



Indonesia Quick Response Center

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



Experience In Motion



Repair Service and Technical Support for Indonesia

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

The Indonesia 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 Indonesia 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 Service

With unequalled pump knowledge, design expertise and manufacturing capabilities, the Indonesia 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 Indonesia QRC include:

- Maintenance, repair and inspection service
- Pump upgrades, re-rates and retrofits
- Overhaul, outage and mechanical service
- Installation and commissioning service
- On-site repair and diagnostic services
- Contract maintenance
- Parts and components supply
- Field supervision
- Service maintenance contract

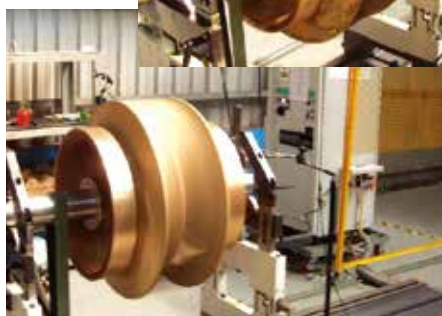




Maintenance and Repair Services

A Dynamic Range of Capabilities

The Indonesia QRC facility features 2888 m² (31 086 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 bearing pumps weighing in excess of 8 tons.



Impellers and rotating assemblies weighing up to three tons are dynamically balanced on a computerized machine that provides a printed document verifying the results.

The Indonesia QRC facility offers extensive services, including:

- Machine Capabilities
 - 600 x 4000 mm and 460 x 1000 mm Lathe Machine
 - OHTC 10 Ton and 5 Ton
 - Radial Drill
 - CNC Milling Machine
 - Keyway Slotting Machine
 - Shaft Grinder
 - 4000 mm x 3 Ton Computerized Schenk Balancing Machine
 - SMAW & GTAW Welding Machine
 - Heat Treatment Oven
 - Hydro Test Machine
 - Hydraulic Torque Wrench
 - Shaft Straightening Table
 - CNC Milling Machine
 - Laser Alignment
 - Vibration Scanner
 - Seal Lapping Machine
 - Mechanical Seal Test Bench
 - Ultrasonic Cleaner
- Quality Control
 - Calibrated Measuring Tools
 - Dye Penetrant and Magnetic Particle Inspection
 - Hardness Tester
 - Roughness Tester
 - Positive Material Identification
 - Leveling Flat Table
 - Electrical Run Out
- Competency
 - MIGAS - GTAW 6G & SMAW 6G Certified Welder
 - ASNT - NDT (PT & 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 Indonesia QRC. Because all parts conform to original design and materials specifications, customers are ensured of reliable operation and lowest equipment ownership costs.

The Indonesia QRC 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 Service

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

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

Overhaul, Outage and Mechanical Services

The Indonesia 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 Indonesia 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 Indonesia 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
- Bellow seal leak testing

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

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 Indonesia QRC can also obtain supply chain consignment stock information to meet urgent customer requirements.

When requested, the Indonesia 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.



Take-off Nozzle Enlargement



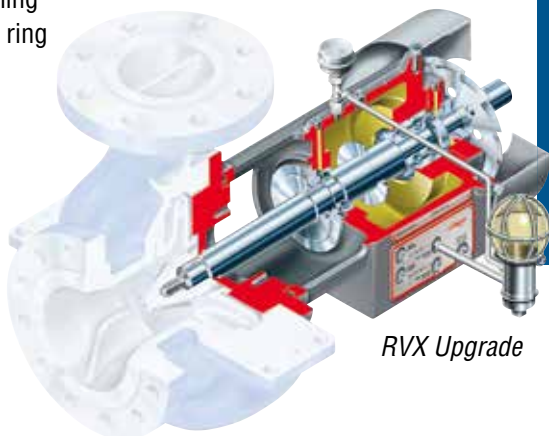
Hydraulic Re-rate

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 Indonesia QRC facility have the experience to analyze and diagnose the root causes of mechanical pump failure and to recommend solutions that improve reliability, reduce emissions and increase plant uptime.

