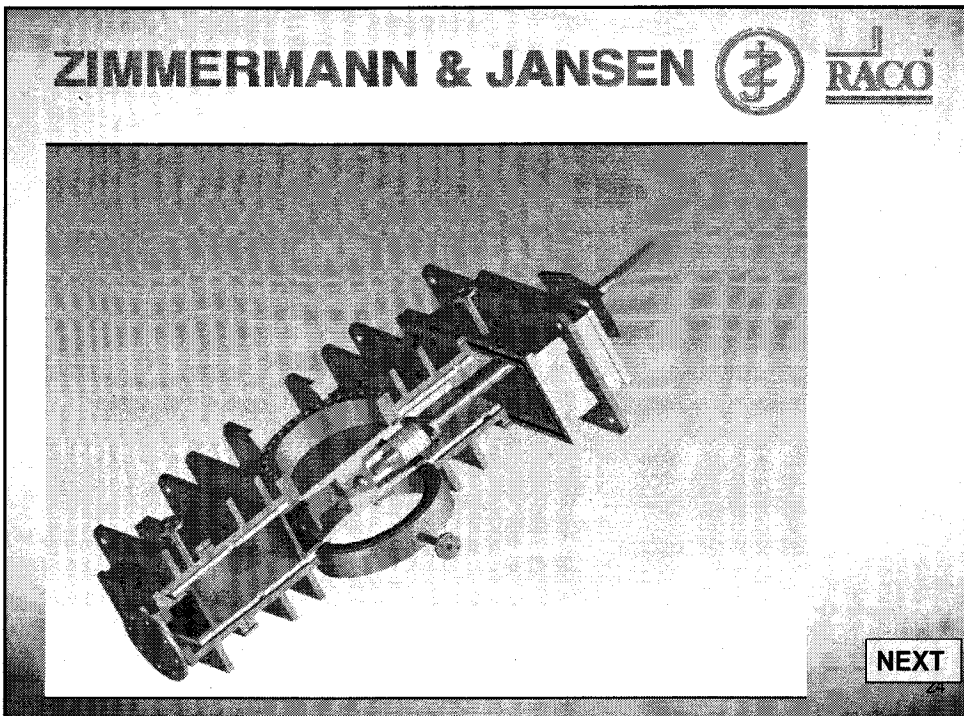
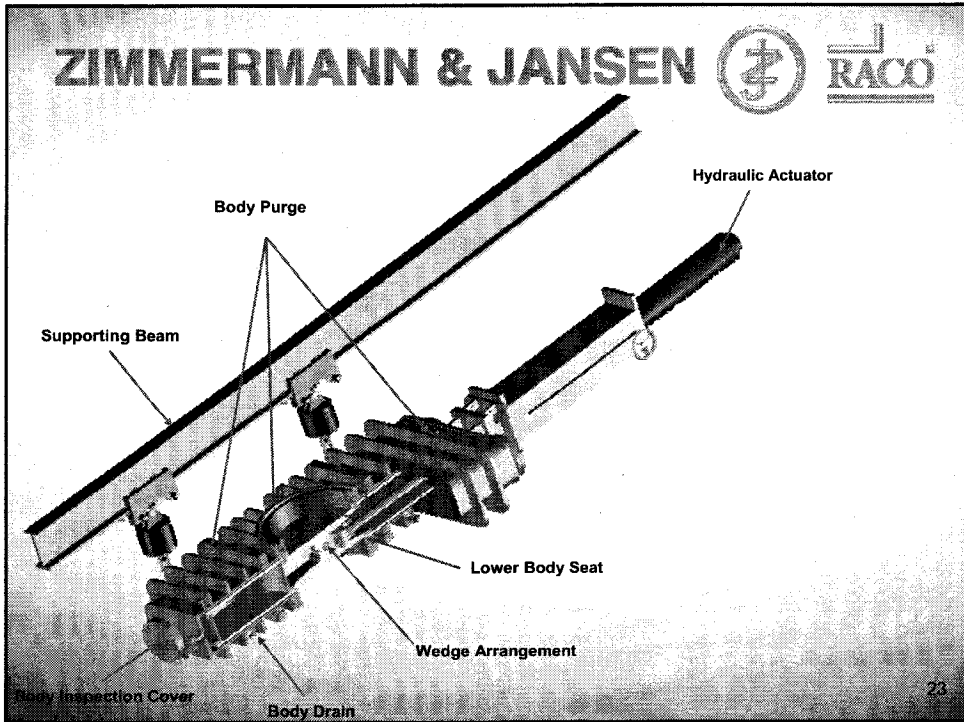
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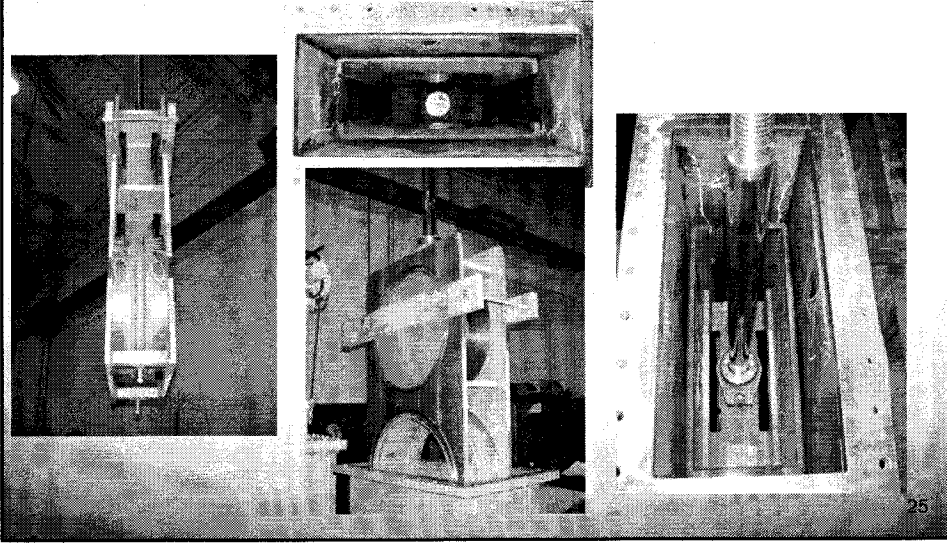


