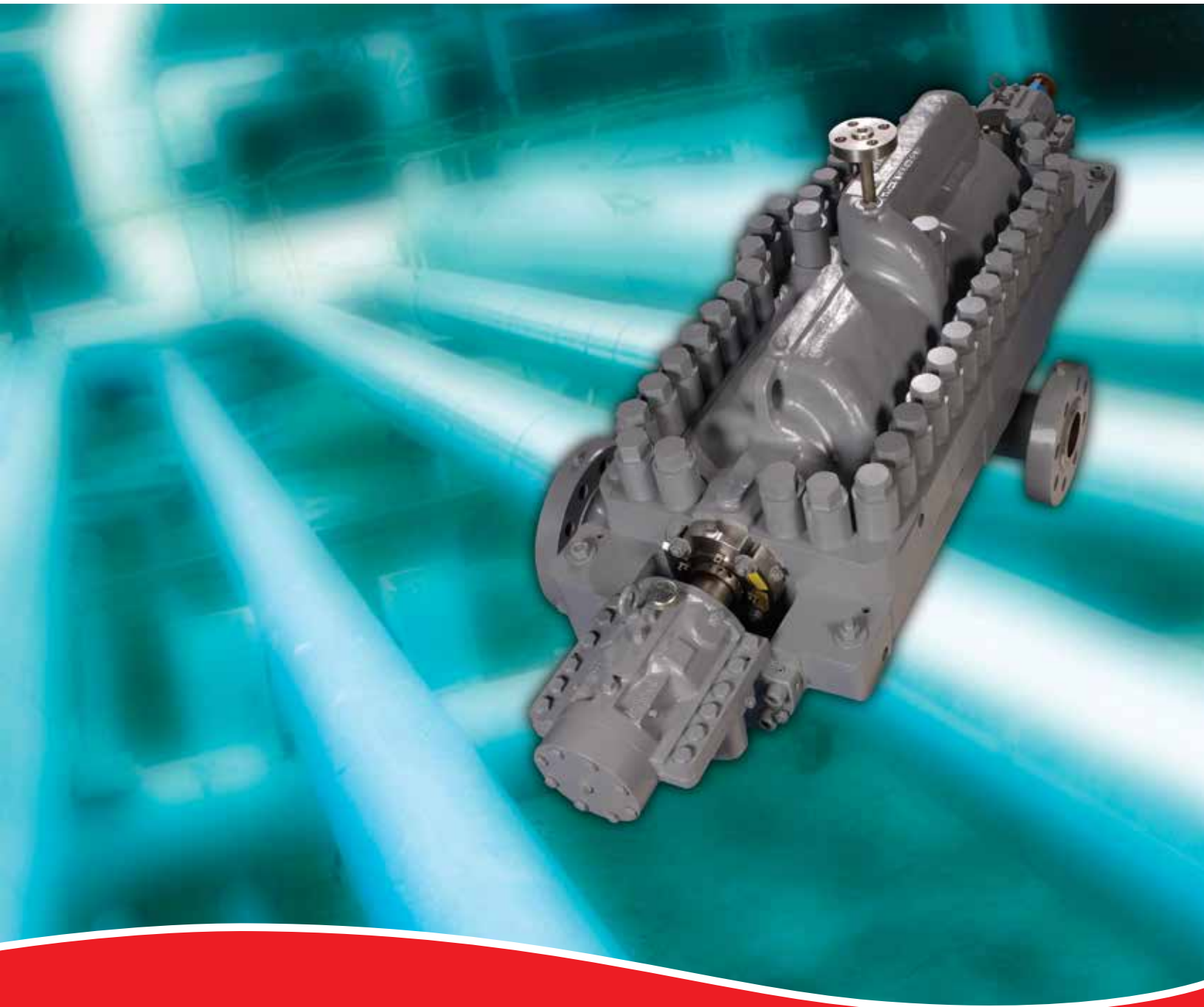


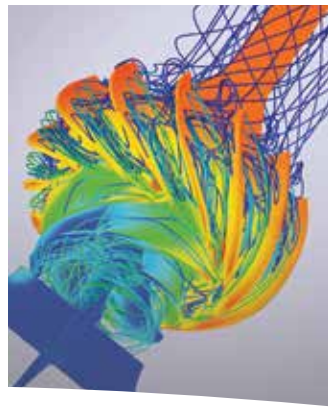


***DMX***  
***Between Bearings, Axially Split,***  
***Multistage Pump***

ISO 13709/API 610 (BB3)



***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.*

### **Life Cycle Cost Solutions**

Flowserve provides pumping solutions that permit customers to reduce total life cycle costs and 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 initial inquiry.

