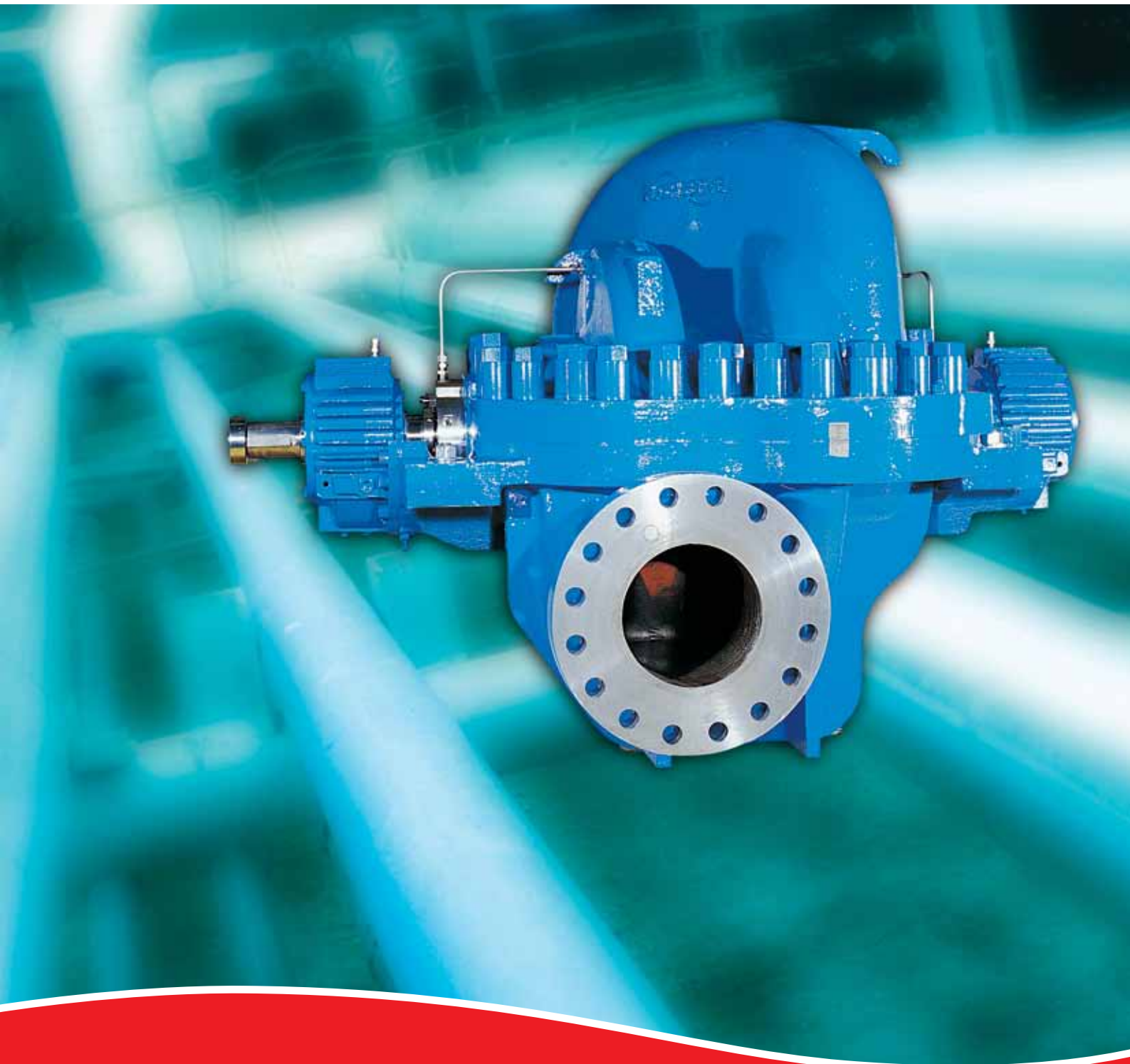
FLOWSERVE

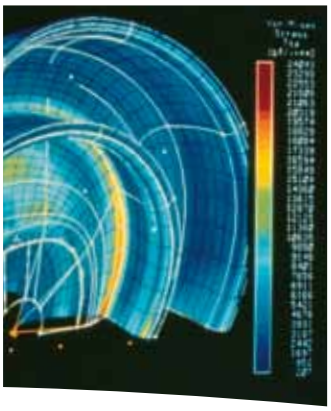
UZDL

API 610 (BB1) Between Bearings, Two Stage, Axially Split Pump



Experience In Motion






Pump Supplier To The World

Flowserve is the driving force in the global industrial pump marketplace. No other pump company in the world has the depth or breadth of expertise in the successful application of pre-engineered, engineered and special purpose pumps and systems.

Pumping Solutions

Flowserve is providing pumping solutions which permit customers to continuously improve productivity, profitability and pumping system reliability.

Market Focused Customer Support

Product and industry specialists develop effective proposals and solutions directed toward market and customer preferences. They offer technical advice and assistance throughout each stage of the product life cycle, beginning with the inquiry.

Dynamic Technologies

Flowserve is without peer in the development and application of pump technology, including:

- Hydraulic engineering
- Mechanical design
- Materials science
- Intelligent pumping
- Manufacturing technology

Broad Product Lines

Flowserve offers a wide range of complementary pump types, from pre-engineered process pumps, to highly engineered and special purpose pumps and systems. Pumps are built to recognized global standards and customer specifications.

Pump designs include:

- Single stage process
- Between bearing single stage
- Between bearing multistage
- Vertical
- Submersible motor
- Rotary
- Reciprocating
- Nuclear
- Specialty

