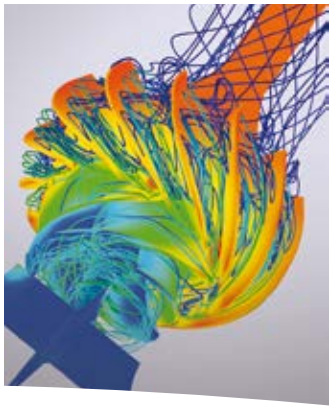
FLOWSERVE

SIHI® Side Channel Pumps
High Head at Low Flow

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

Sier-Bath® Rotary Pumps

SIHI® Pumps

TKL™ Pumps

United Centrifugal® Pumps

Western Land Roller™ Irrigation Pumps

Wilson-Snyder® Pumps

Worthington® Pumps

Worthington Simpson™ Pumps




High head at low flow

The side channel principle was invented by engineers Siemen and Hinsch in 1920. SIHI® has continued to develop and improve the design of its side channel pumps ever since.

This technology plays several important roles in process and operational safety, and is subject to ever increasing requirements on the part of customers. Such requirements present us with considerable challenges, particularly when it comes to incorporating new materials and technologies as part of the continuous further development of these products.

The experience and specific application knowledge of our engineers in terms of development, construction, production, application planning and sales are rooted in the fact that we have sold and maintained more than two million side channel pumps for a wide variety of applications over the past 90 years.

Our side channel pumps can handle high volumes of gas and are self-priming, guaranteeing a high level of process safety in the most varied of process-oriented cycles.

Industries/Markets

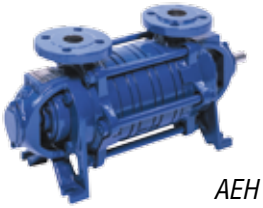
- Chemical
- Pharmaceutical
- Petrochemical
- Foodstuff
- LPG
- Water supply
  and many more

Applications

- Filling
- Emptying
- Irrigation
- Distillation
- Product transfer
- Fuel storage
- Extraction
  and many more

CEH

AKH-X



AEH

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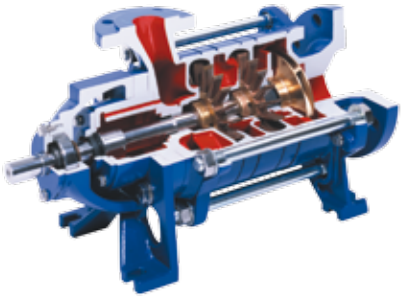
CEH side channel combination pump up to 40 bar (580 psi)

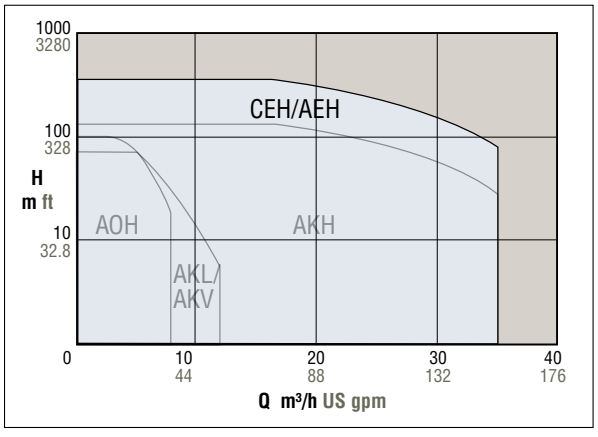
CEH

Pumps of the CEH series are self-priming, capable of handling gas together with the medium and operate with low noise levels.

These pumps are used if there is a need to handle liquids problem-free under unfavourable pumping conditions at suction side and also at positive suction heads lower than 0.5 m (1.64 ft).

CEH pumps have an integrated retaining stage in the NPSH inducer stage, which ensures that the levels of operational fluid required for the pump to self-prime are maintained. Thanks to the very low NPSH value, the CEH is particularly suited to handling liquids under vapour pressure (e.g. condensate, refrigerant, boiler feed water, liquefied gas and especially liquid gas). The range available enables an optimum rating to be obtained, ensuring the pump selected meets the required capacity and head.





Applications

- For handling acids and alkalis
- For liquids near boiling point
  - Condensates
  - Distillates
  - Refrigerants
  - Liquid gases
  - Boiler feed water
- For handling liquids under unfavourable suction conditions
  - Positive suction heads < 0.5 m (1.64 ft)

Construction

Materials: Cast iron, ductile iron, stainless steel and special materials

Shaft sealing: Gland packing, mechanical sealing and magnetic coupling

Performance data

Capacity:	max. 35 m³/h (154 US gpm)
Delivery head:	max. 354 m (1161 ft)
Speed:	max. 1,800 rpm
Temperature:	max. 180 °C (356 °F)
Casing pressure:	PN 40

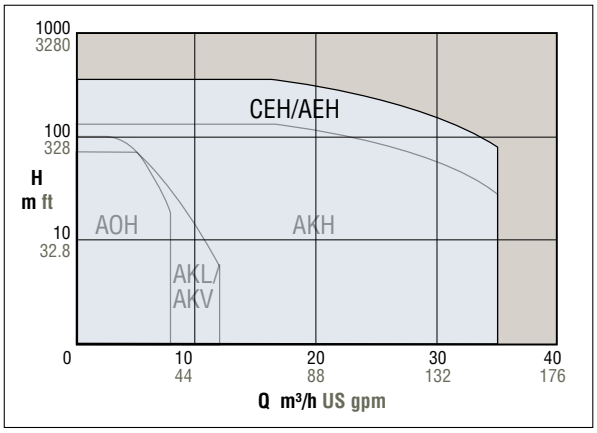
AEH side channel pumps up to 40 bar (580 psi)

AEH

Pumps of the AEH series are self-priming, capable of handling gas together with the medium and operate with low noise levels.