### **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 bearings single-stage
- Between bearings multistage
- Vertical
- Submersible motor
- Positive displacement
- Nuclear
- Specialty

### **Product Brands of Distinction**

*ACEC™ Centrifugal Pumps*

*Aldrich™ Pumps*

*Byron Jackson® Pumps*

*Calder™ Energy Recovery Devices*

*Cameron™ Pumps*

*Durco® Process Pumps*

*Flowserve® Pumps*

*IDP® Pumps*

*INNOMAG® Sealless Pumps*

*Lawrence Pumps®*

*Niigata Worthington™ Pumps*

*Pacific® Pumps*

*Pleuger® Pumps*

*Scienco™ Pumps*

*Sier-Bath® Rotary Pumps*

*TKL™ Pumps*

*United Centrifugal® Pumps*

*Western Land Roller™ Irrigation Pumps*

*Wilson-Snyder® Pumps*

*Worthington® Pumps*

*Worthington Simpson™ Pumps*

**DMX**  
**Between Bearings,**  
**Axially Split,**  
**Multistage Pump**  
 ISO 13709/API 610 (BB3)



## Number One in the Industry

Fully compliant with ISO 13709/API 610, latest edition, the Flowserve DMX is a horizontal, multistage, axially split, near centerline mounted pump. With more than 10 000 units supplied, the DMX is the first choice of users for applications involving high-flow, high-pressure movement of water, hydrocarbons, CO<sub>2</sub> and other process liquids.

Available in numerous sizes, hydraulics and material combinations, DMX pumps are particularly well suited for use in process charge, pipeline and injection services where uncompromising reliability over wide flow ranges is of utmost importance.

### Engineered to Perform

The basic pump design, consisting of opposed mounted impellers operating in heavy-duty, double volute casings, inherently results in optimum axial thrust and radial thrust balance over the full operating range.

- First-stage impellers are available with single- or double-suction inlets, depending on NPSH available for a given application.
- Inherent hydraulic balance allows both seal chambers to operate at pump suction pressure.

### Broad Applications

- Pipeline
- Boiler feed
- Water injection
- CO<sub>2</sub> injection
- Process charge
- Descaling
- Mine dewatering
- Power recovery
- Reverse osmosis feed

