Continuous Innovation
Of Products and Services

Stefan Jansen
Senior Sales Manager, Europe/Russia

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Innovation and Experience

Top Unheading Valve with Integrated Safety System

CenterFeed™ Injection Device

Bottom Unheading Valve

Isolation Valve

1,000+ Units Sold

100+ Refineries Satisfied

20+ Countries Served

Millions of safe cycles

Leading Global Supplier
DeltaValve Solved Major Industry Problem

Manual Unheading
• Unsafe for Operators
• Longer Cycle Times
• Higher Maintenance Expenses
• Lower Unit Throughput
DeltaValve’s Bottom Unheading Valve Solution

- Invented Bottom Unheading Valve in 2001
- 400+ Units Sold World-Wide
- 100+ Refinery Installations
- Safe, Fully Automated, Simple Design
- Efficient Planetary Roller Screw Actuator
- Ultra-low Steam Consumption
- Zero Recordable Injuries
- Zero Incidents
- No Downtime
- 2+ Million Cycles
Traditional (Manual)
Coke Drum Top Unheading
DeltaValve Top Unheading Device/Integrated Safety System Solution

- 270+ Units Sold
- Electric and Hydraulic Actuation
- Built-In Drill Stem Guide/Blowout Diverter
Transition from Bottom Feed to Side Feed

Bottom Feed Entry

Side Feed Entry
Transition from Bottom Feed to Side Feed
Side Feed Challenges

- Feed channeling against the drum wall causes the following:
  - Unsteady coke drum during feed
  - Drum tilt (banana effect)
  - Uneven quench
  - Localized hot spots
  - Top head steam geysers/blowouts

- Inconsistent rates of temperature change negatively impact drum fatigue life at the following locations:
  - Lower transition cone
  - Drum wall
  - Coke drum support skirt
Coke Column Central Formation

Vapor with some liquid entrainment
Foam Layer
Coking liquid froth

Ratholes for passing vapor & liquid
Bed already formed

Rathole Coke Drum

improved feed and quench channeling
= coke drum life time extension detected
DeltaValve CenterFeed™ Injection Solution
DeltaValve CenterFeed™ Injection Solution
CenterFeed Functionality

Retracted Position

- Technology proven since 2011
- 66 units sold / 50+ in negotiations
- Improved feed and quench channeling
- Reduced drum stresses
- Increased drum life

Extended Position
DeltaValve Delayed Coker Isolation Valves

- 125+ Units Sold
- Full Bi-Directional Isolation
- Dual Live-Loaded, Self Cleaning Metal Seats
- In-line Maintainable
- Ultra-low Steam Consumption
- Available in B16:10 Full Port Ball Valve, Gate Valve Short Pattern, and Full Port Wedge Plug Face to Face Configurations
- Customers and Licensors Approving 2 for 1 Configurations
- Electric and Hydraulic Actuation Options Available
DeltaValve Delayed Coker Isolation Valves

Service
- Overhead Vapor to Blow Down
- Overhead Vapor to Fractionator
- Hydrocarbon Liquids/Vapor Bypass to Fractionator
- Feed Line
- Coke Condensate
- Drain to Coke Pad
- Wax Tailings/Steam

Environments
- Designed For Use In Challenging Environments
  - Hydrocarbon liquids near coking temperature
  - Solids laden hydrocarbon liquids
  - Dirty hydrocarbon vapor streams
  - On/off, throttling service
DeltaValve Isolation Valves

Top Entry / In Line Maintainable
- All Internal Components Accessible While Valve is Installed In Line
- Easy Disassembly and Re-assembly
DeltaValve Delayed Coker Isolation Valve
Installation Services (Revamp Projects)

- Leveraging lessons learned from 100+ world-wide installations
- In-house engineering, design, procurement, and construction management
- Work with your EPC or direct hire
- Goal: Streamlined low-cost revamp installation
Installation Services (Revamp Projects)

Enlarged view of coke drum cone section
New transition spool is welded in place. The transition spool is required to bolt a standard 60 inch bottom unheading valve and center feed device to the drum.
Installation Services (Revamp Projects)

Unheading valve support structure installed to transfer bottom unheading valve load off the coke drum.
Installation Services (Revamp Projects)

Center-feed support structure installed to transfer center-feed load off the coke drum
Installation Services (Revamp Projects)

DeltaGlide system installed on support structure, suspended by spring-can assemblies
Installation Services (Revamp Projects)

Bottom unheading valve installed on DeltaGlide
Installation Services (Revamp Projects)

Bottom unheading valve raised and connected to coke drum bottom flange
Installation Services (Revamp Projects)

Retractable center-feed injection device installed inline with bottom unheading valve
Installation Services (Revamp Projects)

Side feed piping installed and connected to center-feed device
Installation Services

Recent Bottom Unheading Valve and CenterFeed installations
OEM Parts and Service

• Pre-installation and installation services
• Asset life-cycle management
• Parts and Service
• Service agreements and proposals

Due to the critical nature of delayed coking, DeltaValve has not authorized any 3rd party company to make parts or perform service on DeltaValve equipment or systems.
Global Aftermarket Service and Support
Why Choose DeltaValve?

- **Technological Innovation (Industry Firsts)**
  - Fully automated Bottom Unheading Valve
  - Fully automated Top Unheading Valve
  - CenterFeed™ Injection Device
  - Ultra-low steam consumption Isolation Valve

- **Product Quality/Certifications**
  - ISO, ASME, U Stamp, R Stamp
  - PED, CRN, TR CU, KHK

- **World-wide sourcing and delivery capability**

- **Global aftermarket service/support**
Experience: Lessons learned from 100+ installations

- Every coker unit is unique (performance expectations are different)
- Single unit – 2 drum, to multi-unit, multi-drum combination
- Slow or fast cycle time
- Small or large drums
- Small or large diameter feed lines
- Shot coke or anode grade coke
- Various deck/structure constraints
- Preference for electric or hydraulic actuation systems
- Challenges of hot/humid or cold/dry climates
- Cutting into pits, sluice ways, rail cars, etc. (capability to throttle)
- Economical and safety driven projects
- Turnaround planning and site audit expertise
Innovation + Experience = DeltaValve *(Problem Solvers)*

What is the biggest problem at your refinery?

DeltaValve can help you solve it!

*Come visit us at booth #7*

Thank you!

QUESTIONS?