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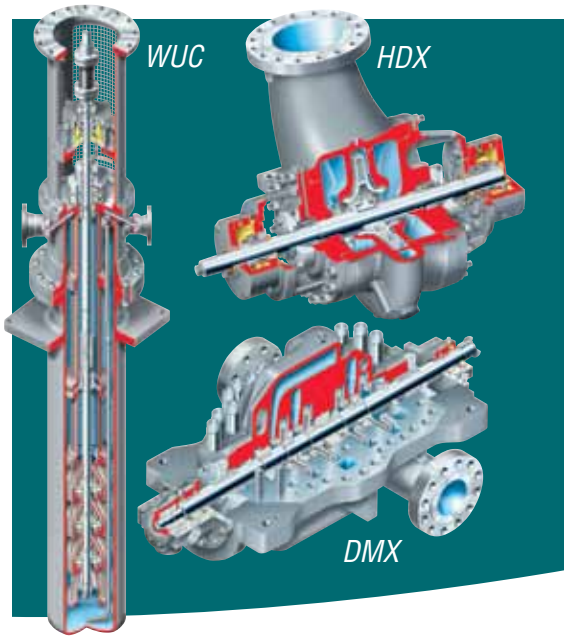

The Pump of Choice for High Pressure, Low NPSH Applications

With a double suction first-stage impeller, the Flowserve UZDL is a natural solution for many low NPSH, high pressure applications. Built to API 610 (BB1), latest edition, the UZDL provides uncompromising performance and reliability over the full range of flows. It is the pump of choice for numerous pipeline and transfer applications.

Consisting of two hydraulically balanced impellers and a heavy-duty double volute casing, the UZDL pump design results in optimum axial and radial thrust balance over the full operating range.

- Double suction first stage impeller is inherently hydraulically balanced
- Balancing holes on the second stage impeller control axial thrust
- Double volute design for both stages minimizes hydraulic radial loads, even at minimum flow
- Stiff shaft design ensures trouble free performance by operating under the first critical speed

Broad Application

- Hydrocarbon pipeline
- Gas scrubbing
- Water pipeline
- Firefighting
- Heavy duty transfer

Complementary Pump Designs

In addition to the UZDL, Flowserve also can provide the following complementary API standard pump designs:

- DVS and DVSH API 610 (BB1) axially split, single stage, double suction pump
- DMX API 610 (BB3) axially split, multistage pump
- WUC API 610 (VS6), vertical, double casing, multistage pump
- HDX API 610 (BB2), between bearings, radially split, double suction process pump
- HED-DS API 610 (BB2) between bearings, radially split, double suction, two stage pump