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Valve internals ready for assembling



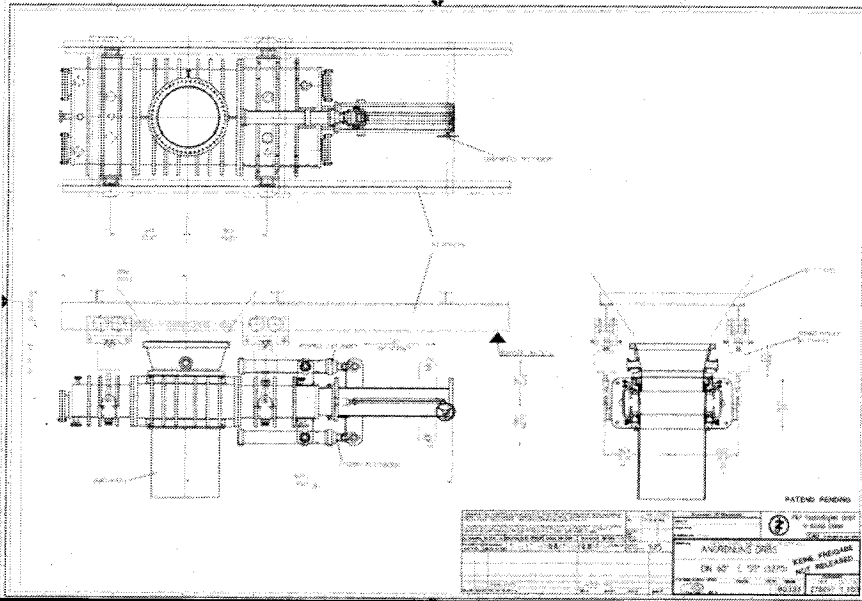
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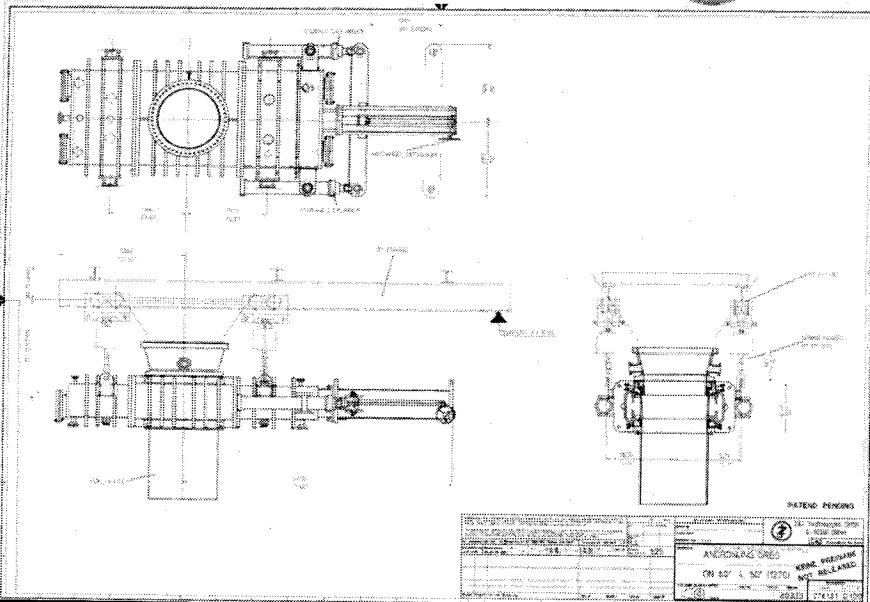
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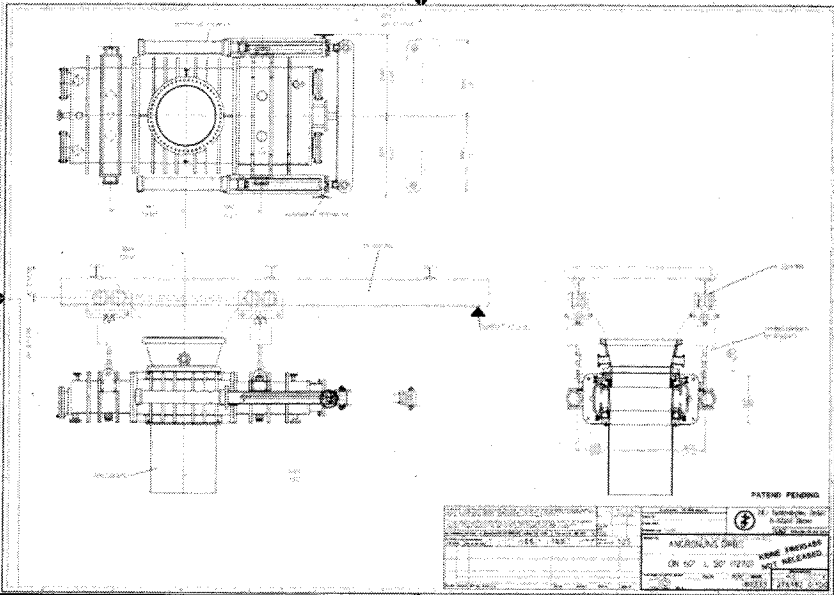
