

# Service for Valves and Actuation

Total valve care

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With a global footprint and network for valve servicing in the oil and gas industry, Cameron is ready to help your operations when you need it—for individual applications or as part of a long-term valve asset management program.

As environments and objectives become more challenging, Cameron has expanded its range of support and response for its portfolio of valves and actuation products.

# Services for Valves and Actuation

## Parts and spare valves

Our service facilities maintain a full inventory of new and reconditioned spare valves, actuators, and parts for immediate delivery.

- 24/7/365 support
- OEM spare valves, actuators, and parts (including non-Cameron brands)
- Handling, storage, packaging, and delivery
- Dedicated stocking program

## Repair

Cameron global service centers restore your assets to industry standards with factory warranties and installation support.

- Disassembly
- Inspection
- Parts replacement and reassembly
- Testing and recertification
- Painting and coating

## Field services

Unlike other valve manufacturers, Cameron has an established network of strategically located field service centers that offer a full range of installation, repair, inspection, testing, spare parts, and maintenance services.

- 24/7 field service support and emergency mobilization
- Portable onshore trailers and offshore containers
- Preventive maintenance

## Offroad trucks, portable onshore trailers, and offshore containers

For faster reaction times and onsite flexibility, our fleet of customizable, fully equipped trucks, trailers, and offshore containers keeps valve support close to onsite customers for their convenience.



	Offroad trucks	Onshore trailers	Offshore containers
Full complement of hand tools, valve spares, workbenches, and cranes	●	●	●
Strategic spare parts	●	●	●
Calibration and onsite recertification	●	●	●
Valve breakdown, cleaning, inspection, and assembly	–	●	●
Pneumatically operated inline machining and pipe cutting equipment	–	●	●
Inline machining	–	●	●
Hydrostatic and gas test equipment	–	●	●
Field hydrostatic testing	–	●	●
Packs	–	●	●



### Preventive maintenance

Customized preventive maintenance programs are designed to provide optimal valve performance and increased reliability for both onshore and offshore facilities. Cameron provides key performance indicators and asset history trails to help technicians detect early stages of reduced efficiency and compromised valve integrity to prevent loss and early failures.

### Equipment testing and diagnostics

Cameron engineers and technical experts offer comprehensive valve testing and recertification services.

- Hydrostatic testing
- Leak detection
- Torque testing
- Fugitive emissions testing
- Pressure safety valve (PSV) testing and recertification
- Control valve diagnostics and repair

### Special equipment

- High-pressure hydrostatic and submerged gas testing
- Cryogenic testing
- Charted low-pressure extended testing

### Torque testing

Our aftermarket service facilities are equipped with torque testing technology ranging from hand-held audio-alarmed wrenches to pneumatic units with various transducers and digital readouts.

- Equipment calibrated to ISO 9001 requirements and National Association of Testing Authorities (NATA) accreditation
- Compact units capable of measuring up to 73,750 ft.lbf [100,000 N.m] of torque
- Valves up to 40-in [1,016-mm] diameter at all pressure ratings

### Control valve diagnostics

- Control valve inspection and testing
- Benchmarking and troubleshooting
- Compact, field-service-compatible diagnostic tools that communicate with all positioned protocols (i.e., 4–20 mA, FOUNDATION® Fieldbus®, and highway addressable remote transducer [HART])
- Portable, computer-operated, online safety tests for spring-loaded, proportional, and full-lift safety or pressure-relief valves, especially in harsh environments

Cameron preventive maintenance services help to optimize valve performance and increase reliability both onshore and offshore.



Cameron facilities maintain a full inventory of new and reconditioned spare valves, actuators, and parts for immediate delivery.



### Remanufacturing

Using our global capabilities, Cameron engineers work to procure and recondition used equipment.

- Broad range of API-compliant reconditioned equipment
- Extensive inventory of the most commonly requested reconditioned equipment

### Asset preservation

To assist customers in maintaining and preserving assets, Cameron will inventory, monitor, and store your assets to help ensure high performance and reliability.

### Customer property management

Property management programs extend the life and reduce the lead times and total cost of ownership of your assets while adding value to your asset recovery programs.

- Asset consolidation and storage at Cameron locations
- Refurbishment, repair, stocking, and rotation programs
- Increased opportunity to convert stranded inventory

### Training and recertification services

For more than two decades, our service program has provided customers around the world with both classroom and field training opportunities focused on raising the performance of operators, engineers, and maintenance personnel by deepening their understanding of flow management equipment and systems.

### Warranty

Cameron warrants all products and services in accordance with Cameron terms and conditions.