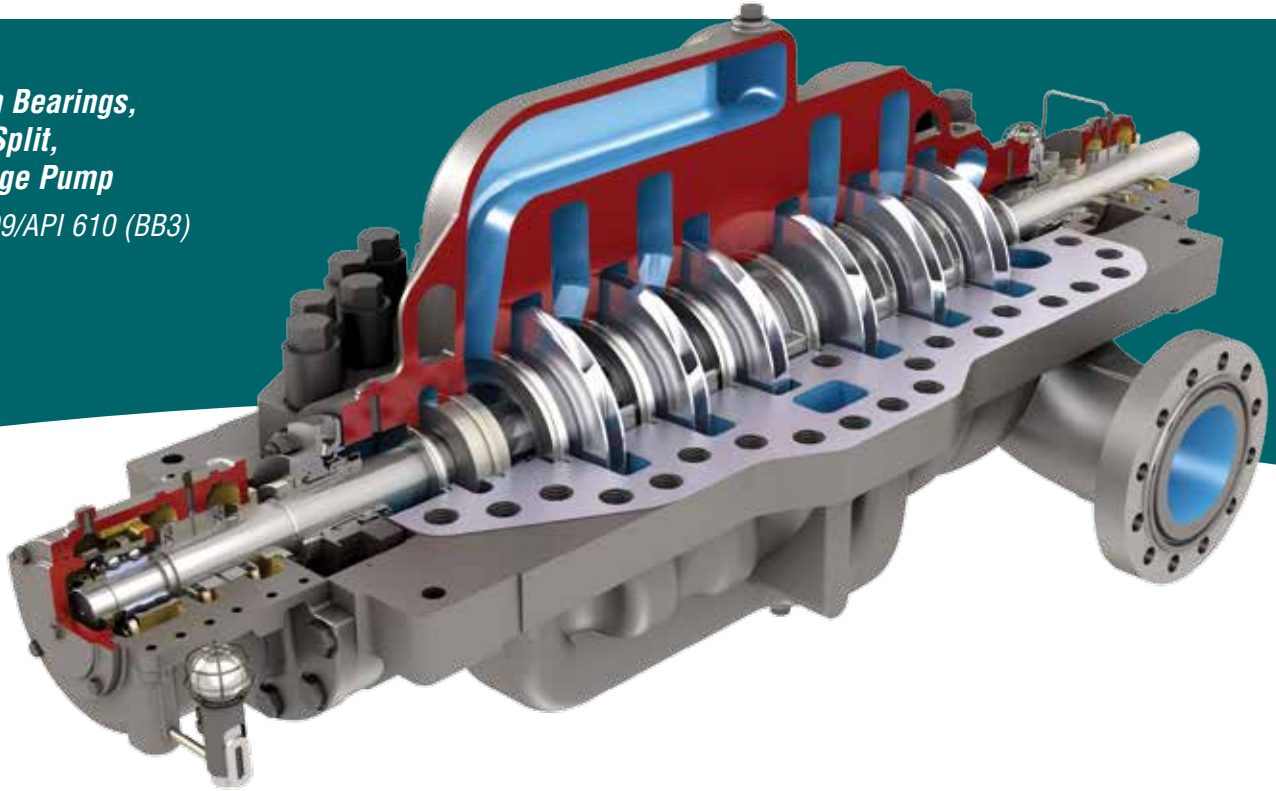
### Complementary Pump Designs

Type DMX pumps may be used with other Flowserve models of the following designs:

- Single-stage, double-suction, axially split pumps
- Multistage, double casing
- Radially split, single- and two-stage pumps
- Vertical canned pumps



**DMX**  
*Between Bearings,  
 Axially Split,  
 Multistage Pump*  
 ISO 13709/API 610 (BB3)



*The Flowserve DMX pump is fully compliant with ISO 13709/API 610, latest edition. It is engineered and built for high-pressure, heavy-duty applications. Boasting a comprehensive range of hydraulic coverage, the DMX permits precise selection to ensure the best hydraulic fit, operating efficiency and stability. This helps to minimize operating expenses and extend mean time between repair.*

### **Operating Parameters**

- Flows to 2950 m<sup>3</sup>/h (13 000 gpm)
- Heads to 2130 m (7000 ft)
- Pressures to 275 bar (4000 psi)
- Temperatures to 200°C (400°F)
- Speeds to 6000 rpm
- Specific gravities down to 0.35

### **Features and Benefits**

**Near Centerline Mounted Pump Casing** maintains alignment during operation at elevated temperatures.

**Casing and Internal Material Combinations** selected to meet service requirements. Available materials of construction include carbon steel, chromium steel, austenitic stainless steels and super duplex stainless steels.

**Raised Face Flanges** meet ASME B16.5 dimensional criteria. Class 600 suction and discharge minimum. High-pressure casings and Class 900 and 1500 are also available.

**Nozzles** are integral with the lower half casing, permitting disassembly of the pump without disturbing piping connections. Nozzles are designed to handle external forces and moments equal to or in excess of ISO/API specified figures.

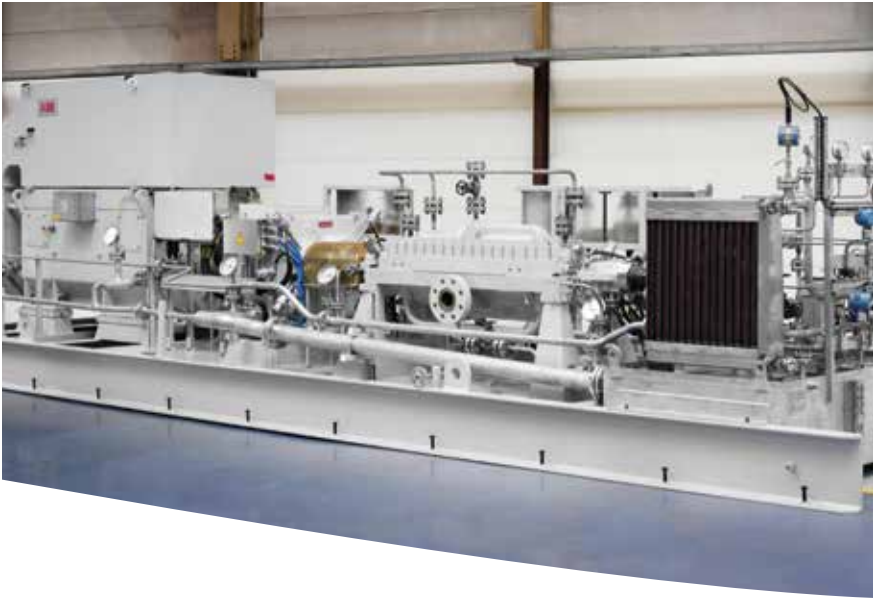
**Cap Nuts** on the top half casing parting flange allow easy casing removal for inspection and maintenance.

