



Philippines Quick Response Center

Maintenance and Repair • On-Site Services
Parts and Components • Pump Retrofits and Upgrades
Mechanical Seals • Seal Change-outs and Upgrades



Experience In Motion



Repair Services and Technical Support for the Philippines

The Flowserve Philippines Quick Response Center (QRC) in Cavite focuses on providing customers with uncompromising service and support.

The Cavite QRC is staffed by highly skilled engineers and technicians who are available around the clock, seven days a week to respond to customer queries, troubleshoot problems and provide reliable solutions.

Strength of Experience, Commitment to Excellence

The Cavite QRC serves customers from industries requiring superior equipment performance and service life, such as:

- Oil and gas production
- Hydrocarbon processing
- Chemical processing
- Water resources
- Power generation
- Mining and mineral processing
- Pulp and paper
- General industry
- Steel industry

Premier, Value-Added Services

With unequaled pump knowledge, design expertise and manufacturing capabilities, the Cavite QRC specializes in value-added repair services. QRC engineers and technicians service most types of equipment, including pumps, motors, compressors, agitators, valves and seals. The dynamic range of services offered by the Cavite QRC includes:

- Maintenance, repair and inspection services
- Equipment repair, analysis and testing services
- Pump upgrades, re-rates and retrofits
- Parts and components supply
- Overhaul, outage and mechanical services
- Installation and commissioning services
- On-site repair and diagnostic services
- Troubleshooting
- Field supervision
- Service maintenance contracts





Maintenance and Repair Services

A Dynamic Range of Capabilities

The Philippines Cavite QRC facility features 1505 m² of workshop and 225 m² office space to support repair, sales and customer service functions. In-shop operations can handle a full range of pumps from small single-stage overhung units to large multistage, between bearings pumps and large size vertical pumps weighing up to 10 tons.



The Cavite QRC facility offers extensive capabilities, including:

- Machine capabilities
 - Horizontal lathes
 - Vertical milling machine
 - Radial drilling machine
 - Balancing machine (700 kg)
 - Sandblasting machine
 - Hydraulic press
- Lifting capability
 - Overhead crane (5 tons / 10 tons)
- Inspection and test capabilities
 - Quantum FaroArm®
 - Pruftechnik vibration analyzer
 - Laser alignment equipment
 - Noise tester
 - Positive material identification (PMI) tester
 - Hardness tester
 - Roughness tester
 - Coating thickness tester
 - Etching machine
 - Dye penetrant test
 - Hydrostatic test for casing and mechanical seal (up to 50 bar)

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Parts and Components, On-Site Services

Quality parts complying with OEM specifications for the entire range of Flowserve product brands are readily available through the Cavite QRC. As all parts conform to original design and materials specifications, customers are ensured reliable operation and lowest equipment ownership costs.

The Cavite QRC can also re-engineer and produce non-Flowserve components for equipment that is obsolete or where the original equipment manufacturer cannot be located.

The Flowserve Advantage

Flowserve manufactured parts offer significant benefits to customers. As an OEM, Flowserve understands the critical elements involved in designing and producing high-quality parts. Whether cast or machined, Flowserve manufactured parts and components result in lower total operating costs and increased personnel safety.

- Flowserve casting quality is superior. Surface finishes, tolerances and material compositions are maintained within defined specifications.
- Flowserve parts incorporate the latest design changes which improve operating efficiency and extend equipment life.
- Customers benefit from ongoing research to develop new materials, overlay techniques and mechanically improved components.

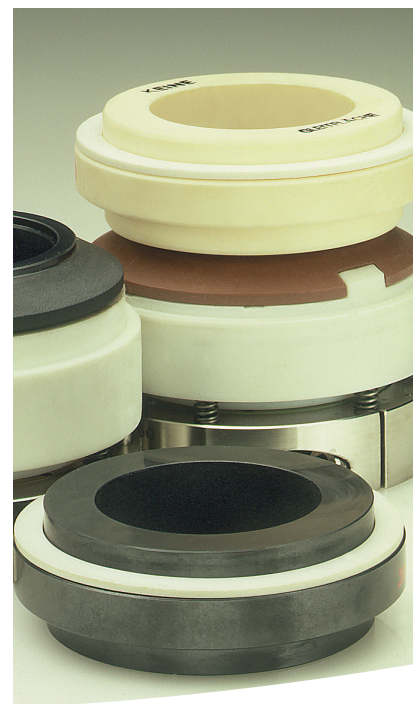
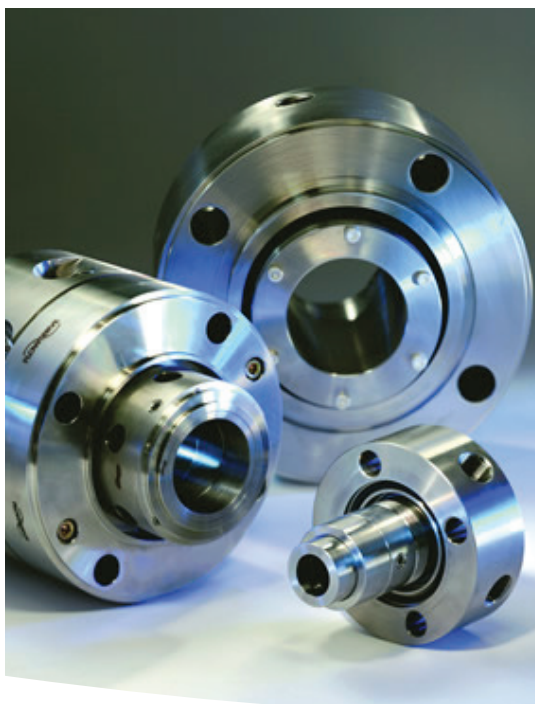
Installation and Commissioning Services