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Main Advantages of the Double Disc Through Conduit Gate Valve

- 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.

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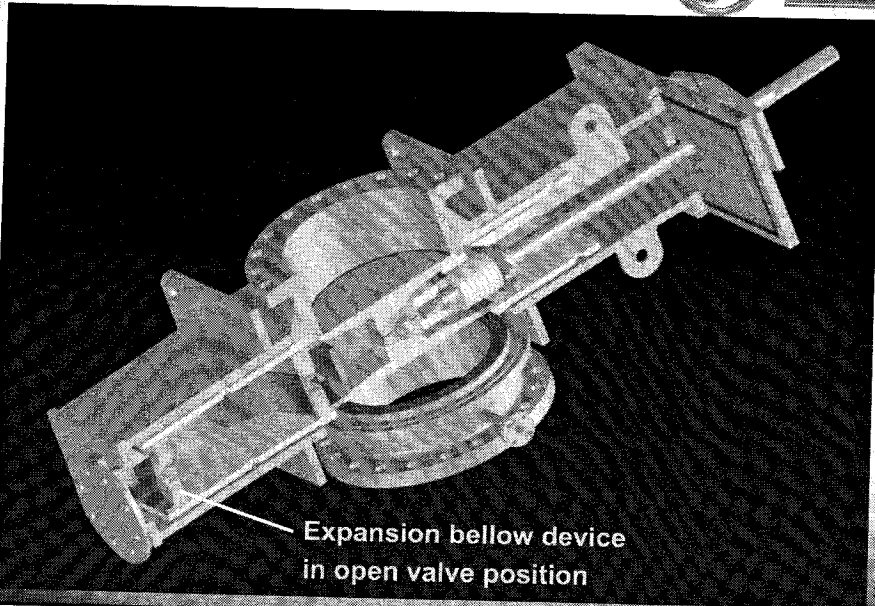
Coke Drum Valves
for
Top Un-heading
Inlet Isolation
Overhead and Blowdown