**Axially Split Center Bushing and Channel Rings** enable inspection and dynamic balancing of the rotor without dismantling.

**Seal Chamber** is compliant with ISO 21049/API 682 dimensional criteria. This design allows for installation of cartridge type single, dual unpressurized, and dual pressurized mechanical seals to meet the required safety and environmental requirements.

**Replaceable Casing and Impeller Wear Rings** control interstage leakage and provide hydraulic stability. Optional laser-hardened, HVOF overlaid or non-metallic wear rings in Graphalloy®, PEEK® and other materials may be specified.

**Certified Testing** is performed on each DMX pump prior to shipment.



**Double Volute and Opposed Impeller Construction**

The DMX pump features a heavy-duty, axially split casing with double volute hydraulic passages for radial thrust balance. Furthermore, its opposed impeller mounting provides axial thrust balance. Consequently, detrimental shaft deflection and vibration are virtually eliminated.

**Robust Rotating Element Ensures Optimum Performance**

The DMX's robust rotating element includes large diameter shafts and short bearing spans to minimize deflection. Final two-plane dynamic balancing and TIR verifications are conducted on assembled rotors to assure optimum mechanical performance throughout the operating range. Shaft size is selected to suit power and speed requirements.

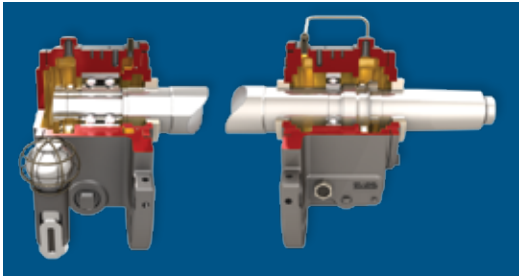
**Multiple Bearing Designs to Suit Application Needs**

The DMX is offered with a variety of bearing designs to meet application requirements. The standard radial bearing is self-aligning, antifriction type. The thrust bearing consists of two single row, angular contact antifriction bearings.

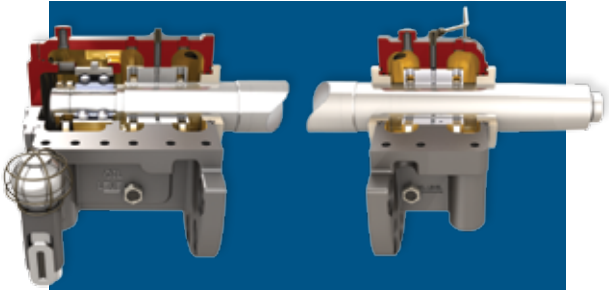
Standard lubrication is via an oil ring system and incorporates a constant level oiler and a sight glass. This system prolongs bearing life by ensuring oil penetrates the bearings without foaming.

Other bearing designs include the following:

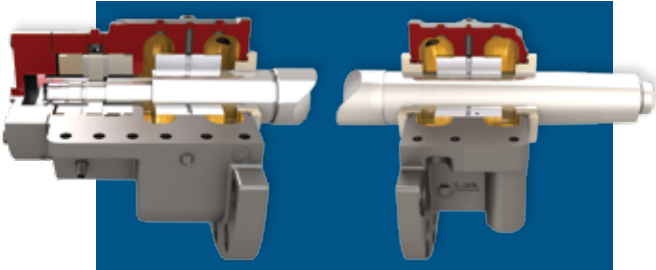
- Split sleeve radial and ball thrust
- Split sleeve radial and tilting pad thrust



**Ball Radial and Ball Thrust**



**Split Sleeve Radial and Ball Thrust**



**Split Sleeve Radial and Tilting Pad Thrust**

*Options and Technical Data*



**Available Pump Packages**

Pump packages are provided to specification and may include lube oil piping, seal systems, cooling piping plans, 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 and multiple pump modules are also available.

**Optional Interstage Take-Off**

An optional secondary fluid take-off line is available for pressure and flow required.

