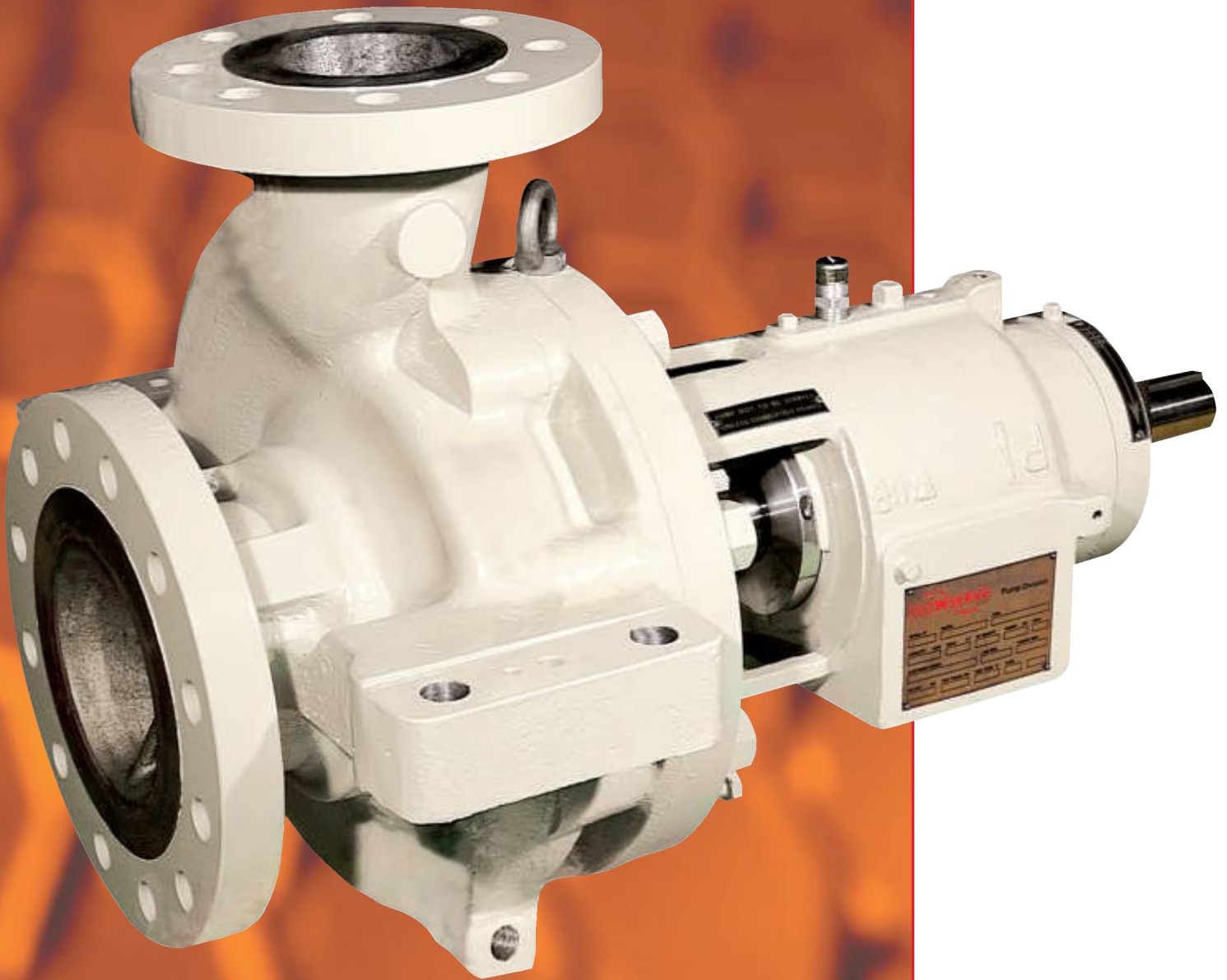




Pump Division

***HPX***  
***API 610***  
***Hydrocarbon***  
***Processing Pump***



## **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:

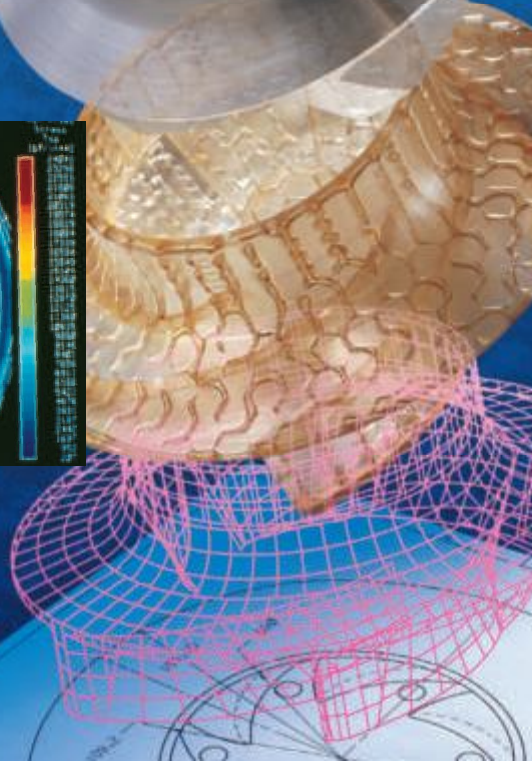
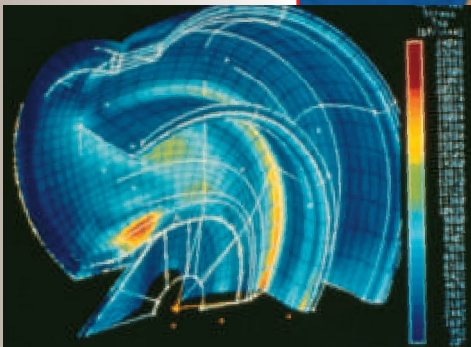
- Hydraulic engineering
- Mechanical design
- Materials science
- Intelligent pumping
- Manufacturing technology

### **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





**HPX  
API 610  
Hydrocarbon  
Processing  
Pump**

**Number One in The Industry**  
Fully compliant with API 610, latest edition design criteria, the HPX pump is of horizontal, end suction – top discharge, overhung, centerline mounted configuration. The Flowserve HPX pump is the *workhorse of the hydrocarbon processing industry* due to its unequalled versatility, reliability and safety. The most stringent emissions containment is achieved as the