With limited staffing, customers often do not have the resources to supervise ongoing, equipment-related activities. As a result, field service experts from the Cavite QRC are available to support customer startup requirements:

- Equipment removal and handling
- Equipment installation
- Equipment transportation
- Maintenance activities
- Startup and commissioning
- Flush and lubrication system installation and testing
- Pump and motor pre-rotation checks
- Laser alignment
- Safety inspections
- Startup and operating procedure development

Overhaul, Outage and Mechanical Services

The Cavite QRC has extensive experience and resources to provide integrated outage and mechanical services. Field service teams offer rapid mechanical assistance, including maintenance, upgrade and inspection services during times of high demand.



Seal Change-Outs, Upgrades and Repairs

To assist customers who need to turn equipment repair around as quickly as possible, the Cavite QRC can design and manufacture engineered seals to meet specific applications within a few days. Strategic inventory stocking of standard seals and spare parts within the facility is a critical component of this capability.

Through real-time electronic access, Cavite QRC engineers can retrieve the latest design drawings and bills of material information. They can utilize the Flowserve application engineering program to simulate operating conditions, allowing them to validate the correct seal selection and system configuration for the application.

Extended Seal Life Through Upgrades

Utilizing the proven knowledge and expertise of the Flowserve rotating equipment specialists, together with the application of best practices and the latest technology, Flowserve is able to offer an extensive array of seal upgrades to extend the life of our customers' key seals in operation throughout their facilities.

Seal Repairs to the Flowserve Standard

The QRC has in-house capabilities to perform quick repairs to seals, including:

- Ultrasonic cleaning
- Seal face lapping
- Repair or replacement of worn parts
- Parts measurement and testing
- Seal testing
- Packaging
- Bellows seal leak testing

The QRC is equipped and staffed to support our alliance partners on a 24-hour basis.

Customer-Focused Services

To ensure the availability and quick turnaround of standard parts, the QRC has access to inventory in Singapore, Europe and the U.S. Assisted by the Singapore Seal Manufacturing hub, the Cavite QRC can also obtain supply chain consignment stock information to meet urgent customer requirements.

When requested, the Cavite QRC can supply root cause analysis reports on the returned seals. Recommendations regarding repairs or upgrades are also provided to ensure improved performance of the equipment once re-inserted into field operation.

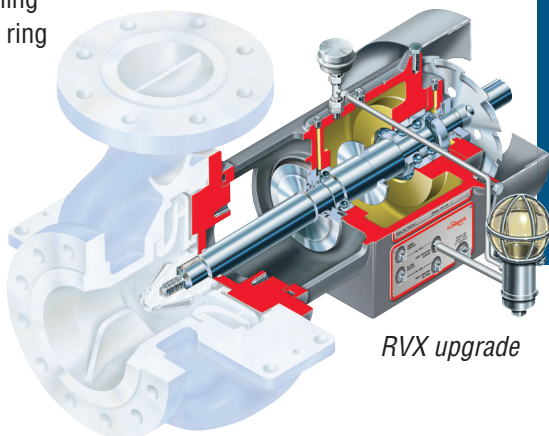


Upgrades, Re-rates and Retrofits

Unreliable and leaking pumps can be refurbished to “as-new” condition via myriad mechanical upgrade and retrofit options. Expert engineers from the Cavite QRC facility have the experience to analyze and diagnose the root causes of mechanical pump failure and recommend solutions that improve reliability, reduce emissions and increase plant uptime.

Mechanical Upgrades and Retrofits

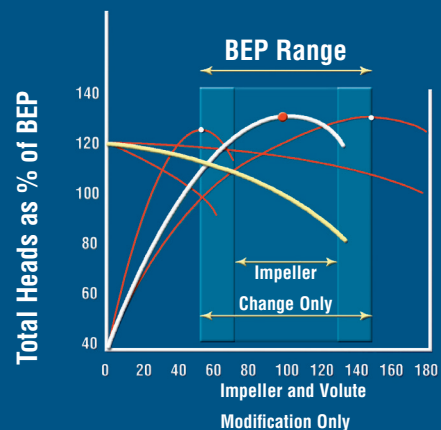
- ISO 13709/API 610 10th grade edition upgrades, including the RVX and RHWX upgrades for horizontal and vertical overhung pumps, bring out-of-date process pumps to current API standards. This avoids costly new equipment investments.
- Other available mechanical upgrades include:
 - Increased rotor stiffness (Superstraight™ shaft material)
 - Bearing housing and bearings
 - Mechanical seal upgrade to API 682
 - Seal chamber
 - Coupling
 - Wear ring