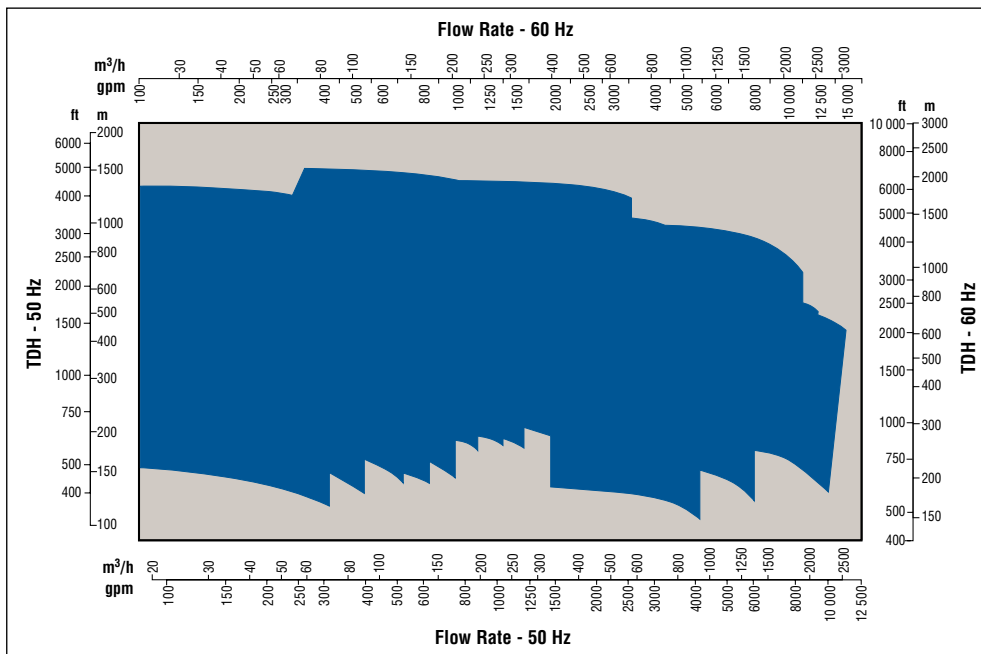
**Bearing Options**

- Cooling
  - Fan cooling
  - Water cooling
  - Product cooling
- Lubrication
  - Ring oil
  - Pressure lubricated
  - Oil mist

**Shaft Options**

The DMX 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.

**DMX Range Chart**



**Global Service and Technical Support**



## Life Cycle Cost Solutions

Typically, 90% of the total life cycle cost (LCC) of a pumping system is accumulated after the equipment is purchased and installed. Flowserve has developed a comprehensive suite of solutions aimed at providing customers with unprecedented value and cost savings throughout the life span of the pumping system. These solutions account for every facet of life cycle cost, including:

**Capital Expenses**

- Initial purchase
- Installation

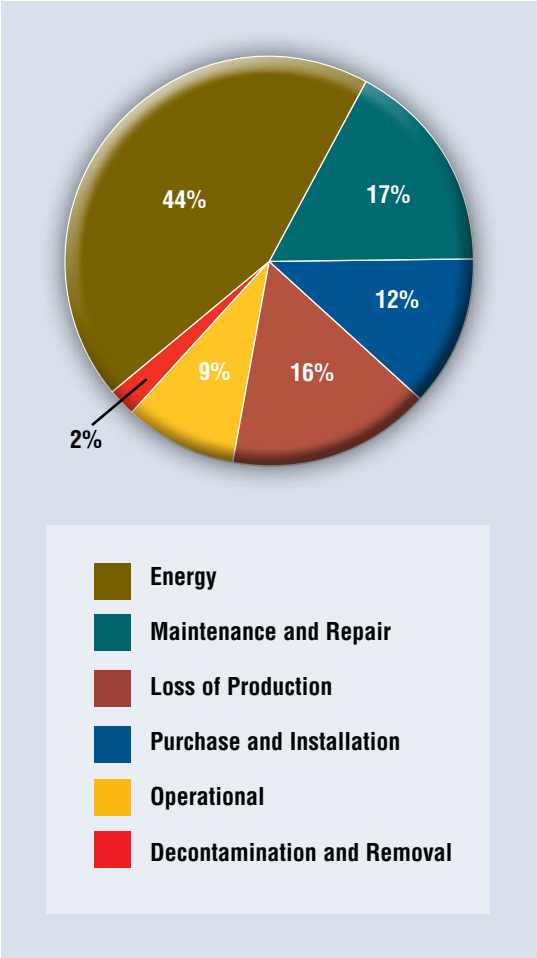
**Operating Expenses**

- Energy consumption
- Maintenance
- Production losses
- Environmental
- Inventory
- Operating
- Removal

