



Thailand Quick Response Center

Maintenance, Repair and Inspection • On-Site Services
Parts and Components • Technical Services
Seal Change-Outs and Upgrade



Experience In Motion



Repair Service and Technical Support for Thailand

The Flowserve Thailand Quick Response Center (QRC) focuses on providing customers with uncompromising service and support, whenever and wherever needed.

Established in 1997, the QRC is one of the largest and best equipped rotating equipment service centers in Rayong.

Located in Eastern Industrial Estate, Map Ta Phut, the QRC features 1300 m² (13 993 ft²) of shop and office space to support repair, engineering, 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 designs.

Strength of Experience, Industries Served

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

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

Thailand QRC Capabilities

The Thailand QRC specializes in value-added service and repair of static and rotating equipment, including pumps, motors, compressors, agitators, valves and mechanical seals. The dynamic range of services offered include:

- Maintenance, repair, inspection and analysis
- Pump upgrades, re-rates and retrofits
- On-site repair, overhaul, laser alignment and diagnostic services
- Installation and commissioning
- Field performance testing and monitoring
- Material selection and upgrades including hardening, welding and overlay services
- Parts manufacturing, sourcing and stocking
- Service maintenance contracts
- Equipment management programs to reduce the total cost of ownership and improve operating efficiency





Maintenance, Repair, and Inspection Services

For more than 10 years, the Flowserve Thailand QRC has been servicing and repairing a wide range of pumps and other rotating and static equipment.

Supported by a worldwide network of pump engineering experts, the Thailand QRC engineers and technicians have the experience and capability to properly repair and maintain critical process equipment. Broad machining capabilities, advanced material overlay technology, progressive inspection techniques and materials expertise are all integral parts of the QRC repair portfolio. Customers are ensured high-quality repair and maintenance practices that focus on prolonging equipment life and improving reliability and safety.



Whether commissioning a new plant, repairing a damaged pump, collecting performance data, executing a service maintenance contract, troubleshooting a problematic pump or performing in-field services, customers can rely on the Thailand QRC to provide the manpower, tools and expertise necessary to meet their needs.

Before



After – Refurbished HED Pump





Parts and Components, On-Site Services

Quality parts that meet OEM specifications for the entire range of Flowserve product brands are readily available through the Flowserve Thailand QRC. Because all parts conform to original designs and materials specifications, customers are ensured of reliable operation and lowest equipment ownership costs. Flowserve can also re-engineer and produce non-Flowserve components for equipment that is obsolete or under circumstances where the original equipment manufacturer cannot be located.

Through quick response programs, rapid prototyping and other innovative approaches to OEM parts supply, Flowserve delivers lower costs while maintaining high levels of equipment performance.

Quick Response Programs

The Thailand QRC has the capability to provide customers with rapid delivery of pump parts to minimize equipment or plant downtime. Machined parts can be delivered in days instead of weeks. Wear rings and sleeves in common sizes and materials can be manufactured to OEM specifications and shipped on the next business day. This program helps to reduce inventory expenses and pump repair cycle time with improved pump performance and reliability.

Inventory Management

By evaluating and monitoring customer-held inventory, Flowserve parts and inventory experts develop programs to reduce customer costs associated with inventory and non-productive assets. Programs

incorporate both Flowserve and non-Flowserve equipment.

- Inventory rationalization
- Safety stock recommendations
- Materials standardization
- Equipment obsolescence
- Repair schedule integration

Outage and Mechanical Services

The Flowserve Thailand QRC has extensive experience and resources to provide integrated outage and mechanical services. Field service teams offer rapid mechanical assistance, including maintenance, upgrade, revamp and inspection services.

Installation, Commissioning and Field Supervision Services

The Thailand QRC field service teams provide a broad range of services to support customer site requirements:

- Equipment removal and handling
- Equipment installation
- Pipe and pump bolt-up, alignment and inspection
- Start-up and commissioning
- Maintenance, overhaul and repair activities
- Vibration diagnostic services
- On-site training
- Field performance testing
- Baseplate modification and machining



Seal Change-Outs, Upgrades and Repairs

To assist customers who need to turn equipment repair around as quickly as possible, the Thailand 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, the Thailand 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 the customer's 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
- Bellow seal leak testing

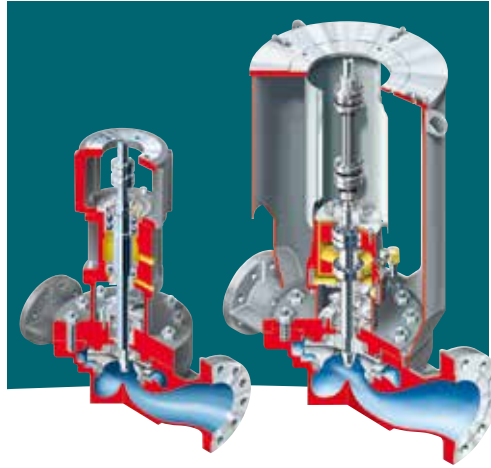
The QRC is equipped and staffed to support our alliance partners on a 24-hour basis. Key manufacturing capabilities include:

- Vertical and radial milling machines
- High precision lathes
- Keyway slotting machine
- Seal lapping machine
- Ultrasonic cleaning equipment
- Optical flatness equipment

Customer Focused Service

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 Thailand QRC can also get supply chain consignment stock information to meet urgent customer requirements.

