SIHI® ISOchem
Chemical Process Pumps with Magnetic Drive

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
- Vacuum & Compressor
- 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
SIHI® Pumps
TKL™ Pumps
United Centrifugal® Pumps
Western Land Roller™ Irrigation Pumps
Wilson-Snyder® Pumps
Worthington® Pumps
Worthington Simpson™ Pumps
Today, chemical process pumps are used in a wide range of plants. Thanks to their reliability, they provide a high level of safety and reduced operating costs for the process industry.

Many application processes require specific types of shaft seals, such as single or double-acting mechanical seals or seal-less designs. These enable a greater range of applications and pump complexity as there are many individual designs available for even the most varied of applications.

The range of applications that chemical process pumps can be used for, as well as the specific technical standards they are required to adhere to as prescribed by e.g. ISO 5199, ISO 15783 and ISO 2858, mean that the pumps must be highly flexible in order to meet various application profiles.

**Performance data**
- Capacity: max. 650 m³/h (4403 US gpm)
- Delivery head: max. 160 m (525 ft)
- Speed: max. 3600 rpm
- Casing pressure: max. 25 bar (362 psi)
- Temperature: max. +400 °C (752 °F)

**Industries/Markets**
- Chemical
- Pharmaceutical
- Petrochemical
- Paper industry
- Food industry
- Plastics industry
- and many more …

**Typical Applications**
- Filling
- Distillation
- Draining
- Extraction
- Product transfer
- Reaction
- Fuel storage
- Vaporisation
- Heat transfer
Materials

Volute casing: ductile iron, stainless steel, duplex steel
Casing cover: ductile iron, stainless steel, duplex steel
Shaft: duplex steel
Impeller: cast iron, stainless steel, duplex steel

Hydraulic and dimensions according to ISO 2858

Wear rings ensure safety against failure

Maintenance free sleeve bearings
Alternative bearings for fluids with low lubrication properties

L10h > 50,000 hours bearing life time for ball bearings

Secondary sealing as an option

Long life and high temperature magnets

Containment shell options

Design according to ISO 5199
Total hermetically sealed without drain drillings in volute casing

Drop-in replacement for mechanical sealed versions
**SIHI® ISOchem**

**Options**

**Containment shells**

**Standard Hastelloy shells up to PN 25**
- Up to temperatures of 300 °C

**High efficiency Hastelloy shells up to PN 25**
- Savings of eddy current losses approx. 40%  
- Increase coupling efficiency of approx. 5%  
- Up to temperatures of 180 °C

**Coated (TiN) ceramic ZrO₂ shells up to PN 25**
- No eddy current losses  
- High fracture toughness, chemical abrasion and thermo-shock resistance  
- Coating (TiN) allows ATEX certification

All containment shells are fully interchangeable with each other.

**Secondary control system according to ISO 15783**

In case of failure of primary pressure casing, a secondary sealing system reduces the leakage to atmosphere and gives the possibility to control the discharge and detect the failure.

**Options**
- Temperatures up to 400 °C (752 °F) without external cooling  
- Special materials (Hastelloy, titanium,...)  
- Heating jackets  
- Monitoring systems
Chemical process pumps in the SIHI® ISOchem range are horizontal, single-stage volute casing pumps with designs that fully meet the technical requirements of ISO 5199, ISO 15783 and dimensions according ISO 2858.

This process pumps consists of 30 hydraulics sizes designed with closed impeller. Due to the design, the pumps can be used in a bare shaft or close-coupled configuration.

**Benefits**

- Low power consumption
- Increased lifetime and longer maintenance intervals
- Low installation costs
- High level of availability and short supply times
- Simple assembly and dismantling
- Quick on-site servicing
- Can be used where there is a risk of explosion

**Hydraulic**

- Volute casing with closed impeller
  - Clean liquids
  - Low NPSH values

**With bare shaft back pull-out assembly**

- CBM with magnetic drive to ISO 15783

**Close-coupled back pull-out assembly**

- CBE with magnetic drive to ISO 15783 for temperatures up to 300 °C (572 °F)
- CBE with magnetic drive and heat barrier to ISO 15783 for temperatures up to 400 °C (752 °F)
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 Costs¹

- Energy: 44%
- Maintenance and Repair: 17%
- Loss of Production: 12%
- Purchase and Installation: 16%
- Operational: 9%
- Decontamination and Removal: 2%

¹ 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.