API 682 seal chamber accommodates all combinations of seal models and styles including advanced gas barrier seal technology.

The HPX pump is the industry leader for these reasons:

- Robust construction to meet or exceed API 610, latest edition criteria
- Widest hydraulic coverage available
- Back pull-out design
- Wide range of materials and configurations

**Broad Application**

- Petroleum refining, production and distribution
- Petrochemical and heavy duty chemical processing
- Gas industry services
- Boiler circulation and other high temperature services
- Water and general industrial

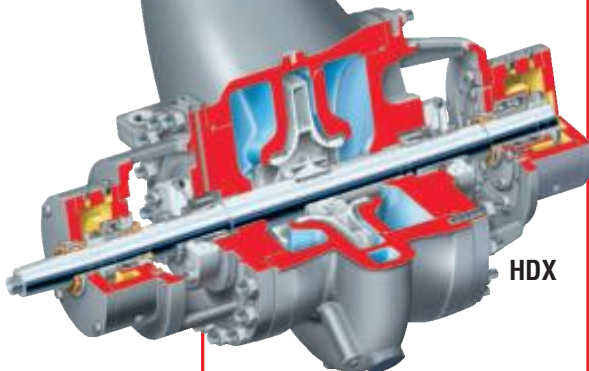
**Complementary Pump Designs**

HPX pumps may be used with other Flowserve models of API design. These include:

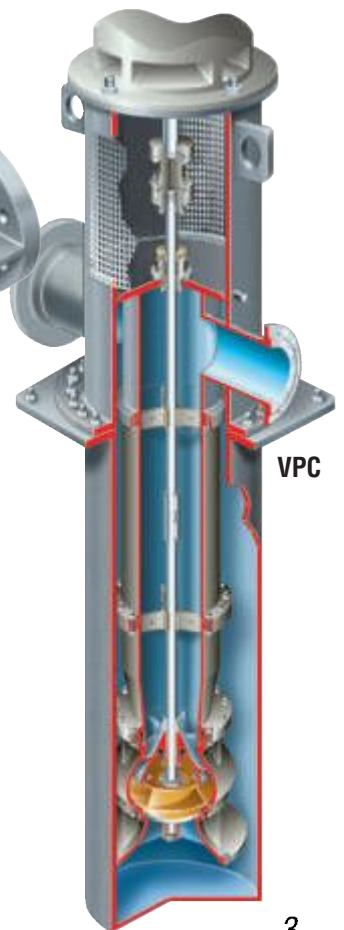
- Single and two stage, between bearing pumps
- Multistage between bearing pumps
- Vertical, double casing pumps
- Specialty pumps



HW



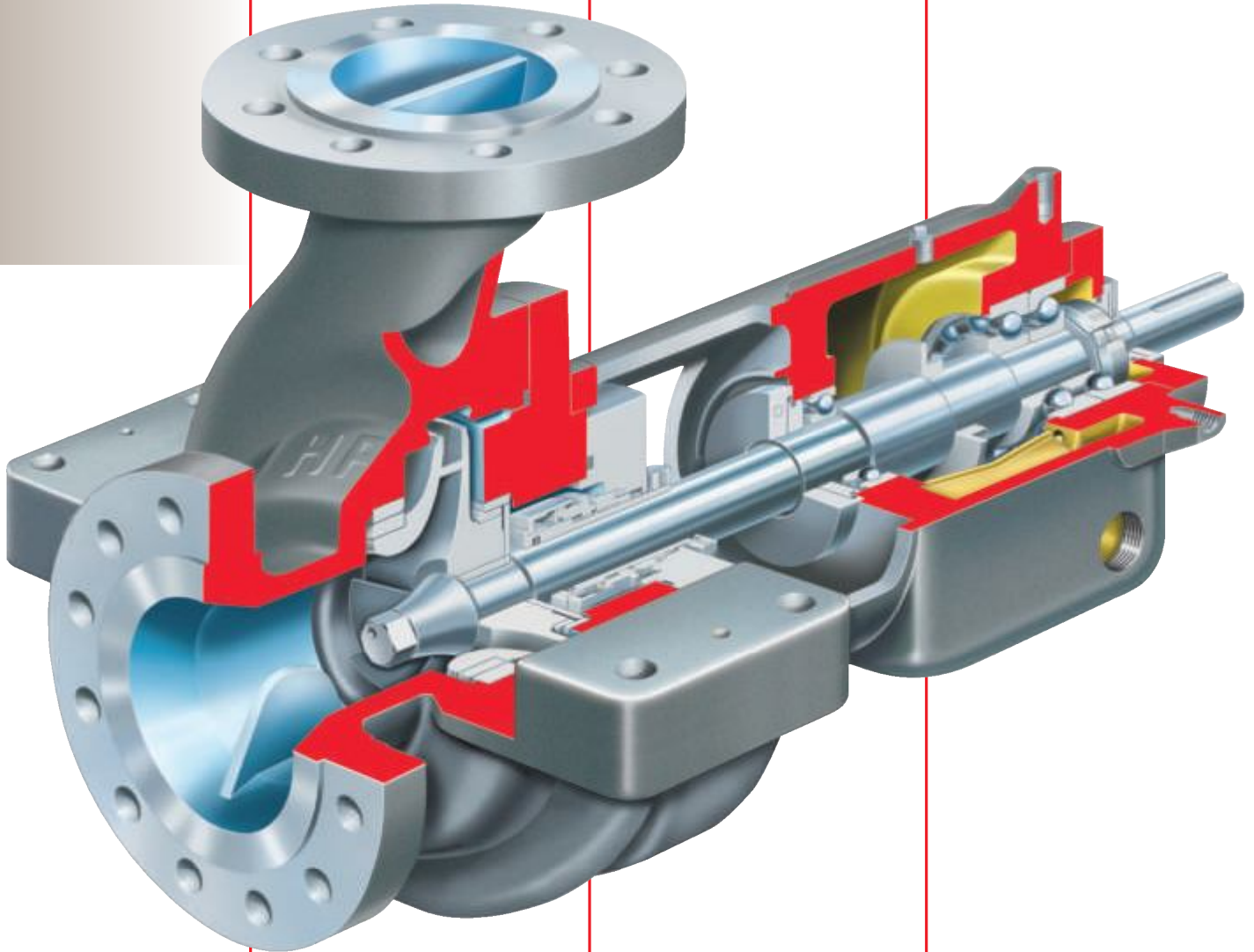
HDX



**HPX**  
**API 610**  
**Hydrocarbon**  
**Processing**  
**Pump**

The Flowserve HPX pump meets or exceeds the rigorous requirements of API 610, latest edition. Engineered and built for reliable, safe performance, it also provides optimal emissions containment.