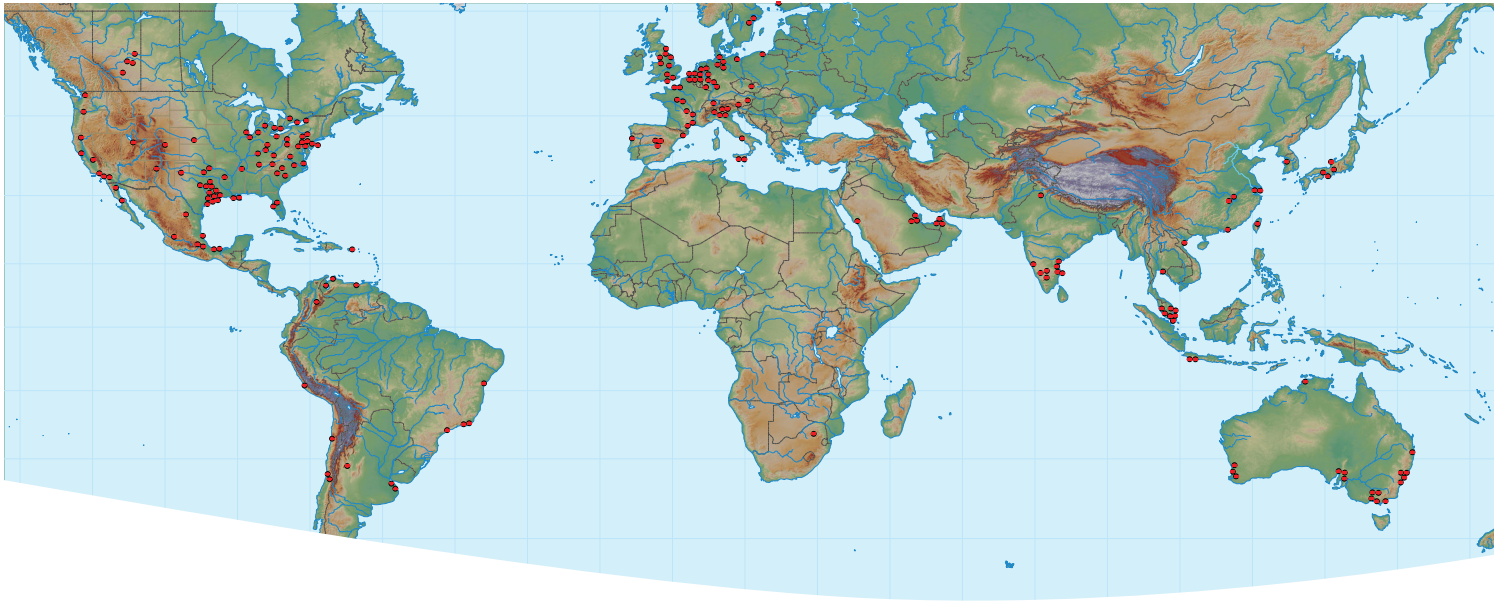


Hydraulic Upgrades and Retrofits

Hydraulic re-rates can be provided to cover changes in flow or TDH, or increase efficiency for power savings.

- Optimization of lip and shroud clearances (A/B/C gaps)
- Impeller modifications
- High-efficiency rotors
- Low flow modifications
- Re-bowling
- De-staging or upstaging
- Optimized hydraulics to reduce erosion/abrasion

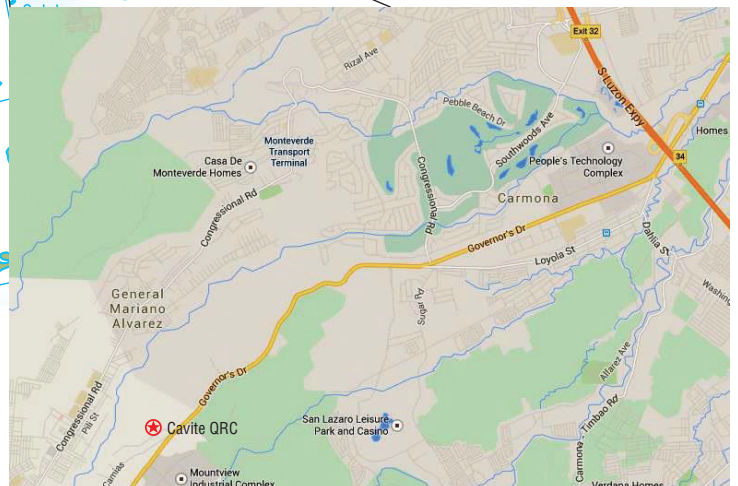




Pump and Seal Supplier to the World

With an installed base of more than one million pumps and seals, Flowserve has sales offices, service centers and manufacturing facilities throughout the world. As a result of its extensive global footprint, Flowserve is ideally positioned to deliver best-in-class solutions to successfully address the world's most challenging projects.

The Philippines Quick Response Center





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