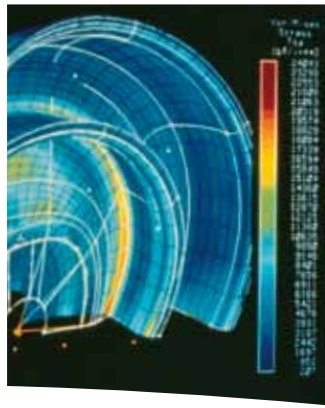




## ***LC Chemical Slurry Pump***



***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.*

### ***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*

*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*

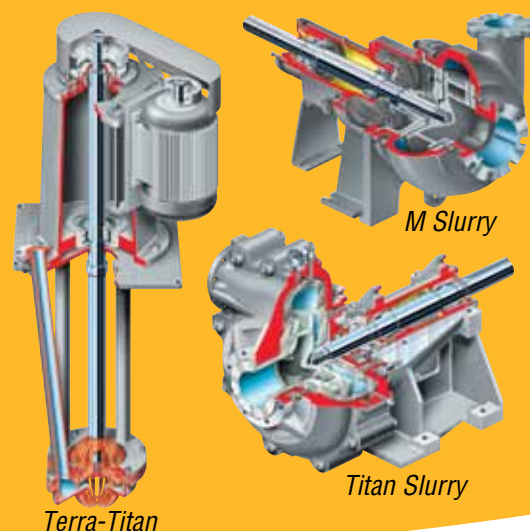
*Worthington® Pumps*

*Worthington Simpson™ Pumps*

## LC Chemical Slurry Pump



## Complementary Pumps



## Engineered to Handle the Toughest Duties

The LC chemical slurry pump is engineered to withstand the rigor of applications that are both abrasive and corrosive. Intended for aggressive, continuous duty, the LC's features and materials are the direct result of industry specific experience and over 40 years of innovative slurry pump development.

### Significant Benefits

- Reliability
  - Concentric casing
  - Tangential discharge
  - Thick wall wear allowance
  - Choice of impeller design
  - Rugged power frame
- Versatility
  - Multiple configurations
  - Multiple drive options
  - Choice of materials
  - Multiple shaft sealing options
  - Multiple discharge orientations
- Ease of Maintenance
  - Inspection holes
  - Tapered shaft
  - Lifting lugs
  - Casing drain
  - Three-part epoxy paint

