Drum Unheading Technology
to
Enhance Safety and Productivity

Coking.com
MORE PRODUCTION - LESS RISK!

Rio De Janeiro, August 3 - 7, 2009
Agenda

• Z&J’s history - proven reputation since 1877
• Delayed Coker, workhorse of the refinery
• DC - need for innovation - high standards
• Z&J Double Disc - Triple Seal - Unheading Technology
• Z&J’s UNIQUE Technology that makes the difference
Z&J’s History - Proven Reputation

1877
Large diameter valves
Manufacturing plant in Düren, Germany
Solid reputation Steel - Glass - Ethylene - FCC

1920
First Delayed Coker - Standard Oil, Whiting, Indiana

1955
DC industry growth in the U.S.A

1999
Z&J - DC - isolation

2004
Z&J - DC - top unheading

2005
Z&J - DC - bottom unheading
Z&J’s History - Proven Reputation

Nearly 25% market share of global Delayed Coking unheading applications
DC Industry in need for Innovation, sets High Standards

Based on the input of the DC industry, Z&J recommends

DOUBLE DISC TRIPLE SEAL

High standards for both Top Unheading & Bottom Unheading

SAFE, ECONOMIC, ROBUST & DURABLE
RELIABLE, SIMPLE TO OPERATE
Double Disc vs. Single Plate Slide Valve

**Single Rectangular Plate**
- Random temperature distribution
- Sensitive to distortion
- Resulting in leakage & excess steam consumption

**Innovative Double Disc Design**
- Round disc, more equal temperature distribution
- Limited distortion, less deformation
- 10 x less risk to leaks
- Best choice for DC applications
Z&J’s Unique Technology

- Double Disc - Triple Seal & Purge - 100% tight
- Circular discs
- Active seating force
- Scraper and guide plates avoid coke fines entering body
- No cooling water
- Manual or automated blocking pin

- Ability to throttle coke & water mixture
- Minimize maintenance downtime
- No need for capital spare parts
- Low steam consumption
Z&J’s Unique Technology

- Actuator(s) outside of valve body
- 100% actuator redundancy
- Pneumatic driven emergency HPU cart

- Actuator options, customized to fit
- Solution to overcome weight aspect
- Revamp engineering, design and execution of lower drum section
Robust Double Disc - Triple Seal Design

- REMOVABLE SEAT RING
- 2 FLOATING DISCS
- WEDGE
- DISC CARRIER
- THROUGHWAY

Patented Design
Double Disc - Triple Seal

- Removable Upper Seat Ring
- Scraper Edge
- Guide Plate
- Spring Loaded Seat
- Seal Steam Between Two Seats
- Hard-Faced Seat

Patented Design
Unique Technology

Active seating force

Helps sealing and avoids possible deformation

Controlled discharge
Unique Technology

Scraper & guide plates avoid coke fines to enter valve-body

Disc is maintained against seat / scraper at all times by means of pretensioned springs to avoid coke fines to enter valve-body
Unique Technology

Comfort in freezing conditions
No cooling with glycol
Unique Technology

Inspection - Maintenance Position - TA

Minimize downtime & maintenance cost
No need to dismantle body for valve inspection and maintenance on upper seat and upper disc if needed

ECONOMICS

BOOSTING CAPACITY
Unique Technology

Inspection - Maintenance Position - TA

Only 2 gaskets to replace
Technology Solution

Solution to overcome weight aspect
Coker Upgrade: Engineering - Design - Execution Assistance

Supporting beams to reinforce structure
Spring hangers to minimize load on drum
DC Product Offering

Isolation

Top Unheading

Spring Hangers

HPU

Bottom Unheading
Global Presence & Support

- Golden Gate Bridge
- Statue of Liberty
- Saint Basil's Cathedral
- Great Wall of China
Bottom Unheading - Inspection
Supervision Installation & Commissioning
Production Capabilities

Large Production Area & continued hiring of qualified Personnel
Delayed Coking
Unheading Technology

Thank You!

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