



DELAYED COKING

Installation Services

INNOVATIVE TECHNOLOGY





World-class
installation services

Leadership and Experience

DeltaValve created the fully enclosed coke drum unheading valve market in 2001, with its innovative sliding gate unheading valve design. This new valve technology revolutionized coke drum unheading by replacing traditionally unsafe and unreliable manual or semi-automated unheading equipment, with a fully enclosed and automated system. The result has been a safer working environment, reduced downtime, and increased productivity.

Since 2001, DeltaValve has continued to innovate and bring revolutionary new technologies to the delayed coking market; these include the top unheading valve, planetary roller screw electric actuator, delayed coker isolation valve, and the CenterFeed™ injection device.

In addition to offering best-in-class equipment for the industry, DeltaValve offers installation services,

which includes the management of the engineering, procurement, and construction activities required to install DeltaValve equipment. Our internal team, combined with our strategic alliance partners, bring to each project the experience and perspective of having been involved in the installation of DeltaValve equipment in over 100 different refineries around the world over the past 18 years.

DeltaValve, together with our partners, is uniquely qualified to install DeltaValve equipment in light of our previous experience, application expertise and small revamp project capabilities. This allows us to focus on project scope and cost management.

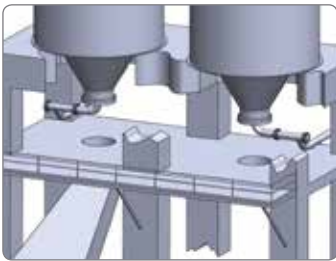
In 2016, DeltaValve was acquired by CIRCOR and is a key brand within its energy group.





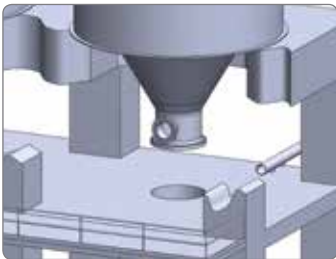
Extensive engineering
and design services

Preliminary Engineering



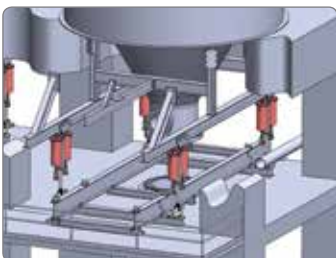
Customer Drawings

The DeltaValve engineering team has decades of experience in reviewing and interpreting all types of site drawings and Piping and Instrumentation Diagram (P&ID) packages. Our staff includes professional structural, mechanical, and fluid flow engineers. Additionally, we have pressure vessel code expertise and Finite Element Analysis (FEA) capability in house.



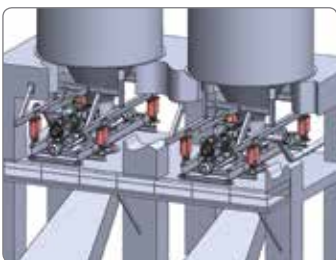
Modeling

DeltaValve's engineering team utilizes state-of-the-art systems to rapidly produce a 3-D model of any delayed coking structure. These models are very flexible and allow for different equipment and supporting systems to be virtually added, removed, or reconfigured rapidly.



Early Engineering Studies

DeltaValve has installed various types of delayed coking equipment in a variety of different unit configurations. The combination of our industry experience, engineering expertise, and modeling capabilities allow us to create early engineering studies for our customers to utilize in their strategic planning exercises.





Customer Proposals

Technical Proposals

DeltaValve has a team of installation service experts qualified to prepare complete technical proposals. Each proposal includes detailed scope descriptions of all equipment, together with details regarding the engineering, procurement, and construction management activities necessary to complete the project as well as requirements for bills of material, inspection and test plans, etc.



Commercial Proposals

At the request of the client, DeltaValve will provide budgetary and/or firm commercial proposals. Each budgetary proposal gives an approximation of scope and cost by category for budget preparation purposes. A firm commercial proposal is a comprehensive summary of all pricing information related to the scope of work outlined in the request for proposal for each unique installation project. The DeltaValve team is organized to react quickly to support our customers' changing needs throughout the life of a specific project.



Project Planning / Timeline Management

DeltaValve has built a reputation over the years as an organization that understands the critical nature of turnaround work and the cost of downtime or delays. Our project management and operations teams work closely together to create and manage schedules and resources to ensure that we deliver on time and with exceptional quality.





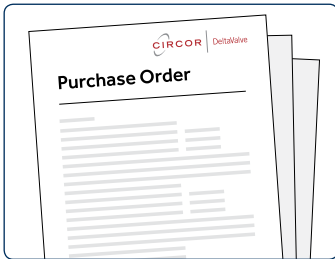
Best-in-class
project management

Project Execution



Engineering Management

DeltaValve has a strong team of engineers with a broad base of experience in a variety of technical disciplines. Additionally, DeltaValve has alliance relationships with engineering contractors that have expertise in the design and engineering of delayed cokers and supporting systems. DeltaValve's role of project manager allows us to effectively direct the efforts of our internal team and the engineering contractor to complete the scope of deliverables on schedule and with the highest level of quality.



Procurement Management

As it relates to procurement of materials for a project, DeltaValve utilizes our internal team as well as sub-contract purchasing resources. DeltaValve has partnered with procurement experts throughout the industry to ensure material availability regardless of the complexity or size of the project. DeltaValve's role is to ensure that all materials are purchased and delivered to specification in a timely manner.