Further, the HPX represents the most comprehensive range of hydraulic coverage available to the industry, thereby permitting precise selection for best operating efficiency.



**Operating Parameters**

- Flows to 2000 m<sup>3</sup>/h (9000 gpm)
- Heads to 350 m (1100 ft)
- Temperatures from -160°C (-250°F) to 450°C (850°F)
- Pressures to 80 bar (1160 psi)

**Raised Face Flanges** are to ASME B16.5 criteria for Class 300 or 600. Surface finish meets API 610 standard. ISO and JIS flanges are available.

**Centerline Supported Pump Casing**

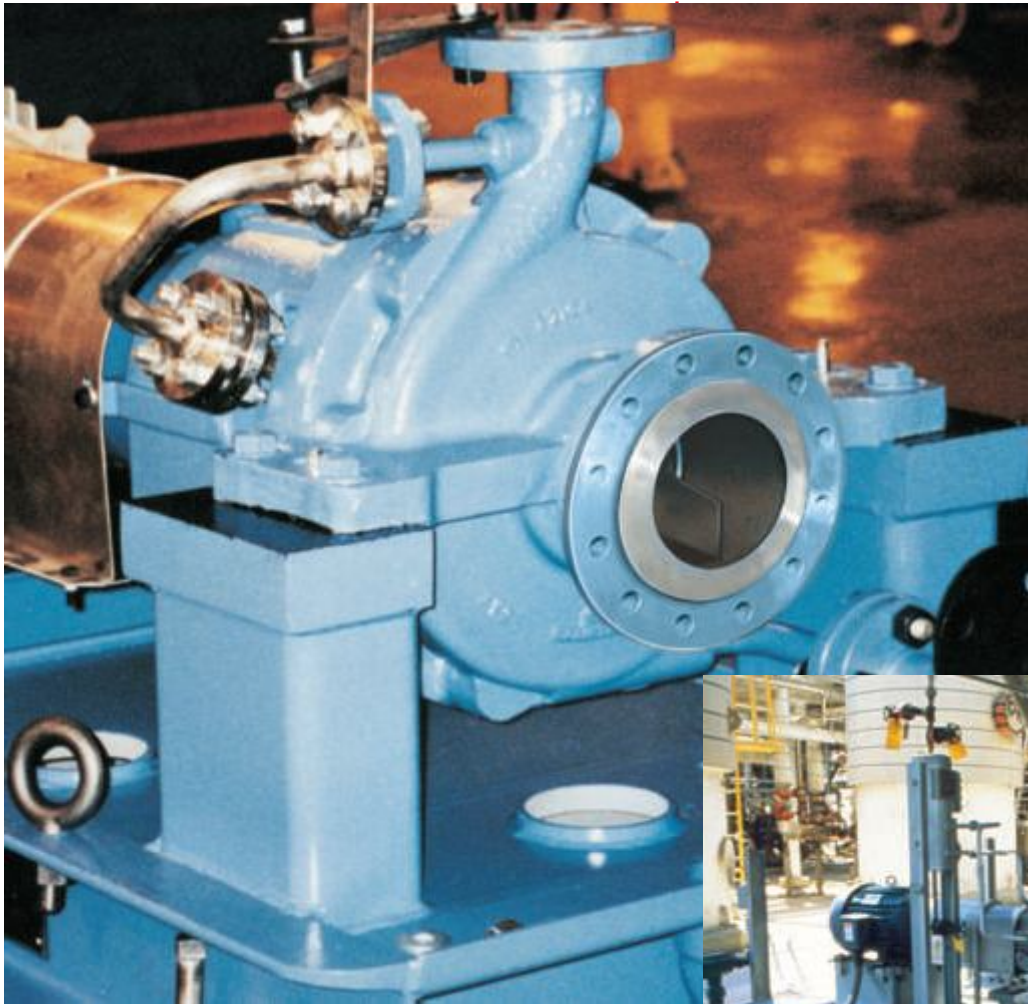
Nozzle loads beyond API 610 design requirements.