### Applications

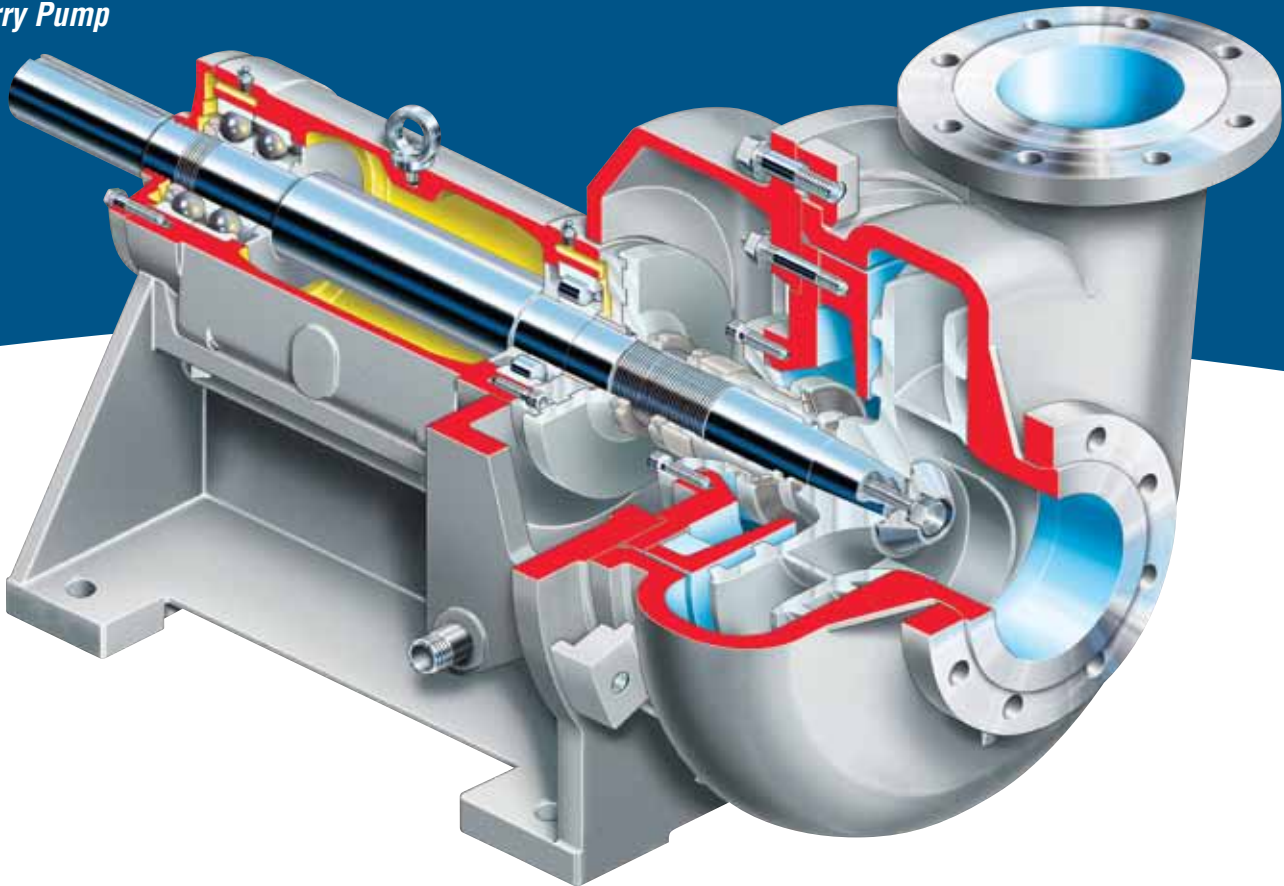
- Mineral processing
  - Phosphoric acid and derived industries
  - Aluminum (sodium aluminate, aluminahydroxide, muds)
  - Calcium carbonate
  - Zinc, cobalt and lead treatment
- Hydrocarbon processing
- Chemical processing
- Water resources
- Steel and primary metals processing
- General industry
- OEM

### Complementary Pump Designs

- Titan Slurry heavy-duty, lined slurry pump
- Type M hard metal slurry pump
- Type R rubber lined slurry pump
- Terra-Titan lined sump pump
- Types MJ and MJC vertical hard metal slurry pumps



## LC Chemical Slurry Pump



The LC chemical slurry pump is a horizontal, frame mounted, single stage, end suction design with a tangential discharge nozzle. It is available in 26 sizes on only 5 different frames and available in multiple materials of construction to suit application needs. The LC pump is engineered to withstand high concentrations of abrasive and corrosive solutions, like those found in the phosphoric and derived industries as well as mining and mineral processing.

### Operating Parameters

- Flows to 3000 m<sup>3</sup>/h (13 200 gpm)
- Heads to 75 m (250 ft)
- Pressures to 25 bar (360 psi)
- Temperatures to 140°C (280°F)
- Specific gravities to 1.7

**Thick Wall Concentric Casing With Tangential Discharge** is radially balanced and provides unobstructed flow to minimize wear

**Impeller Counter Vanes** provide hydraulic balance and hydro-dynamic relief of the shaft seal. This limits internal recirculation and reduces seal chamber pressure