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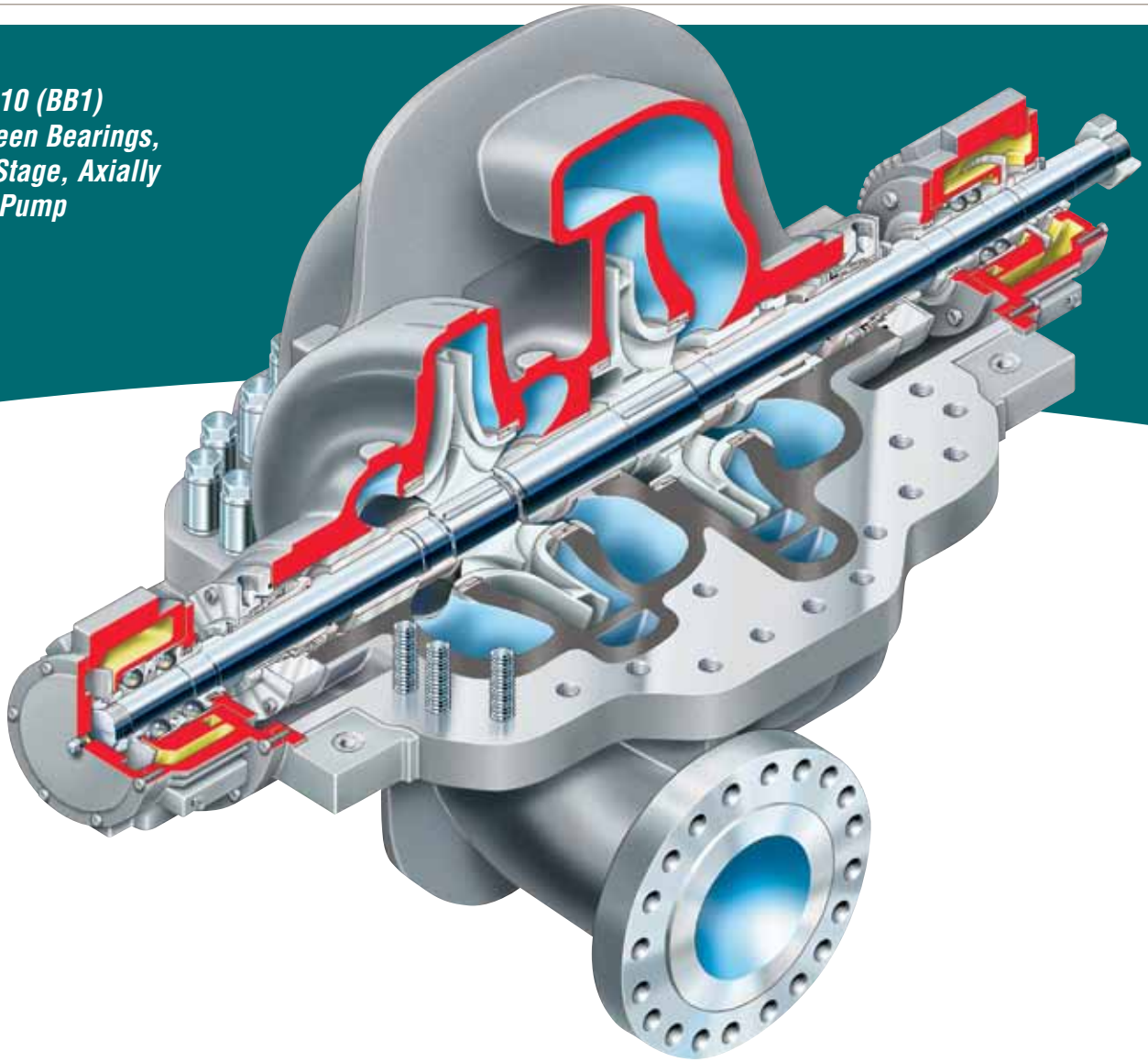
UZDL API 610 (BB1) Between Bearings, Two Stage, Axially Split Pump



The Flowserve UZDL is an axially split, two stage pump designed to API 610 (BB1), latest edition. With a double suction first stage impeller, the UZDL is a natural solution for many low NPSH, high pressure applications, such as those found in water and hydrocarbon pipelines.

