

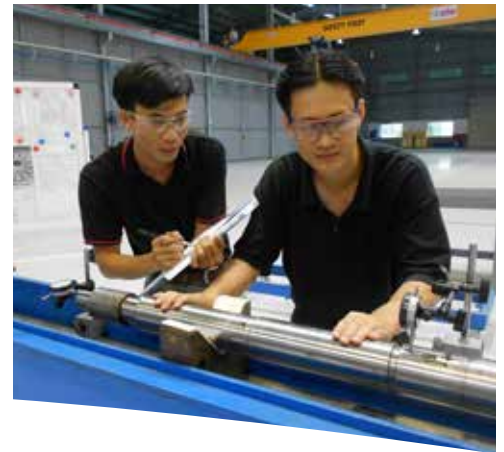


## ***Vietnam Quick Response Centers***

Maintenance and Repair • On-Site Services  
Parts and Components • Pump Retrofits and Upgrades  
Seal Change-Outs and Upgrades



***Experience In Motion***



## **Repair Services and Technical Support for Vietnam**

*The Flowserve Vietnam Quick Response Centers (QRCs) focus on providing customers with uncompromising service and support.*

*The Vietnam QRCs are 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 Vietnam QRCs serve 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 unequalled pump and seal knowledge, design expertise and manufacturing capabilities, the Vietnam QRCs specialize 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 Vietnam QRCs include:

- Maintenance, repair and inspection services
- Pump upgrades, re-rates and retrofits
- Seal change-outs and upgrades
- Overhaul, outage and mechanical services
- Installation and commissioning services
- On-site repair and diagnostic services
- Contract maintenance
- Parts and components supply
- Field supervision
- Service maintenance contract
- LifeCycle Advantage programs (LCA)
- Pump and seal specialist training services





## Maintenance and Repair Services

### A Dynamic Range of Capabilities

The Vietnam QRCs feature 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 pumps weighing in excess of 10 tons.



The Vietnam QRCs offer extensive services, including:

- Machine Capabilities
  - 600 x 4000 mm and 460 x 1000 mm lathe machine
  - OHTC 10 ton and 5 ton
  - Radial drill
  - G1.0 balancing machine
  - Keyway slotting machine
  - Shaft grinder
  - 4000mm x 1.5 ton computerized schenk balancing machine
  - SMAW and GTAW welding machine
  - Hydro test machine
  - Shaft straightening table
  - Laser alignment
  - Vibration scanner
  - Seal lapping machine
  - Mechanical seal test bench
  - Ultrasonic cleaner
  - Glass bead blasting
  - Soda blasting
- Quality Control
  - Calibrated measuring tools
  - Dye penetrant
- Competency
  - MIGAS: GTAW 6G and SMAW 6G certified welder
  - ASNT: NDT (PT and MPI) Level II certified technician
  - ISO Category I and ASNT Level I Vibration Analysis



## ***Parts and Components, On-Site Services***

Quality parts that comply with OEM specifications for the entire range of Flowserve product brands are readily available through the Vietnam QRCs. Because all parts conform to original design and materials specifications, customers are ensured of reliable operation and lowest equipment ownership costs.

The Vietnam QRCs can also re-engineer and produce non-Flowserve components for equipment that is obsolete or when 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 Vietnam QRCs are available to support customer startup requirements:

- Equipment removal and handling
- Equipment installation
- Equipment transportation
- Maintenance activities
- Startup and commissioning
- Equipment foundation inspection
- Pipe and pump bolt up, alignment and inspection

### ***Overhaul, Outage and Mechanical Services***

The Vietnam QRCs have 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 Vietnam QRCs 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 Vietnam 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 QRCs have in-house capabilities to perform quick repairs to seals, including:

- Ultrasonic cleaning
- Glass bead and soda blasting
- Seal face lapping
- Repair or replacement of worn parts
- Parts measurement and testing
- Seal testing
- Packaging
- Bellow seal leak testing

The QRCs are 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 QRCs have access to inventory in Singapore, Europe and the U.S. Assisted by the Singapore Seal Manufacturing hub, the Vietnam QRCs can also obtain supply chain consignment stock information to meet urgent customer requirements.

When requested, the Vietnam QRCs 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.

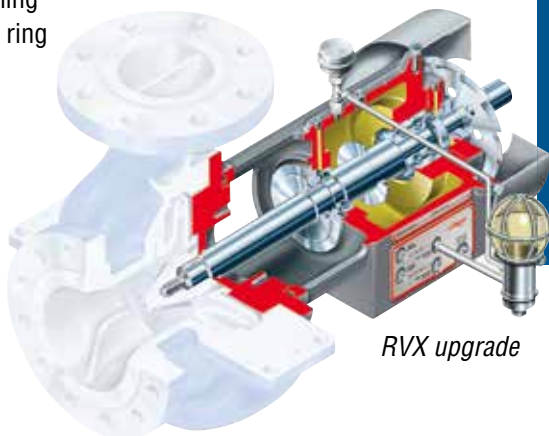


## Upgrades, Re-rates and Retrofits

Unreliable and leaking pumps can be refurbished to “as-new” condition via a myriad of mechanical upgrade and retrofit options. Expert engineers from the Vietnam QRCs 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