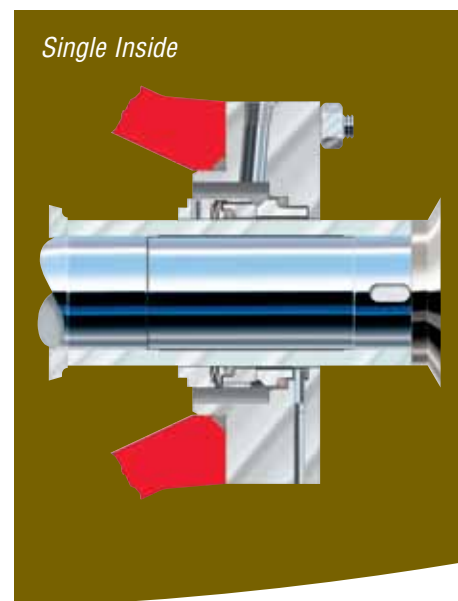
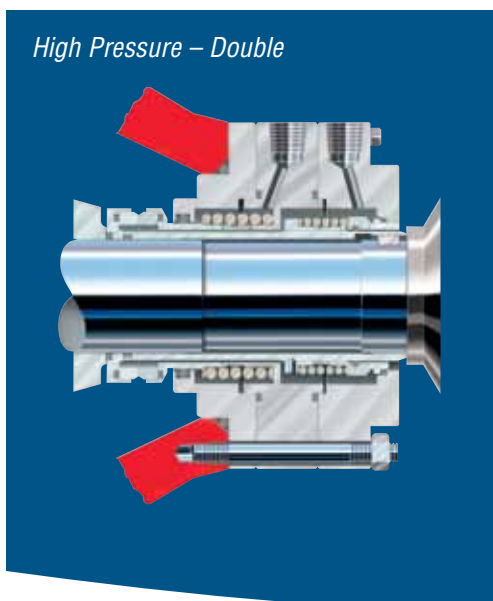
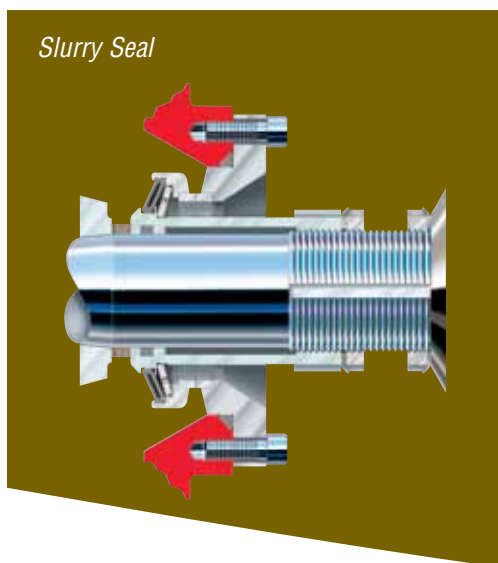
**Flanges** conform to PN10 and PN 16 (ANSI Class 150) standard. Special flange types available

**Rigid, One-Piece Bearing Frame** is generously sized to handle belt loads and can be removed easily for maintenance. Allows ample access to seal chamber

**Large Diameter Steel Shaft** minimizes problems associated with overhang, deflection and vibration. Stainless steel available

**Two Angular Contact Outboard Bearings** and a single inboard roller bearing mitigate axial and radial thrust. Grease lubrication standard; oil optional

**Machined Fit** between bearing carrier and bracket provides positive alignment



### Numerous Shaft Sealing Systems

The Flowserve LC chemical slurry pump is available with numerous shaft sealing options. These include the following configurations.

- Wet gland packing for light to moderate abrasives
- Single mechanical seal with process or external flush
- Zero emission, double mechanical seal
- High pressure double seal for services to 20 bar (290 psi)
- Rubber coated, high solids seal with product flush and optional quench
- High solids seal with quench containment and a back-up safety seal
- Alumina industry seal

### Multiple Drive Arrangements

The LC chemical slurry pump is available with multiple drive arrangements to meet application needs. They include:

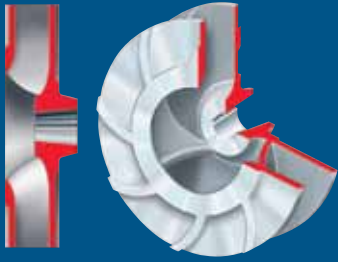
- Direct coupled
  - Direct drive base mounted
- Belt driven
  - Side drive base mounted
  - Direct overhead motor mount
  - Reverse overhead motor mount
  - Side drive base mounted with secondary bearings
  - Reverse overhead motor mount with secondary bearings

### LC Materials of Construction

		A1	B3	C2	C3	C4
Component		Grey Cast Iron (EN-GJL-250)	Ferritic Cast Iron 30% chromium, low carbon	AISI 316SS	CD4MCu Duplex SS U55	904L
Casing, Impeller, Cover		Grey Cast Iron	FCI 30% Cr	AISI 316SS	Duplex	904L
Impeller						
Cover						
Shaft		Steel/AISI 1035	Duplex SS			
Sleeve	Packing	AISI 420 Carbon Steel (13% Cr)	FCI 30% Cr	AISI 316L	Duplex	904L
	Mechanical Seal	316L	904L			
Gasket		Klingerit Acid-Resistant				
O-rings		Nitril	Viton			
Deflector		Neoprene				
Bearing Housing		Grey Cast Iron				
Bearing Bracket		Grey Cast Iron				
		–	BELZONA Corrosion Resistant Coating			