The UZDL's unique confined gasket design allows metal-to-metal contact for perfect sealing. This design also eliminates corrosion of bolts and nuts.

Operating Parameters

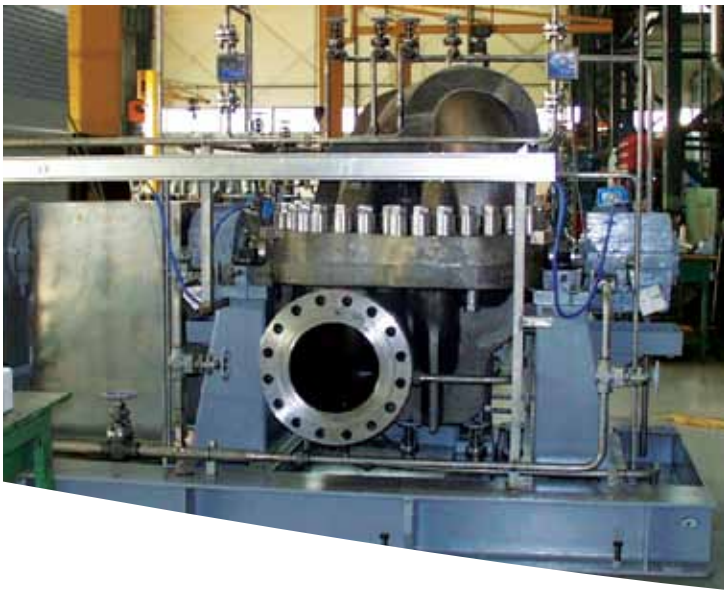
- Flows to 2950 m³/h (13 000 gpm)
- Heads to 685 m (2250 ft)
- Pressures to 64 bar (910 psi)
- Temperatures to 200°C (400°F)
- Speeds to 2000 rpm

Double Suction First Stage Impeller *considerably reduces NPSHr and often eliminates the need for booster units. While the first stage is inherently hydraulically balanced, second stage axial thrust is controlled via balancing holes*

Double Volute, Axially Split Casing *is near-centerline supported to provide superior alignment and performance at elevated temperatures*

Suction and Discharge Nozzles *are integrally cast in the lower half casing to permit disassembly without disturbing the piping. Flanges meet ASME B16.5 standards and may be supplied in Class 300 (PN 40), 600 (PN 100) or 900 (PN 160)*

API 682 Seal Chambers *operate at suction pressure and allow for installation of cartridge style single, dual unpressurized and dual pressurized mechanical seals to meet required safety and environmental requirements*



Double Volute Construction

The UZDL pump features a heavy-duty, axially split casing with a double volute design for both stages. An integral crossover conveys the pumped liquid from the first stage to the second stage. This design minimizes hydraulic radial loads, even at minimum flow, and virtually eliminates detrimental shaft deflection and vibration.

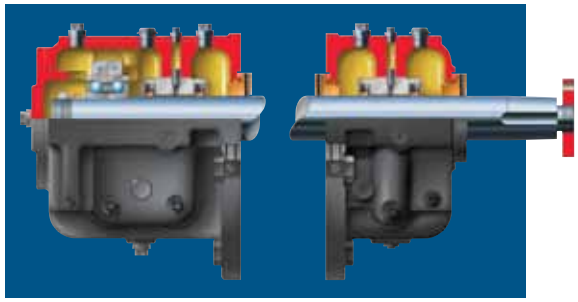
Bearings

The UZDL is offered with a variety of bearing designs to meet application requirements. The standard radial bearings are self-aligning, antifriction type configured in a double row. The thrust bearing also is antifriction and is of the dual, single row, angular contact type. Standard lubrication is via an oil slinger system. This system prolongs bearing life by ensuring the oil penetrates the bearings without foaming.