When requested, the Thailand 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.



Technical Services

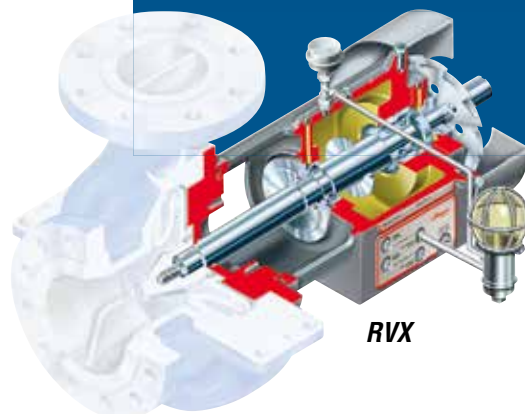
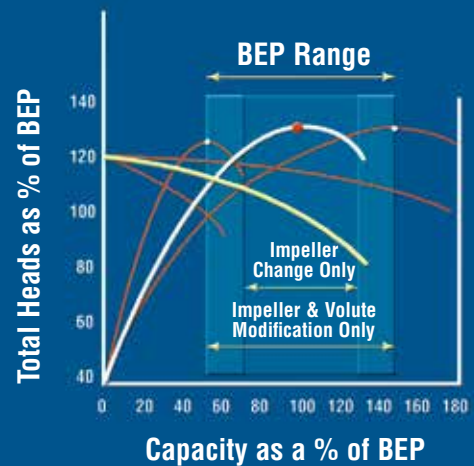
Flowserve has developed and implemented countless hydraulic, mechanical and metallurgical upgrades for its customers. From highly engineered hydraulic modifications to full-scale equipment exchange programs, Flowserve has the engineering expertise and physical resources to address changing system requirements and problematic equipment. The Flowserve Thailand QRC has executed numerous such programs for customers in Thailand over the last 10 years.