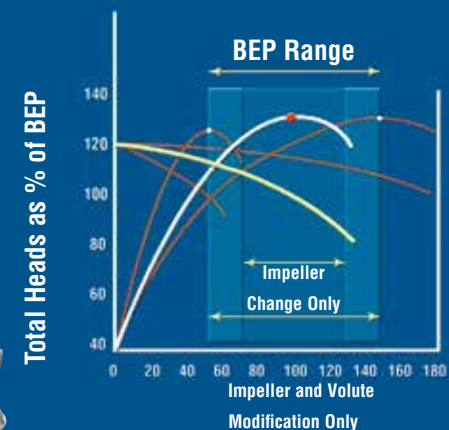
- ISO 13709/API 610 10<sup>th</sup> Edition upgrades, including the RVX and RHWX upgrades for horizontal and vertical overhung pumps, bring out-of-date process pumps to current API standards. This avoids costly new equipment investments.
- Other available mechanical upgrades include:
  - Increased rotor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

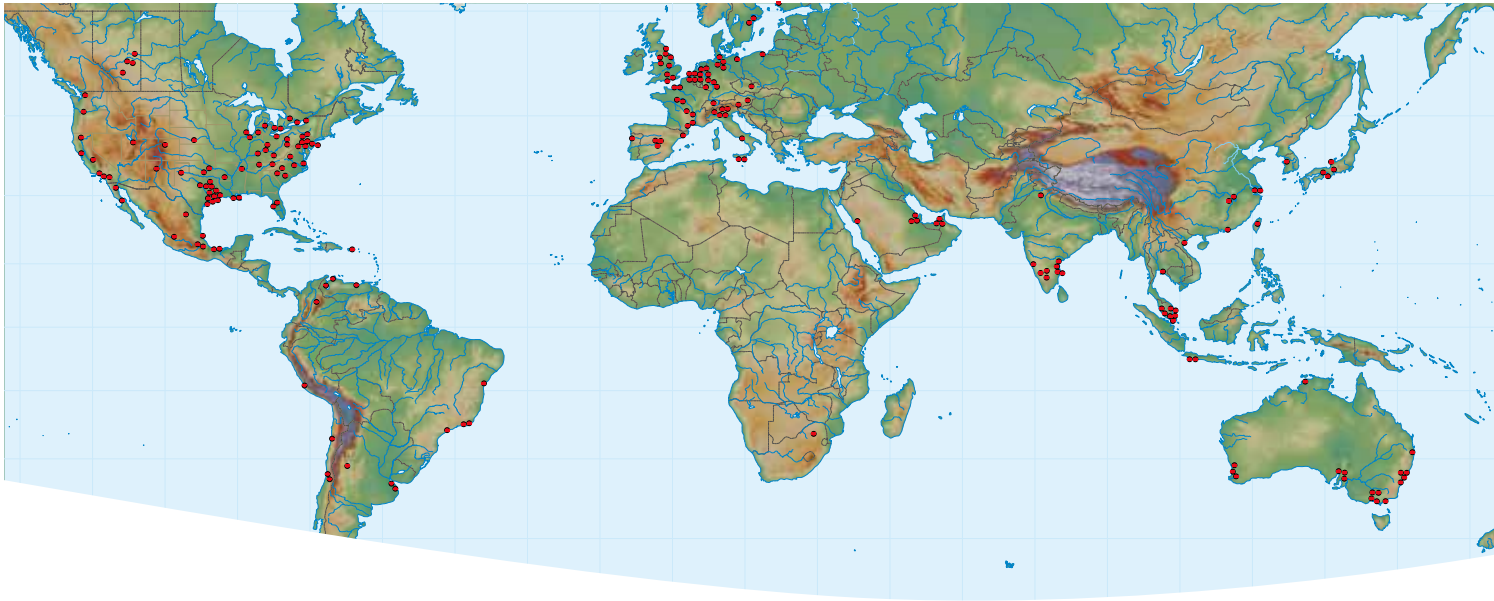


### Hydraulic Upgrades and Retrofits

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 gap)
- 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.

### Asia Pacific Quick Response Centers





FPD-1603 (E/A4) August 2014. © 2014 Flowserve Corporation

**To find your local Flowserve representative:**

For more information about Flowserve Corporation, visit [www.flowserve.com](http://www.flowserve.com) or call + 1 937 890 5839.

**Vietnam**

Dong Nai QRC  
Det May Nhon Trach Industrial Zone, Nhon Trach District, Dong Nai Province, Vietnam  
Tel: (84 61) 3566 108 / 109  
Fax: (84 61) 3566 110

**Dung Quat QRC**

Tuyet Diem Hamlet, Binh Thuan Commune, Binh Son District, Quang Ngai Province, Vietnam  
Tel: (84 55) 3618 787  
Fax: (84 55) 3618 786

**Indonesia**

Jakarta QRC  
Kawasan Industri JIEP, Jl. Pulokambing, Blok OR No.5, Jakarta Timur 13920, Indonesia  
Tel: (62 21) 4683 0105  
Fax: (62 21) 4683 0205

**Taiwan**

Kaohsiung QRC  
No.133, Beiping Road, Fengshan City, Kaohsiung 830, Taiwan  
Tel: (886 7) 790 2800  
Fax: (886 7) 790 2921

**Malaysia**

Kuantan QRC  
Lot. A7, Jalan Gebeng 3/2, Kawasan Perindustrian Gebeng, 26080, Kuantan Pahang, Malaysia  
Tel: (60 9) 583 3203  
Fax: (60 9) 583 3215

**Thailand**

Rayong QRC  
13 Soi G-14 Eastern Industrial Estate, Pakornsongkorhrat Road, Maptaphut, Muang, Rayong, 21150, Thailand  
Tel: (66 38) 673 888  
Fax: (66 38) 673 889

**Singapore**

Tuas QRC  
10 Tuas Loop, Singapore 637345  
Tel: (65) 6771 0600  
Fax: (65) 6862 2329