- Minimal shaft misalignment for extended rotor, bearing and seal life

**Pump Casing And Cover** feature metal to metal fit with fully confined, controlled compression gasket to ensure proper sealing and alignment.

**Guide Vane** in suction nozzle preserves available NPSHA while reducing vortexing and assuring uniform flow to pump inlet.





**Renewable Wear Rings**

for both the casing and impeller reduce replacement parts cost.

- Secured by locking pins or threaded dowels
- Back wear ring standard on larger models; optional on all other sizes

**API 682 Seal Chamber**

accommodates a wide variety of seal configurations including dual pressurized and unpressurized cartridge types for the most severe services. A full complement of API 610 seal flush piping plans is available.

**Cartridge Seal Mounting**

assures:

- Ease of maintenance
- Precise seal face setting for maximum seal life

**Back Pull-out** of rotating assembly simplifies maintenance as neither the motor nor piping connections are disturbed.

**Dynamically Balanced Impeller**

limits vibration and assures smooth operation, over wide flow range.

- Casting techniques and manufacturing processes for fine finish, high efficiency
- Positively locked, anti-rotation impeller nut with threads unexposed to pumped liquid

**Rugged Shaft** design is well within API 610 shaft deflection and run-out criteria.

**Shaft Sleeve** and gland plate are constructed of stainless steel for optimum life.

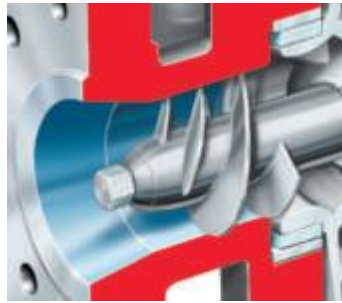
**Bearing Configurations**

- Standard – single row, deep groove, radial bearing and duplex, single row, 40° angular contact thrust bearings
- Special bearing arrangements for high suction pressures

**Bearing Housing** is made of heavy duty carbon steel.

- Labyrinth type oil seals retain oil and exclude atmospheric contaminants and moisture
- Optional bearing isolators available
- Standard ring or oil slinger lubrication, depending upon pump size, ensures optimal bearing lubrication

**Options and Technical Data**

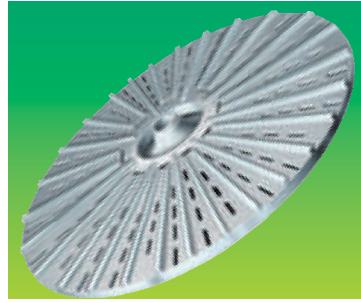


**Inducer**

A high specific speed, axial flow pumping device, an inducer provides significant improvement in suction performance by reducing pump NPSHR.

**Bearing Lubrication and Cooling Options**

- Oil mist and oil purge for continuous bearing lubrication
- Fan cooling for high operating or high ambient temperatures
- Finned cooling insert for efficient water cooling



**Low Flow Hydraulics**

Multiple, radial blade impeller provides better hydraulic fit for low flow applications and continuously rising performance curve.

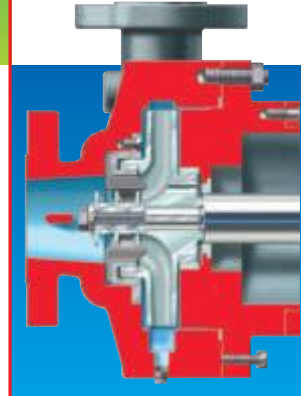
**Top Suction Nozzle Configuration**

This option is available for ease of piping configuration by:

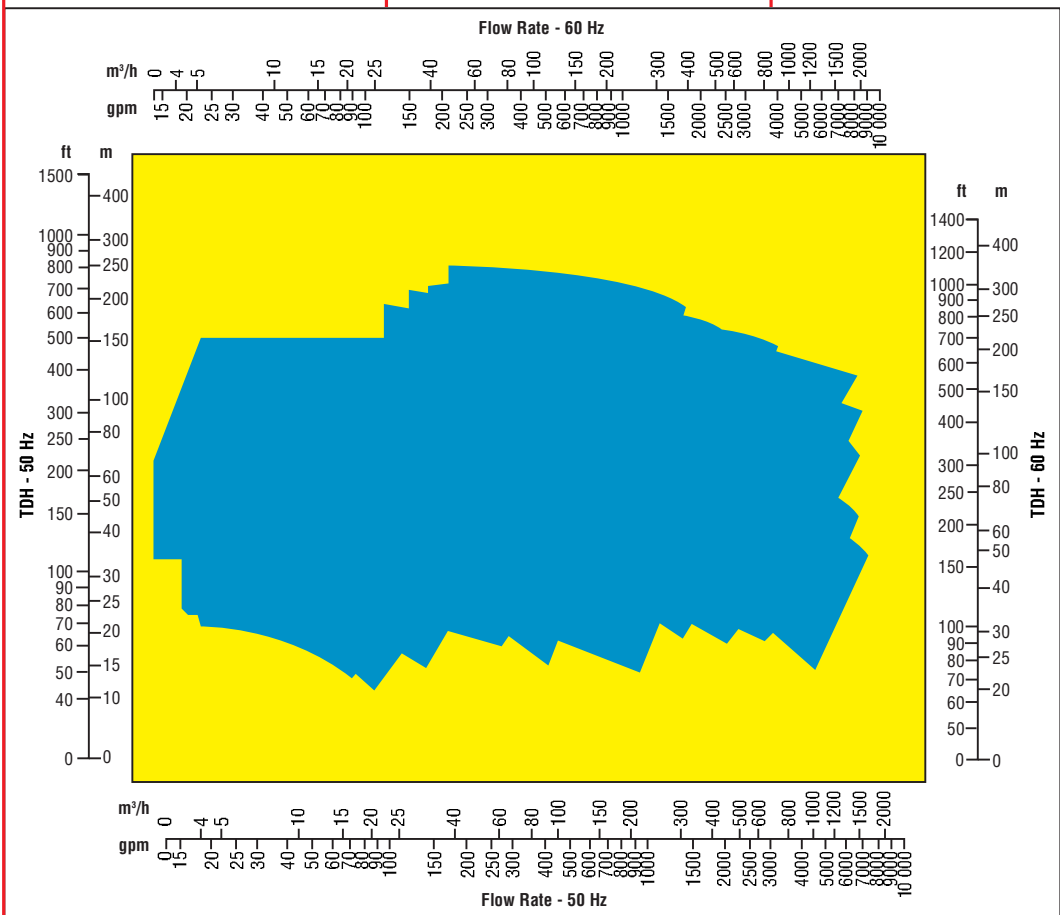
- Reducing space requirements
- Reducing installation costs

**Coke Crusher Design**

Special cutter screw construction facilitates the handling of coke particles in suspension by reducing their size to easily pass through the impeller.



**HPX Range Chart**



**Global Engineered Services and Support**

- Total Cost Reduction*
- Asset Management*
- Product Life Cycle*
- Performance Re-rates*
- Site Diagnostics*
- Repair Services*
- Energy Management*
- Spare Parts*
- Maintenance Contracts*
- Materials Upgrades*
- Turnkey Services*
- Field Repairs*
- Installation*
- Project Supervision*
- Commissioning*
- Equipment Upgrades*
- Condition Monitoring*
- Systems Analysis*
- Field Machining*

**Service Dedication**

Flowserve Engineered Services is focused on providing customers with uncompromising service and support, where and when needed. Dedicated to delivering the highest quality support, Engineered Services integrates its extensive pump and materials engineering knowledge with creative service solutions. Engineered Services fully understands the business challenges facing customers and is prepared to manage solutions to succeed as a team.

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

Engineered Services is dedicated to maximizing equipment performance and providing reliability-centered maintenance programs for pumps and related equipment, regardless of manufacturer. Using the FlowStar™ asset management software, Engineered Services tracks performance and supports 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.





**Flowserve... Supporting Our Customers  
With The World's Leading  
Pump Brands**



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**Pump Division**

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