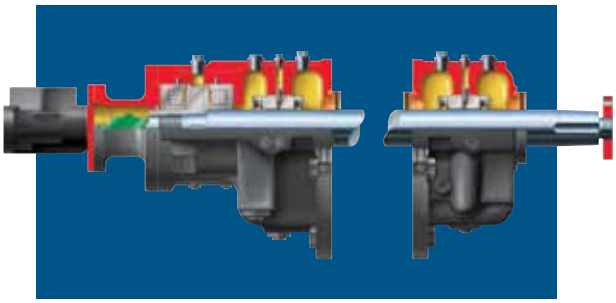
Optional bearing designs include the following:
- Split sleeve radial and ball thrust
- Split sleeve radial and tilting pad thrust

Bearing Housing

The UZDL's carbon steel bearing housing features 180° bolting to mounting brackets. The bearing housing comes standard with labyrinth seals. Bearing isolators are available. Isolators provide superior sealing to retain oil and exclude atmospheric contaminants and moisture.



Split Sleeve Radial and Ball Thrust



Split Sleeve Radial and Tilting Pad Thrust

Pump Packages

Pump packages are provided to specification and include lube oil piping, seal system, monitoring instruments and drive train mounting.

Baseplate Designs

Engineered to contract requirements, baseplate designs may include any of the following:

- Conventional welded steel with drain rim
- Sub-base under pump only
- Three-point design
- Pre-grouted
- Skid-type, non-grouted

Pumps mounted with engine or turbine drivers as well as multiple pump modules also are available.

Bearing Cooling Options

- Air cooling
- Water cooling
- Product cooling

Bearing Lubrication Options

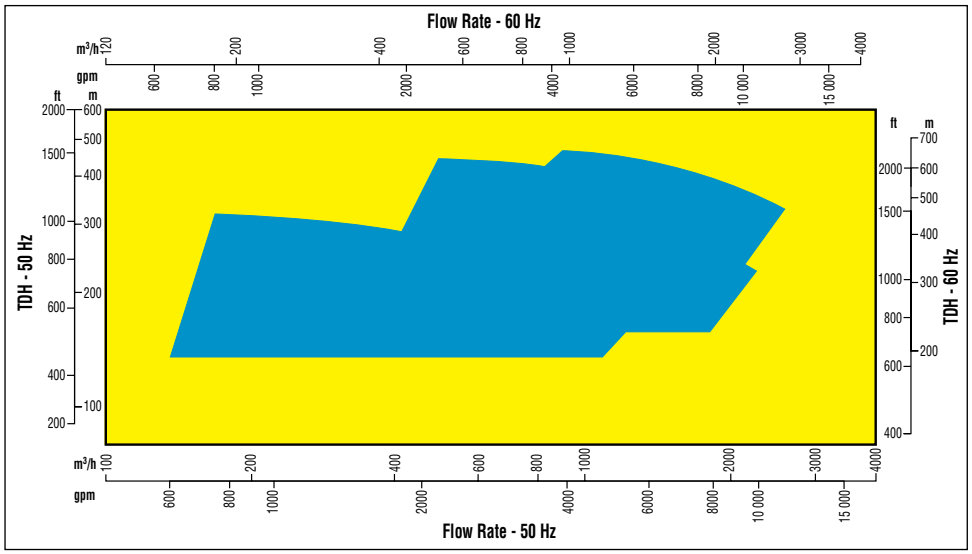
- Ring oil or flinger
- Pressure lubricated

Shaft Options

The UZDL is available with an optional double extension for connecting to auxiliary pumps or hydraulic turbines. Additionally, special shaft end machining is available for hydraulic fitted couplings.

Rotation options:
- CCW (standard)
- CW

UZDL Range Chart



Global Service and Technical Support

Service Dedication

Flowserve Engineered Services focus on providing customers with uncompromising service and support, where and when needed. Dedicated to delivering the highest quality support, Engineered Services integrate pump and materials engineering knowledge with creative service solutions.

A worldwide network of service and repair centers staffed by highly skilled engineers and technicians is available around the clock, seven days a week to respond to customer queries, to evaluate and troubleshoot problems and to provide reliable solutions.