**Options and  
Technical Data**

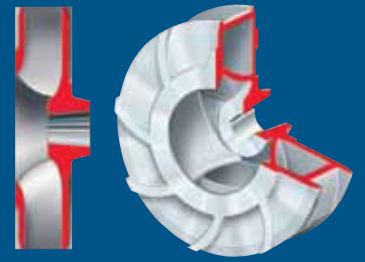
*Two Vane Impeller*



*Vortex Impeller*



*Blade Impeller*



**Impeller Options**

The LC chemical slurry pump is available with multiple impeller designs to meet application needs. They include:

- Channel impeller
  - One and two vane types
  - Large solid particles
  - Small amount of entrained gas
- Vortex impeller
  - Large solid particles and long fibers
  - Large amount of entrained gas
  - Long fibers and tramp solids
- Blade impeller
  - Small solid particles
  - Small amount of entrained gas
  - Good NPSH

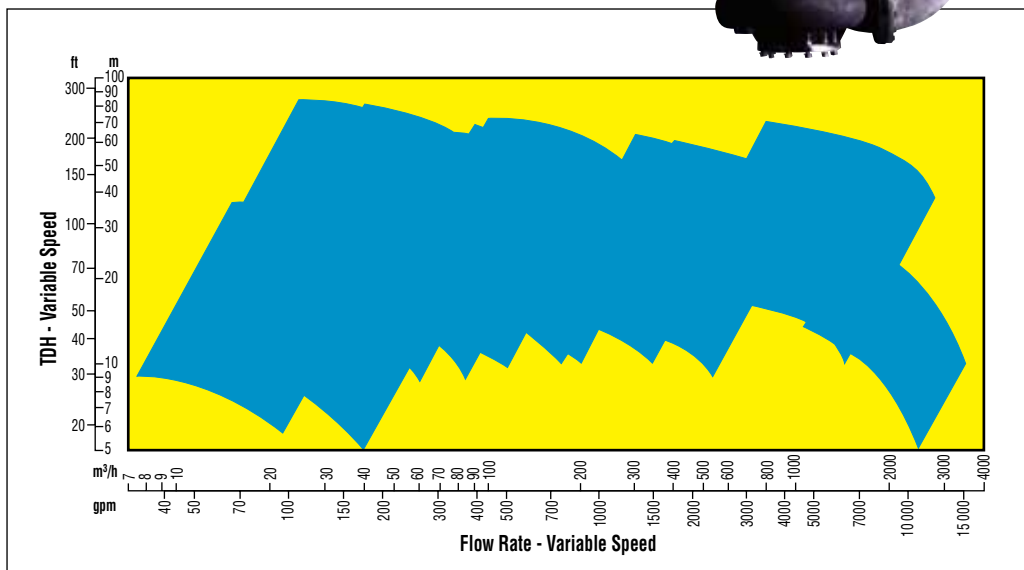
**Available Configurations**

The same wet end is available in multiple configurations to meet application and installation requirements

- PL-C cantilever shaft sump
- LC-S vertical suspended lineshaft
- LC-V vertical dry pit close coupled
- LC-Y vertical dry pit long coupled



