Flowserve has pioneered many significant advancements in hydraulic decoking and has transformed it into an increasingly safe, efficient and automated process.

The Decoking Experts

With over 100 years of decoking experience through its Worthington®, Pacific® and IDP® heritage brands, Flowserve is the undisputed global leader in hydraulic decoking systems. No other company has its depth or breadth of expertise and experience. This is why Flowserve decoking solutions permit customers to continuously improve key operational drivers:

- Safety
- Productivity
- Profitability
- System reliability

A Heritage of Innovation and Leadership

In 1938 Flowserve Worthington designed and manufactured equipment for Shell Oil’s Wood River, Illinois (USA) refinery, the world’s first hydraulic decoking installation. Flowserve supplied decoking tools, swivel joints, decoking control valves and high-pressure water jet pumps for that system. In 1940 Flowserve Pacific supplied the jet pumps for a hydraulic decoking system at Standard Oil’s El Dorado, Indiana (USA) refinery.

Since then, Flowserve has pioneered many significant advancements in hydraulic decoking. Integrated systems consisting of decoking equipment, jet pump trains and control systems are matched to achieve the guaranteed decoking performance. Flowserve has transformed hydraulic decoking into an increasingly safe, efficient and automated process.

Continuing to Innovate: Remote and Automated Operation

Improving personnel safety has always been the number one goal of DCU managers. Removing operators from the cutting deck would eliminate their exposure to inherent hydraulic decoking dangers, including:

- High-pressure water
- Hot spot steam eruptions
- Hydrogen sulfide (H₂S) vapors
- Fire and mechanical hazards

The introduction of drum monitoring through vibration and the AutoShift tool, along with significant advancements in associated equipment design, now make remote operation possible. The addition of modern instrumentation, controls and software technology can achieve system automation for reduced cutting times with greater throughput, maximum reliability and lowest total cost of ownership.

Market Focused Customer Support

Flowserve decoking specialists provide customer support to develop effective proposals and solutions directed toward market and customer preferences. They offer technical advice and assistance throughout each stage of the product life cycle. From inquiry to installation through start-up and expansion, Flowserve specialists work with customers to achieve their operational goals.
Leading the Way in New Equipment and System Upgrades

Whether new equipment or system upgrades, Flowserve continues to advance decoking technology. With its AutoShift™ decoking tool, the company revolutionized the way coke is removed from the coke drum. Capable of remotely changing its operating mode from bore to drill and back to bore, AutoShift proved to be a significant advancement toward decoking automation along with ultimate improvement in operator safety.

Flowserve also has made continuous and significant improvements in the performance and reliability of its integrated hydraulic decoking system. In addition to being the world leader in barrel pump technology, Flowserve continues to advance the development of decoking control valves, rotary joints, controls and ancillary equipment. This is why at more than 160 refineries around the world Flowserve is the preferred supplier of hydraulic decoking systems.

A Complete Range of Decoking System Equipment

Whether for new equipment, system upgrades or replacement parts, Flowserve provides a complete proven decoking system:

- Cutting tools
- Threaded drill stems
- Drill stem guideplates
- Rotary joints
- Decoking hoses
- Crossheads
- Free-fall arrestors
- Pulley blocks, sheaves and wire ropes
- Proximity limit switches
- Latching mechanisms
- Tensiometers and instrumentation
- Winch systems, including console
- Isolation and bleed valves
- Decoking control valves
- Jet pump trains
- Lube oil skids
- Tools and accessories
- Control systems
- Drum cutting monitoring systems
Isolation Valves

Pneumatic shown; electric available

Drum Vibration Monitoring

Welded or magnetic sensor mounts available

Decoking Control Valve

Bleed Valve

Pneumatic shown; electric available

Jet Pump Train

Lube Oil Skid

Modular Automation System

Audio/Video Drum Monitoring

Control System Panels

Operator Shelter

Drum Vibration Monitoring

Welded or magnetic sensor mounts available

Decoking Control Valve

Bleed Valve

Pneumatic shown; electric available

Jet Pump Train

Lube Oil Skid

Modular Automation System

Audio/Video Drum Monitoring

Control System Panels

Operator Shelter
Decoking Hose
API 7K or 17J

Cable-Gripping Crosshead

Rail-Gripping Crosshead

Drill Stem Assembly

Latching Mechanism
Electric shown; pneumatic available

Pulley Blocks

Arrester Springs

Cable-Gripping Crosshead

Rotary Joint
Electric shown; hydraulic or electric-over-air available

Winch
Electric shown; hydraulic or electric-over-air available

Tensiometer
Linerider also available

Operator Console

Vapor recovery or lifting configurations

Pulley Blocks

Cutting Tool

Latching Mechanism

Latching Mechanism

Operator Console

Vapor recovery or lifting configurations

Liningriider also available

Pulley Blocks

Cutting Tool
Critical process information is displayed in real time on the operator’s control panel.
Complete Upgrade Solutions for the Future

Whether converting to heavier coker feed stock to reduce costs and increase production or revamping systems to address safety, environmental and maintenance needs, Flowserve works closely with refinery personnel to develop proposals for upgrading existing coking equipment. These proposals result in reduced operational costs, increased coker efficiency and improved system reliability.

Flowserve offers numerous safety and performance upgrades for vintage equipment of all types, including:

- Cutting tools
- Decoking valves
- Rotary joints
- Jet pumps
- Control systems

Field Service and Technical Support

Flowserve customer service technicians are on call 24 hours a day, seven days a week to respond to scheduled or unscheduled outages, construction, installation and start-up service needs. Technicians are specifically trained to evaluate and troubleshoot problems with decoking systems and equipment. Backed by Flowserve design and engineering groups, technicians have access to manufacturing drawings, bills of material and performance data so they can develop practical and reliable solutions to decoking problems.

Unequaled Product and System Support

With the industry’s most comprehensive portfolio of fluid motion and control products, including pumps, seals, valves and actuation, Flowserve is well positioned to attend to its decoking customers’ product and support needs.

- Service
  - Start-up and commission
- Repair
  - Local repair center
  - On-site repair
- Technical support
  - Decoking specialists
  - Plant evaluations (walk-throughs)
  - Site-specific training
- Spare parts
- Auxiliary equipment
- Training
- Alliance agreements

In addition, Flowserve is an authorized repair center for the isolation, bleed and unheading valves.
Flowserve Corporation has established industry leadership in the design and manufacture of its products. When properly selected, this Flowserve product is designed to perform its intended function safely during its useful life. However, the purchaser or user of Flowserve products should be aware that Flowserve products might be used in numerous applications under a wide variety of industrial service conditions. Although Flowserve can provide general guidelines, it cannot provide specific data and warnings for all possible applications. The purchaser/user must therefore assume the ultimate responsibility for the proper sizing and selection, installation, operation, and maintenance of Flowserve products. The purchaser/user should read and understand the Installation Instructions included with the product, and train its employees and contractors in the safe use of Flowserve products in connection with the specific application.

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