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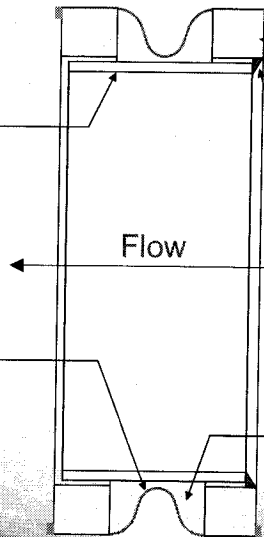
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Expansion Bellows

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

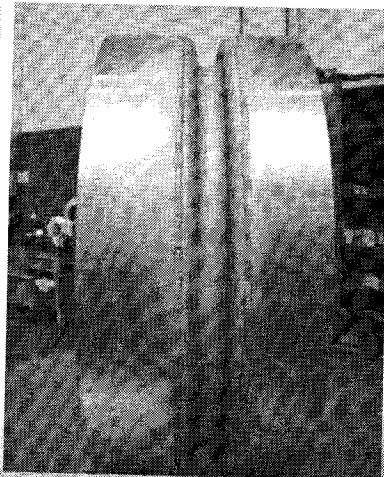
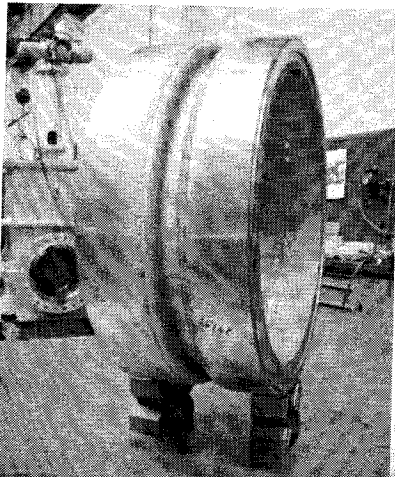
Bellow Void Area

- Packed w/Kaowool blanket

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Expansion Bellows



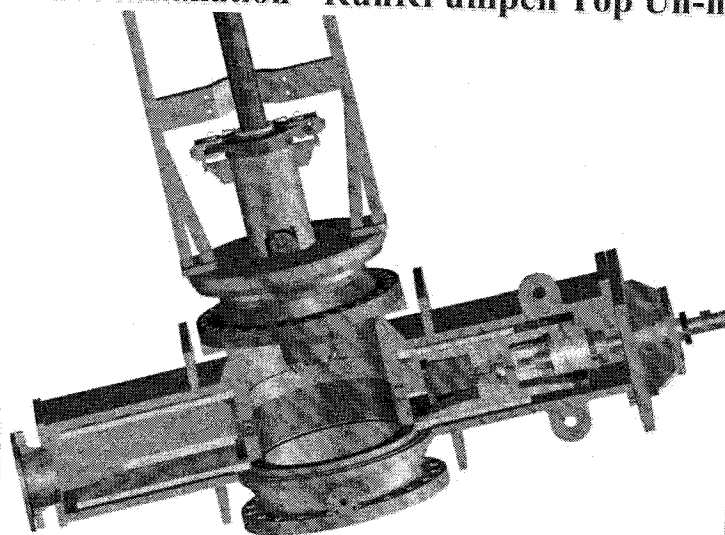
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Recent Valve Installation - RuhRPumpen Top Un-heading



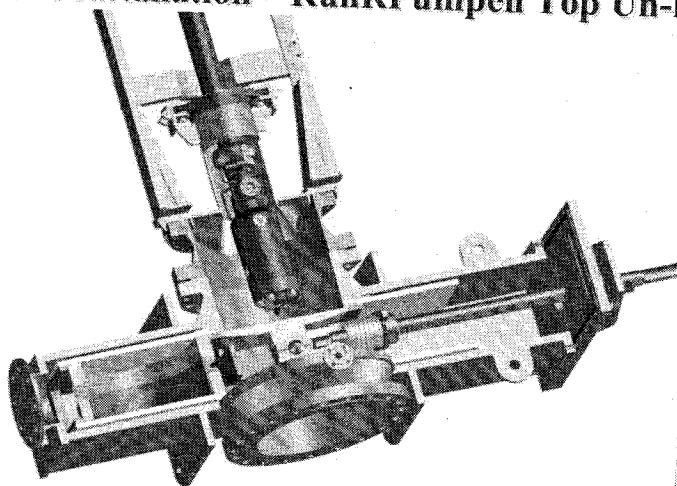
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Recent Valve Installation - RuhRPumpen Top Un-heading