# Total Valve Care (TVC)

Every stage of the TVC cycle is supported with state-of-the-art technology and specialized product engineering, flexibility, improved cost control, and disciplined valve management.

For greater flexibility and improved cost control, Cameron offers TVC solutions, a complete valve management program designed to optimize uptime, availability, and life-of-field support. TVC provides management support specializing in high-specification project work, existing operations with vast installed bases, and new development opportunities. TVC covers standard and critical valves ideal for extreme environments and remote areas of the world.

## Design and procurement

- A range of consultative services focused on improving operations to increase asset utilization

## Startup and operation

- Extensive menu of aftermarket, engineering, and technical services
- Installation, testing, and troubleshooting
- Equipment monitoring, spare valves, and parts management

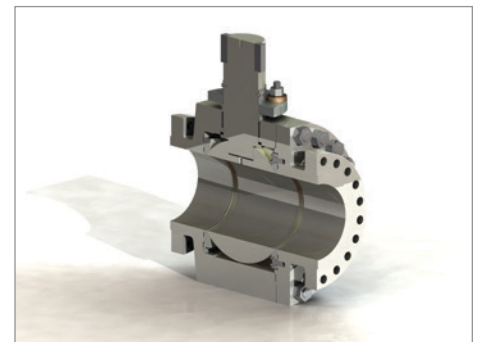
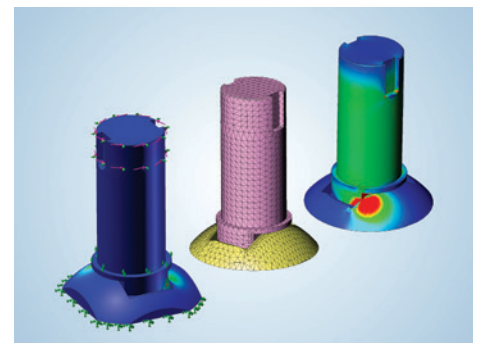
## TVC engineering consultancy

The TVC program provides dedicated engineers with specialized training and expertise in the design, manufacture, repair, and inspection of valves and related actuation technologies.

Our consulting services offer a unique blend of operational knowledge, industry expertise, and best-practice methodologies to ensure that each project complies with all regional industry safety and quality standards and regulations. Using analytical methods including finite-element analysis (FEA), computational fluid dynamics (CFD), nondestructive testing techniques, and onsite performance testing, the team identifies and corrects design issues and delivers timely and cost-effective technical solutions.

## TVC engineering consultancy services

- Shutdown planning and management
- Work pack development
- Front-end engineering, design, and analysis
- Computer-aided design and modeling
- FEA
- CFD analysis
- Criticality analysis of parts and spare valves
- Failure analysis
- Design review
- Specification review



# Total Valve Care (TVC)

## TVC site management

Valve integrity is a critical component of project success. The Cameron site management team helps mitigate the risk of project delays by identifying issues in the construction process prior to valve installation to ensure valve integrity. The TVC program uses our advanced asset management program to protect and preserve assets while improving system control and efficiency.

Site Management	Receiving Inspection	Monitoring Lay-Down Area	Monitoring Valve Installation	Optional Services
Witnessed unpacking of received valves	●	–	–	–
Receipt inspection	●	–	–	–
Resolving of any warranty disputes	●	–	–	–
Onsite issue rectification, if possible	●	●	●	–
Preservation	–	●	●	–
Handling	–	●	●	–
Flange management	–	–	●	●
Proper valve positioning	–	–	●	–
Valve inspection before installation	–	–	●	–
Startup and commissioning spares	–	–	–	●
Valve database	–	–	–	●

## TVC flange management

To help eliminate risk and save time, Cameron offers experienced personnel and specialized equipment for the implementation of bolt torque and tensioning programs and flange management. To prevent leaking flange connections, skilled technicians assess bolted-joint integrity and perform and supervise technical bolt services—all while maintaining an electronic database capturing a critical joint's engineering calculations. Data can include gasket size and material, bolt type and length, torque and tension, and a history of all work performed on the joint.

- Engineering and technical support
- Onsite bolting services
- Comprehensive electronic database systems

Our property management service extends the life of your assets while adding value to your asset recovery programs.





### TVC startup and commissioning

Our experts understand that each project is unique. That's why Cameron Services helps facilitate commissioning and start-up activities.

- Integrated solutions, onsite or at our global service centers
- Increased equipment and product performance
- The shortest-possible trouble-free startup for your critical assets

### TVC spare parts and asset management

Cameron offers the assets and expertise to cover all aspects of valve management.

- Full inventory of quality exact OEM parts and spares
- Complete asset risk and criticality assessments
- Comprehensive inventory of your assets, including a complete recommended spare valves and parts list

### TVC operational support

Our ability to address valve requirements in the field is a reflection of our commitment to life-of-asset support.