Strength of Experience, Commitment to Excellence

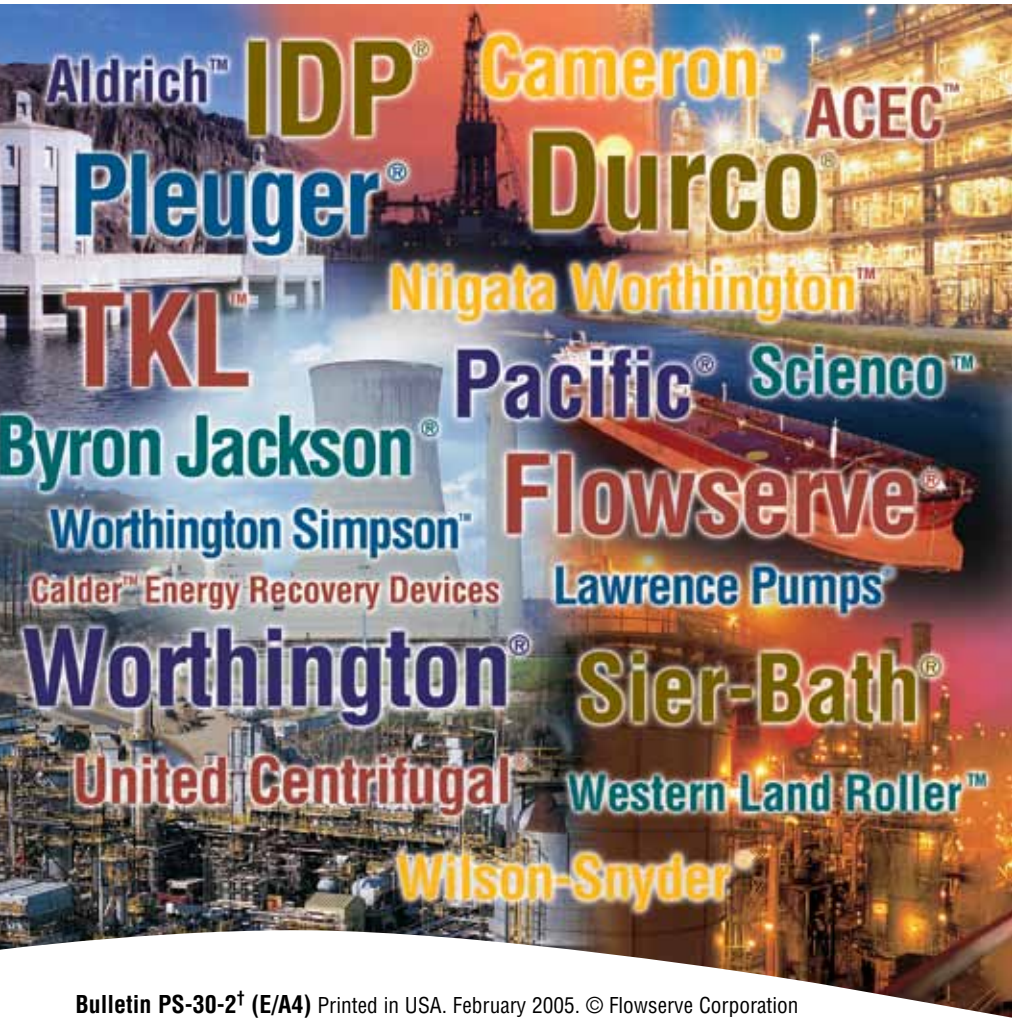
Flowserve has long served industries requiring superior equipment performance and service life.

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

Flowserve is dedicated to maximizing equipment performance and providing reliability-centered maintenance programs for pumps and related equipment, regardless of manufacturer. Using the FlowStar.net™ asset management software, Flowserve engineers and technicians track performance and support improvement programs using a service life cycle cost business approach. The results are improved reliability and increased profitability.

Business Partner

Flowserve partners with customers to respond to the dynamic business conditions that affect them. Flowserve will work with customers to drive efficiency, maximize throughput and control process quality. Whether user needs involve on-site technical assistance or broader project planning with full turnkey responsibility, Flowserve Engineered Services will deliver professional, reliable results.



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