Construction Management

DeltaValve's responsibility is to manage the construction of each project and to ensure the defined scope of work is completed on schedule and within budget. Each project is executed by DeltaValve's internal team of construction managers, together with one or more of our strategic alliance partners. Each of these partners has extensive experience in the construction and modification of delayed cokers.



Start Up and Commissioning

Site Acceptance Testing

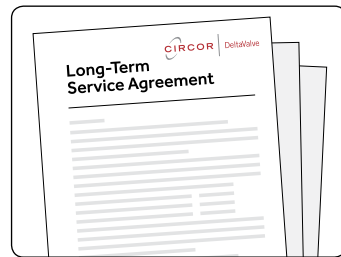
DeltaValve participates actively in Site Acceptance Testing (SAT) activities to ensure that all equipment and controls are integrated properly and functioning as specified. Our team is staffed with qualified technicians with expertise and experience in a wide variety of mechanical, instrumentation/electrical (I/E), and hydraulic equipment.

Long-Term Service Agreements

Long-Term Service Agreements (LTSA) optimize operational reliability by ensuring preventative maintenance is performed. Agreements include periodic site audits by DeltaValve technicians to review and inspect equipment, and to participate in turnaround planning activities. These agreements typically include pre-negotiated rates.

Master Service Agreements

Master Service Agreements (MSA) are an efficient and effective way for DeltaValve and its customers to manage their relationships. These agreements include pre-negotiated terms and conditions, labor rates, safety certifications, etc. We have many of these agreements in place, some of which are for individual refineries and some are corporate level agreements covering numerous facilities. MSA's streamline the process of working together to ensure seamless support throughout critical phases of work execution.





Innovative, safe, and reliable
delayed coking equipment

Delayed Coker Equipment



Bottom Unheading Valve

DeltaValve's bottom unheading valve connects to the bottom of the coke drum's transition spool and creates a totally enclosed system from the top head to the discharge chute. With the push of a button from a remote location, safe and reliable unheading can be achieved. The bottom unheading valve is inherently safe, easy to operate, and designed to be maintenance-free from turnaround to turnaround.



Top Unheading Valve

The DeltaValve top unheading valve mounts directly to the drum to create a permanent top head connection. Just like the bottom unheading valve, the top unheading valve uses patented dynamic seating technology that is tight-sealing, robust, and reliable.



CenterFeed™ Injection Device

DeltaValve's innovative CenterFeed™ injection device addresses the issues of uneven thermal distribution and severe thermal transients experienced when using single or dual side feed configurations. The CenterFeed accomplishes this by simply returning feed streams to the center of the coke drum, resulting in more consistent operation during feed, steam strip, and quench cycles, all of which can contribute to reduced drum stresses and longer drum life. The CenterFeed can be configured with electric, electro-hydraulic, or hydraulic actuation, and can be integrated with any safety interlock system.



Isolation Valves and Controls

DeltaValve's line of isolation valves are designed for on/off as well as continuous operation in the partially open (throttling) position, while isolating body internals from the process. These valves are available with a complete suite of electric and hydraulic actuator options and complete PLC-based control systems with safety interlocks and sequence controls. This design provides for quick and efficient in-line removal or replacement of all internal components.



OEM Parts and Service

DeltaValve offers a full line of Original Equipment Manufacturer (OEM) spare parts for its entire line of delayed coking equipment. Additionally, DeltaValve's service technicians are highly trained to evaluate, troubleshoot, and resolve issues and are available to respond to our customers' needs in a timely and efficient manner. They are backed by our engineering group, allowing for quick access to technical expertise, drawings, bills of material, and other relevant data to expedite practical and reliable solutions.

Core services provided by the DeltaValve service team are:

- DeltaValve equipment installations
- Site acceptance tests
- Commissioning supervision
- Site audits
- Turnaround service
- Maintenance and repair
- Equipment rebuilds
- Equipment storage
- Hydraulic flush services
- Electrical loop checks
- On-site training
- Bolt tensioning/torquing
- Valve/equipment maintenance and service



DeltaValve's network of global facilities offer support and technical assistance to our large and growing base of worldwide customers.



Quality control, quality assurance

Quality

DeltaValve complies with all aspects of the ISO 9001:2015 certified quality management system, and provides customers with the highest level of quality.

DeltaValve Design Standards

Unheading valves

- ASME and BPVC, Section VIII Div. I and II

Isolation valves

- ASME B16.34, API 598 and API 600

Center feed devices

- ASME B31.3

DeltaValve maintains the following stamps and design certifications:

- ASME
- “U” Stamp, Division I
- “R” Stamp
- National Board Registration
- Pressure Equipment Directive (PED) (2014/68/EU)

DeltaValve manufactures to the following certifications per international requirements:

- Canadian Registration Number (CRN)
- TR CU (formerly GOST-R)
- KHK
- Others as required

DeltaValve has experience installing equipment in flameproof/explosion proof, non-incendiary, intrinsically-safe hazardous areas utilizing the following standards:

- IECEx
- InMetro
- NEMA
- PESO
- UL
- TIIS
- ATEX
- KOSHA
- CSA
- JIS
- TR CU
- NEPSI

DeltaValve complies with international certifications and standards, and has unheading valves installed in over 100 refineries and in more than 20 countries around the world.

Quality Assurance Documentation

- ISO 9001:2015 certificate
- Quality assurance manual
- Additional international certifications as required.



Final Assembly and Testing

Our equipment is assembled and tested at our facilities in Houston, Texas, Salt Lake City, Utah, and Coimbatore, India. As part of our quality control protocol, each critical component is inspected and reviewed before installation for proper functionality and product quality.



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