**LC 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

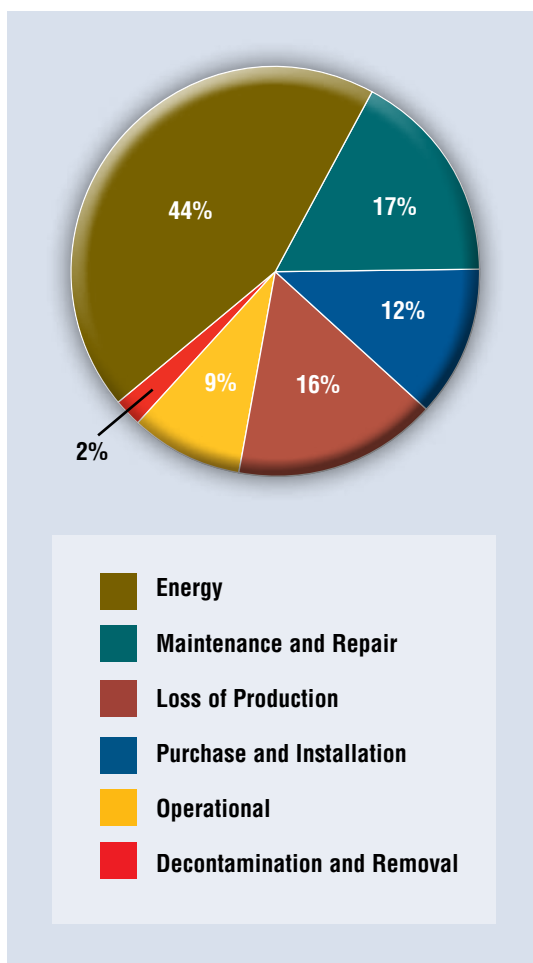
### Operating Expenses

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

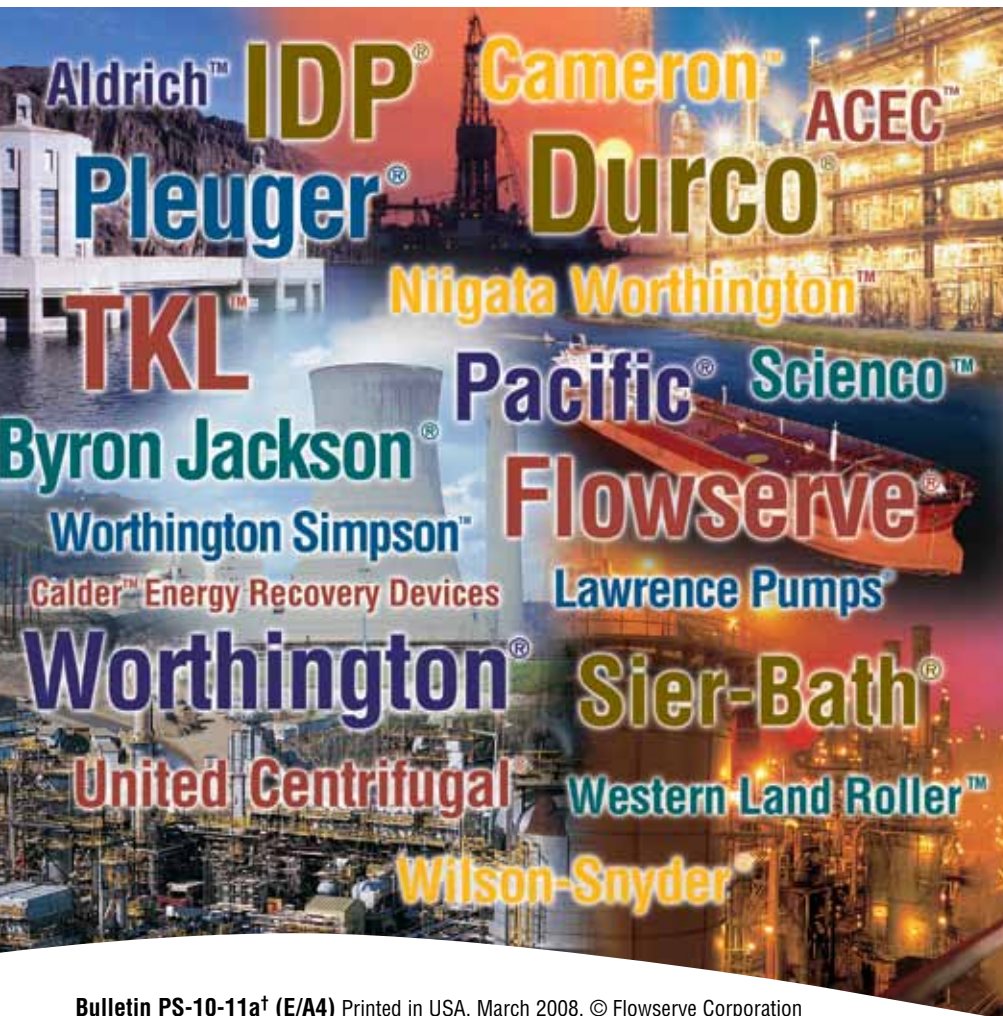
### Innovative Life Cycle Cost Solutions

- 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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