

2007 Coking.com Safety Seminar
Calgary, Alberta, Canada

Reliable
equipment
is critical.

DELTA GUARD



**CURTISS
WRIGHT**
Flow Control
Corporation

 **DeltaValve**

DELTA GUARD

 **DeltaValve**

Outline

- DeltaGuard Technology Validation
- Prototype Turnaround
- Service & Maintenance
- Capacity Planning
- Additional Products

 **CURTISS
WRIGHT**

 DELTAgUARD DeltaValve®

Technology Validation

DeltaGuard® Pre-commercialization

Research and Testing: (in-house coker and prototype unheading device)

- Understanding of the serve-service nature of the delayed coking process
- Metallurgical testing analysis
- Selection of materials of construction
- Selection of material hard surfacing
- Coke bond/shear strength
- Actuator/drive train thrust requirements

 DELTAgUARD DeltaValve®

Technology Validation

DeltaGuard® Commercialization

- Compliance to ASME Sec. VIII, Div. I (Calculations)
- Compliance to ASME Sec. VIII, Div. II (FEA)
- Compliance with National/International regulations

- Field data from multiple refineries verifies compliance



 DELTAgUARD DeltaValve®

Technology Validation

DeltaGuard® 5 Year Review

In excess of 100,000 cycles

- Reduced safety related incidents
- Reduced maintenance
- Reduced downtime
- Increased reliability
- Increased throughput
- Increased refinery profitability

 DELTAgUARD DeltaValve®

Technology Validation

Market Update

Installations	Units in Production	Total Units
Bottom Valves: 129	Bottom Valves: 71	Bottom Valves: 200
Top Valves: 34	Top Valves: 62	Top Valves: 96

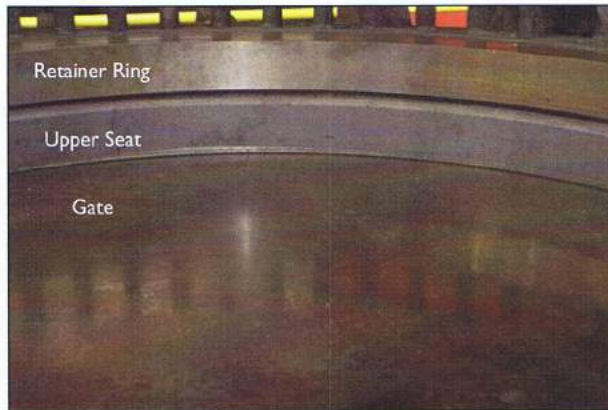
As of August 2007



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Prototype Turnaround



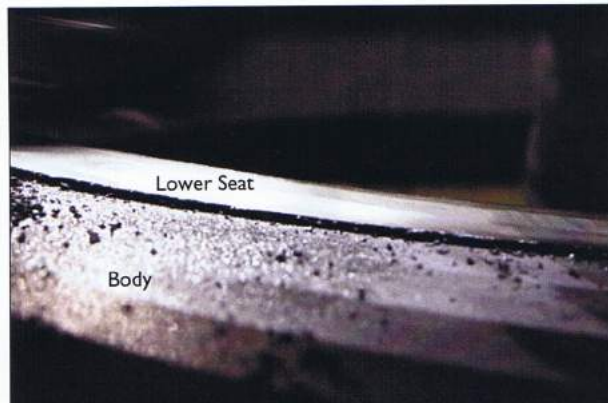
Installed date: September 2001 | Turnaround date: October 2006



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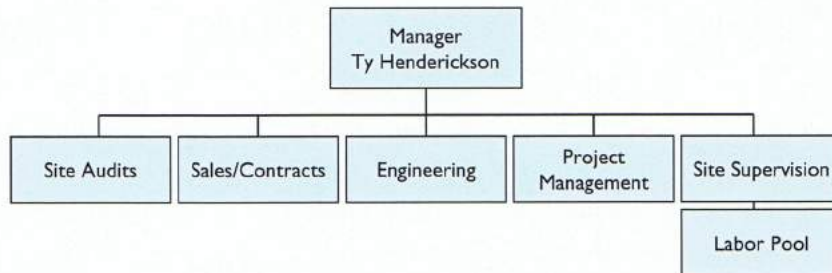
Prototype Turnaround



Installed date: September 2001 | Turnaround date: October 2006



Service & Maintenance



Service & Maintenance

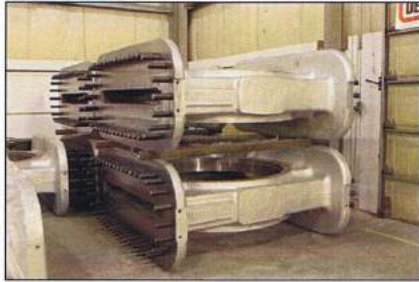
Support by geographic market

- Installations/start-up/commissioning
- Turnaround planning support
- Site audits to assist with turnaround timing
- DeltaValve supervisors on-site
- Authorized local technicians
- On call 24 hours a day

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Capacity Planning



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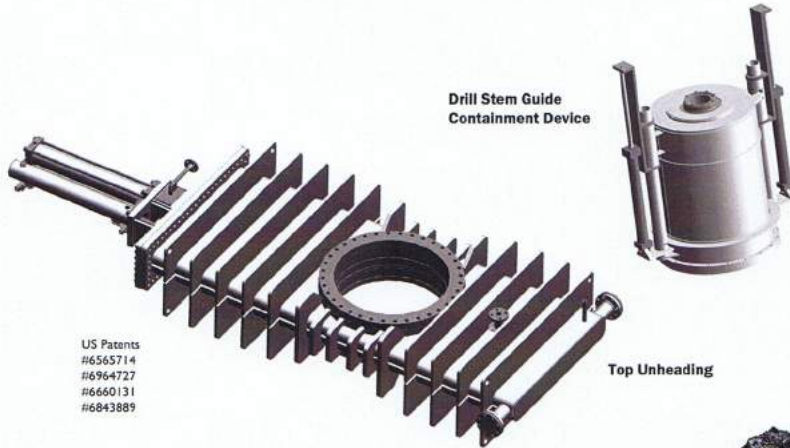
Capacity Planning



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Additional Products



US Patents
#6565714
#6964727
#6660131
#6843889

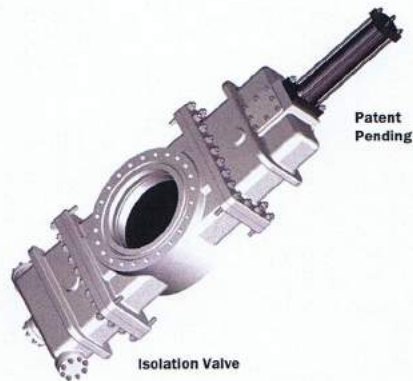
Top Unheading



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Additional Products



Patent Pending

Isolation Valve



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Additional Products



Patent Pending

Auto-Switch
Coke Cutting Tool

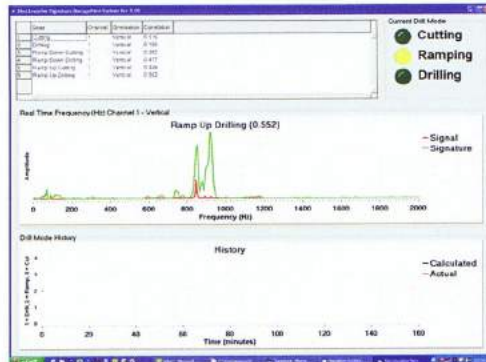


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Additional Products

Remote Cutting Mode Indication



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Additional Products

Remote Cutting Mode Indication