- Innovative asset management solutions
- Trouble-free installation, startup, and operations
- Support from commission to operation—extending through all phases of a valve's life cycle
- Extensive inventory of spare valves and parts

Our site management team helps mitigate the risk of project delays by identifying issues in the construction process prior to valve installation to ensure valve integrity.



# Project Valve Engineering (PVE)

The PVE program increases performance, reduces total cost of ownership, and delivers a seamless process.

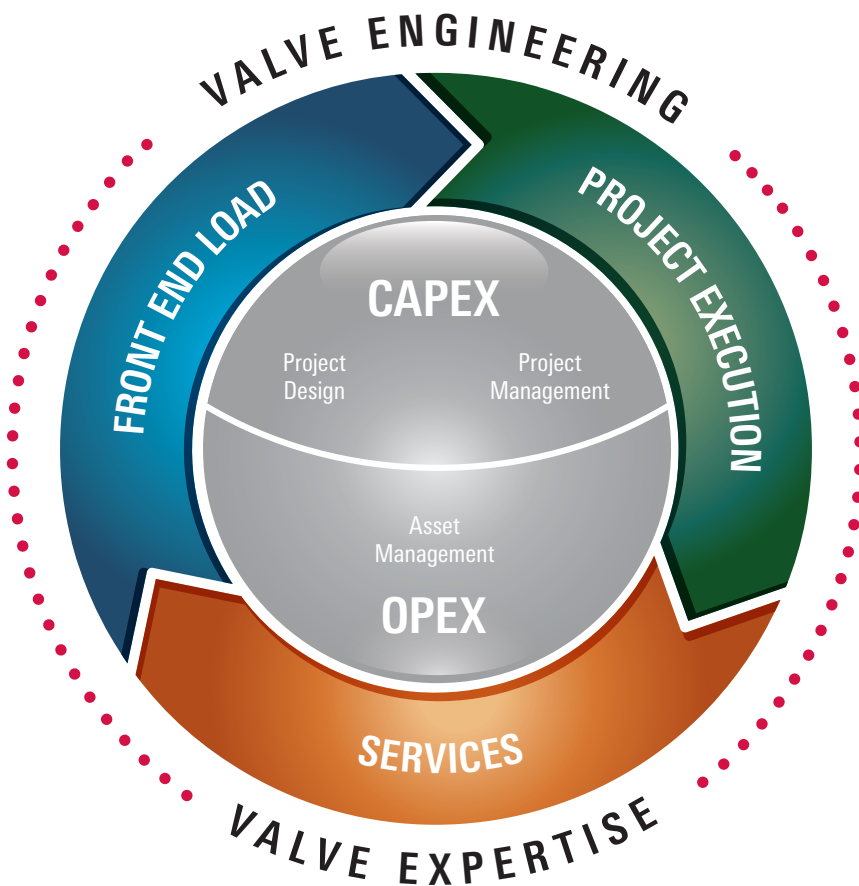
Cameron is one of the only valve companies in the world with an established program that provides technical, commercial, and operational intelligence to large-scale, high-specification oil and gas projects. By working with end users and their project team leaders from as early as before the front-end engineering design (FEED) stage through engineering design, operations, commissioning, and support, the PVE program offers

- experience
- engineering and technical expertise
- project execution and operational resources
- intelligence databases—life of asset and lessons learned.

In partnership with the services team, this program provides 24/7 complete life cycle service and support. From FEED to aftermarket, we integrate our industry best-practices database with unmatched support to increase asset performance, reduce total cost of ownership, and deliver a seamless process.



As the largest service network for valves operating in the global oil and gas industry, Cameron is ready to respond 24/7.





# Global Network and Local Support



*Cameron global footprint.*

## Manufacturing excellence

Our commitment to valves and valve automation is evident in the ongoing investments we make in our 2,000,000 ft<sup>2</sup> [185,806 m<sup>2</sup>] of facilities and state-of-the-art machining, testing, and quality equipment.

## Innovation in engineering

Few companies in the world can match the level of oil and gas valve engineering expertise Cameron commits to our day-to-day, project, and services businesses.

With hundreds of engineering professionals in countries around the world, our technical expertise delivers what you need where you need it.

## Valuable partnerships that strengthen our performance

To ensure global and timely accessibility to our complete portfolio, we provide services via direct sales teams and through relationships with specialized and respected distributors, agents, and representatives focused on oil, gas, and industrial applications worldwide.

## Our commitment to HSE

Our most valued assets are our people, and our focus on health and safety is uncompromised.



# Service for Valves and Actuation



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