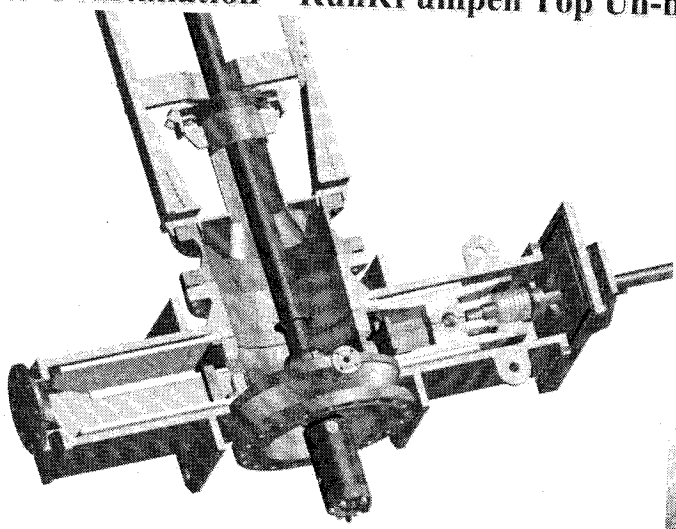
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Recent Valve Installation – RuhRPumpen Top Un-heading



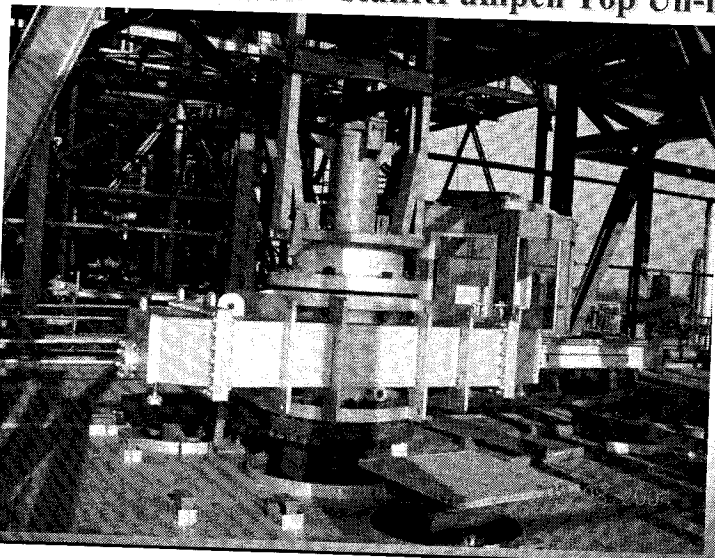
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Recent Valve Installation – RuhRPumpen Top Un-heading



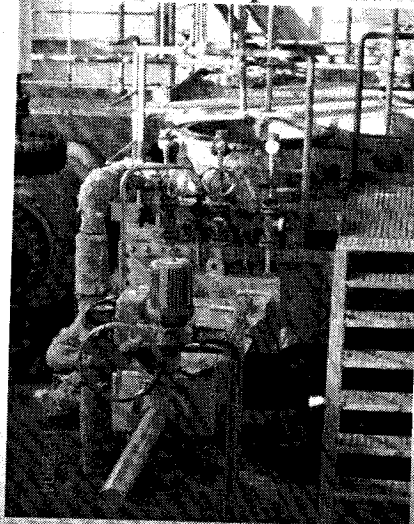
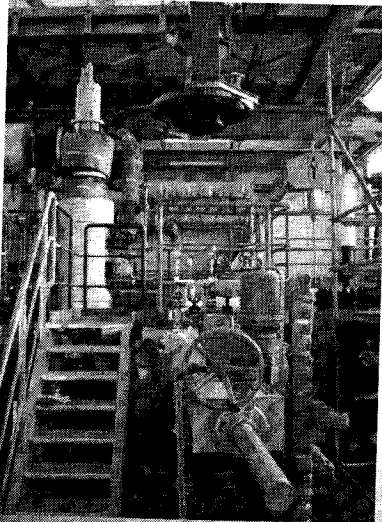
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Recent Valve Installation – RuhrPumpen Top Un-heading



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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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