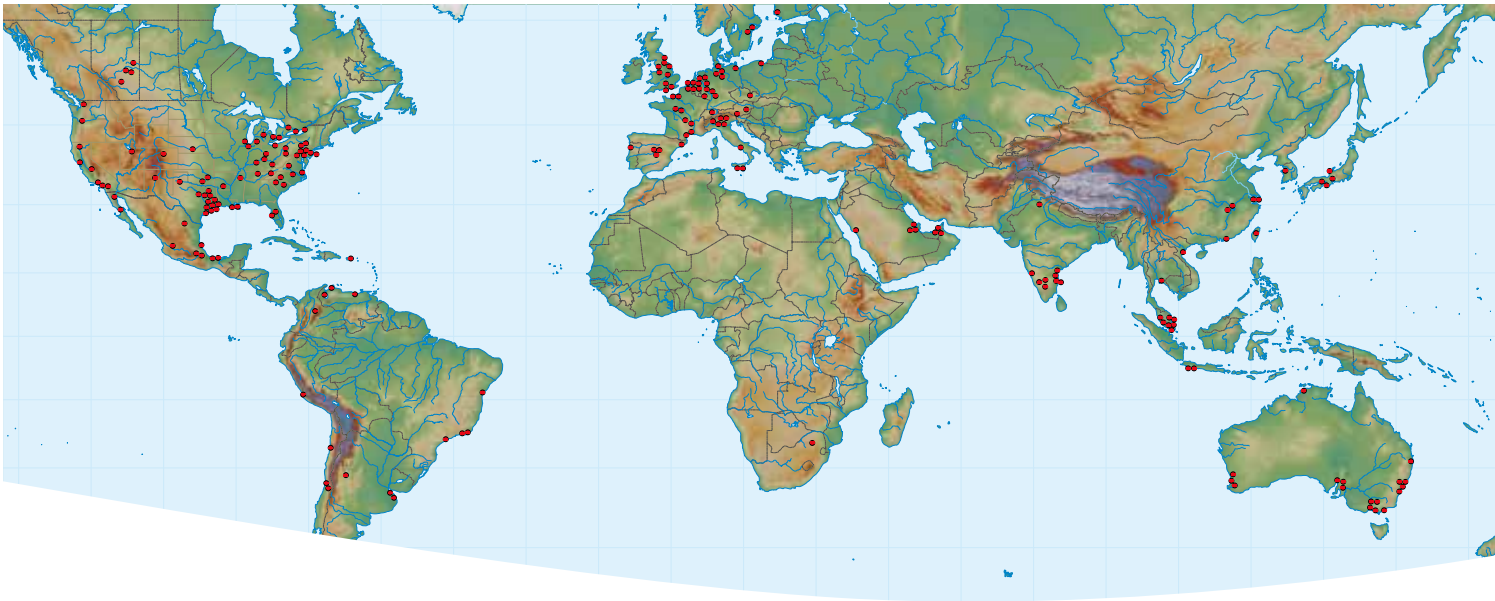
Mechanical Upgrades and Retrofits

Unreliable and leaking pumps can be refurbished to as-new condition through various mechanical upgrade and retrofit options. Engineers from the Thailand QRC have the experience to analyze and diagnose the root causes of mechanical pump failure and recommend solutions to improve reliability and improve plant uptime. Such solutions include latest API edition upgrades, increased rotor stiffness, bearing housing and bearing upgrades, mechanical seal upgrades and material upgrades.

Hydraulic Upgrades and Retrofits

Whether system requirements have changed or a plant's output needs debottlenecking, Flowserve can execute solutions that enhance performance, increase pump efficiency, lower NPSHR, improve reliability and reduce operating costs.

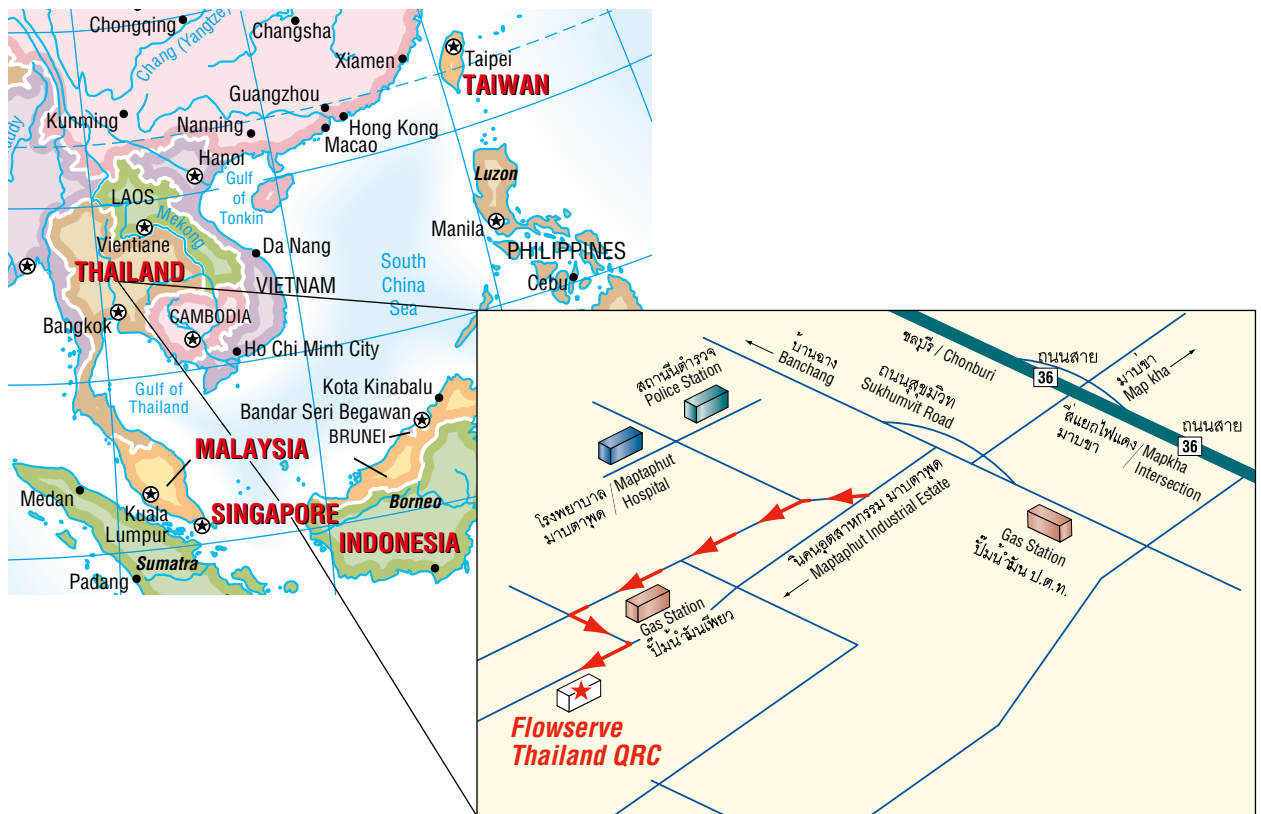




Pump and Seal Supplier to the World

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.

Asia Pacific Quick Response Centers





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