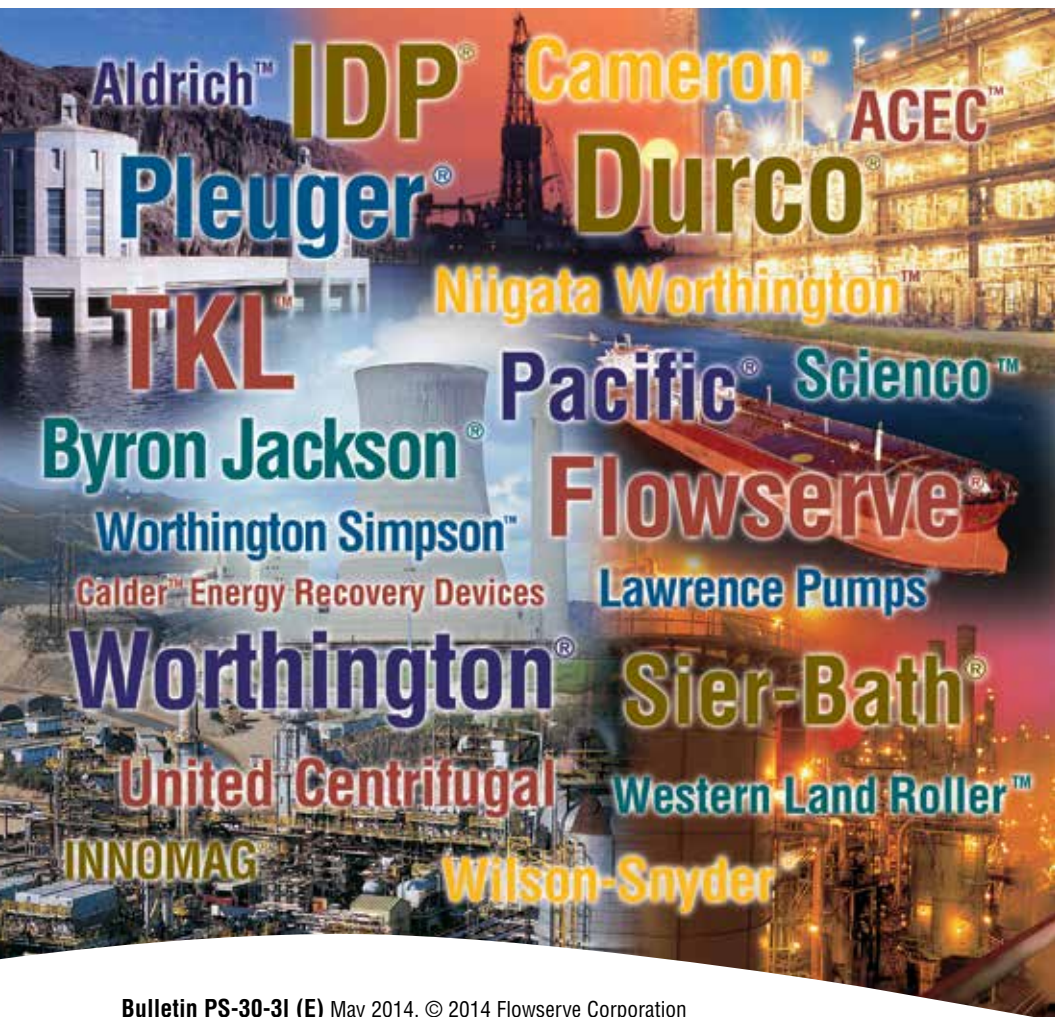
**Innovative Life Cycle Cost Solutions**

- New Pump Selection
- Turnkey Engineering and Field Service
- Energy Management
- Pump Availability
- Proactive Maintenance
- Inventory Management

### Typical Pump Life Cycle Costs<sup>1</sup>



<sup>1</sup> While exact values may differ, these percentages are consistent with those published by leading pump manufacturers and end users, as well as industry associations and government agencies worldwide.



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Bulletin PS-30-31 (E) May 2014. © 2014 Flowserve Corporation

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