Mechanical Upgrades and Retrofits

- ISO 13709/API 610 10th 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

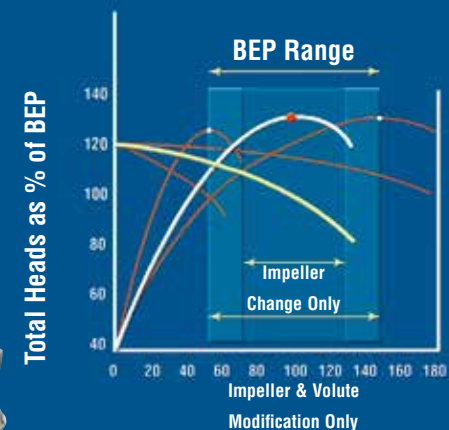


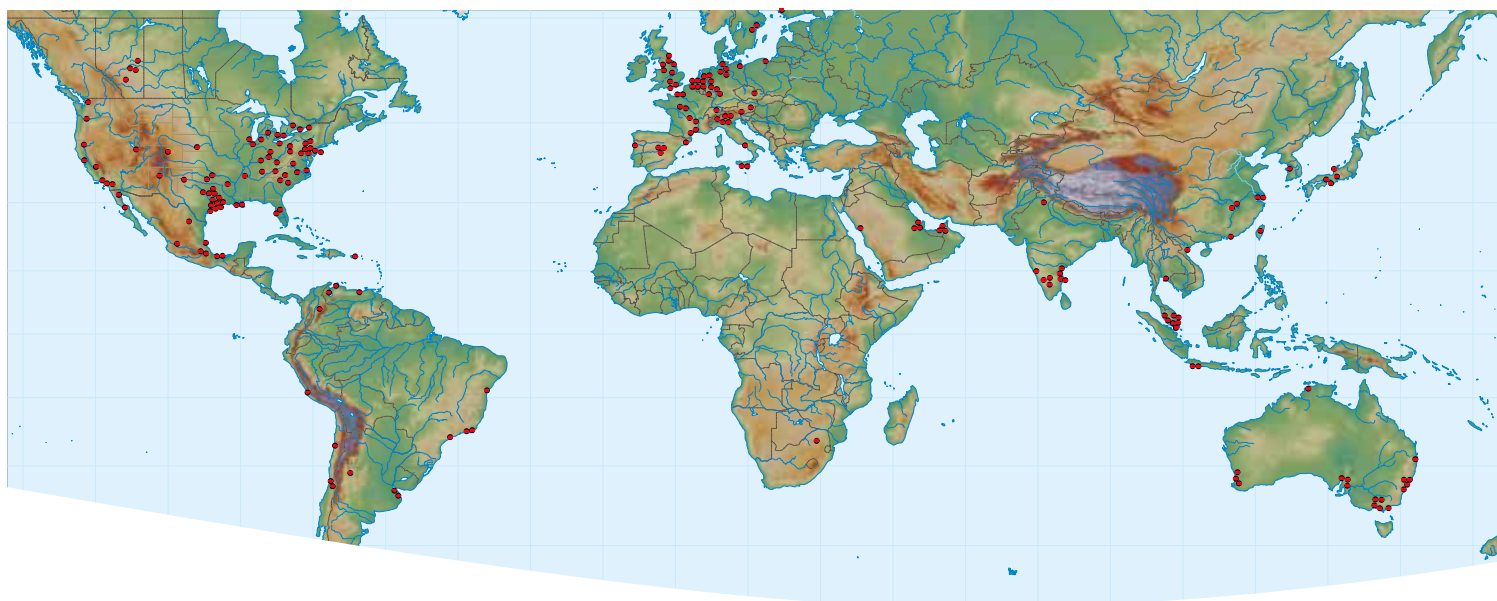
RVX Upgrade

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



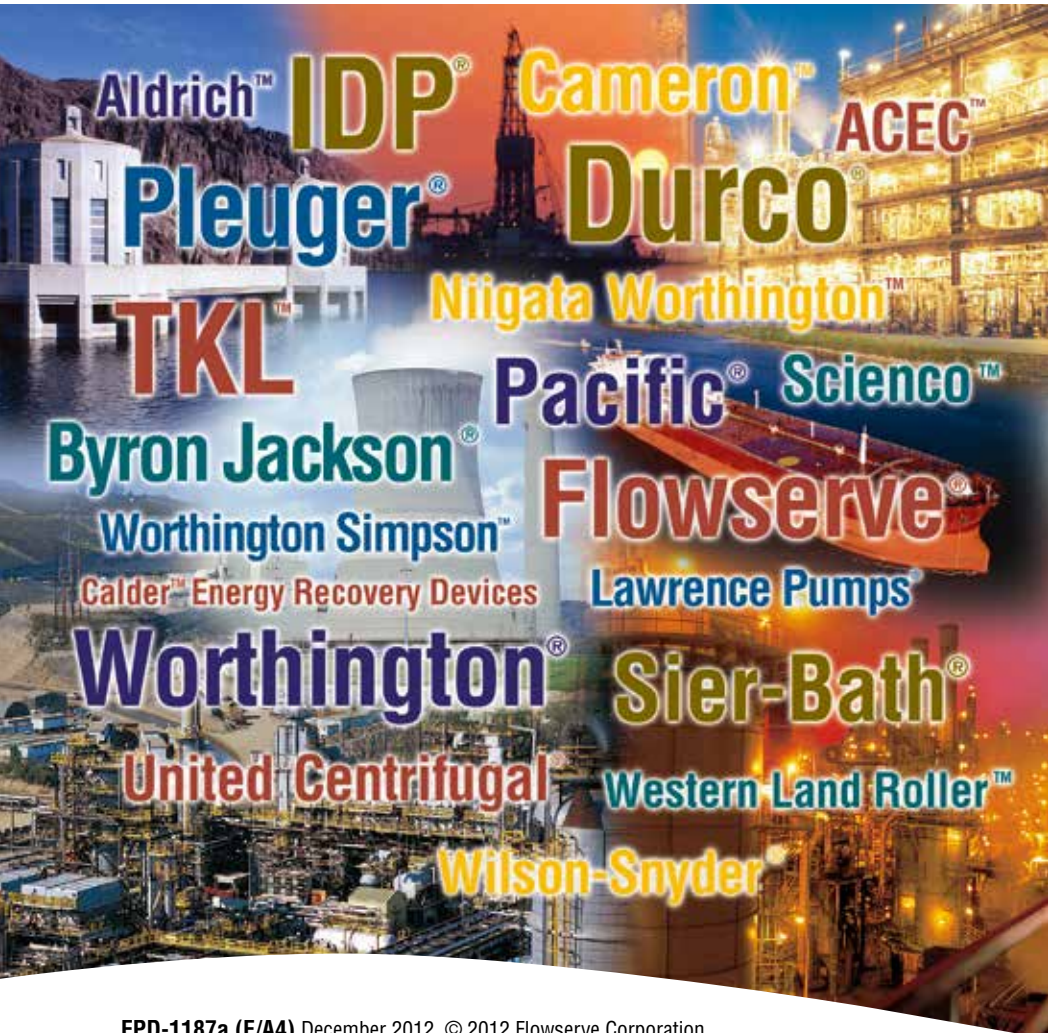


Pump and Seal Supplier to the World

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-1187a (E/A4) December 2012. © 2012 Flowserve Corporation

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