These pumps have been specifically designed for heavy-duty applications within all fields of industry where it is necessary to ensure problem-free pumping of pure, turbid or aggressive media.

The range available enables an optimum rating to be obtained, ensuring the pump selected meets the required capacity and head.



Applications

- Chemical industry
- Pharmaceutical industry
- Petrochemical industry
- Food and semi-luxuries industry
- Plastic and rubber industry
- Surface treatment and hardening

Construction

Materials: Cast iron, ductile iron, stainless steel and special materials

Shaft sealing: Gland packing, mechanical sealing and magnetic coupling

Performance data

Capacity:	max. 35 m³/h (154 US gpm)
Delivery head:	max. 348 m (1142 ft)
Speed:	max. 1,800 rpm
Temperature:	max. 180 °C (356 °F)
Casing pressure:	PN 40

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AKH side channel pumps up to 16 bar (232 psi)

AKH

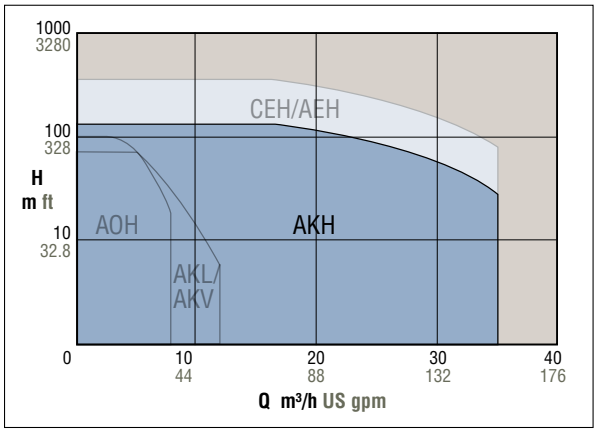
The SIHI side channel pumps of the AKH range are self-priming, capable of handling gas together with the medium and operate with low noise levels.

These pumps have been specifically designed for heavy-duty applications within all fields of industry where it is necessary to ensure problem-free pumping of pure, turbid or aggressive media.

The range available enables an optimum rating to be obtained, ensuring the pump selected meets the required capacity and head.

Applications

- Chemical industry
- Pharmaceutical industry
- Petrochemical industry
- Steel industry, mechanical engineering and vehicle construction
- Food and semi-luxuries industry
- Plastic and rubber industry
- Electrical industry
- Surface treatment and hardening
- Shipbuilding industry



Construction

Materials: Cast iron, bronze and stainless steel

Shaft sealing: Gland packing and mechanical sealing

Performance data

Capacity:	max. 35 m³/h (154 US gpm)
Delivery head:	max. 144 m (472 ft)
Speed:	max. 1,800 rpm
Temperature:	max. 120 °C (248 °F)
Casing pressure:	PN 16

AKL/AKV side channel pumps up to 16 bar (232 psi)

AKL/AKV

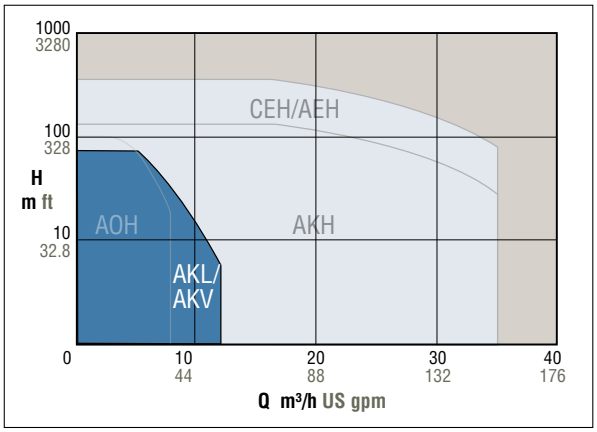
The SIHI side channel pumps of the AKL/AKV range are self-priming, capable of handling gas together with the medium and operate with low noise levels.

These horizontal or vertical single-stage inline pumps are space-saving and easy-to-install units that are fitted with standard motors and mechanical seals.

The range available enables an optimum rating to be obtained, ensuring the pump selected meets the required capacity and head.

Applications

- Chemical industry
- Pharmaceutical industry
- Petrochemical industry
- Food and semi-luxuries industry
- Plastic and rubber industry
- Surface treatment and hardening
- Air conditioning and refrigeration



Construction

Materials: Ductile iron

Shaft sealing: Mechanical sealing

Performance data

Capacity:	max. 12 m³/h (53 US gpm)
Delivery head:	max. 70 m (229 ft)
Speed:	max. 3,000 rpm
Temperature:	max. 120 °C (248 °F)
Casing pressure:	PN 16

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AOH side channel pumps up to 10 bar (145 psi)

AOH

The SIHI side channel pumps of the AOH range are self-priming, capable of handling gas together with the medium and operate with low noise levels.

These pumps have been specifically designed for use in all industrial fields where it is necessary to ensure problem-free pumping of pure, turbid or aggressive media.

The range available enables an optimum rating to be obtained, ensuring the pump selected meets the required capacity and head.

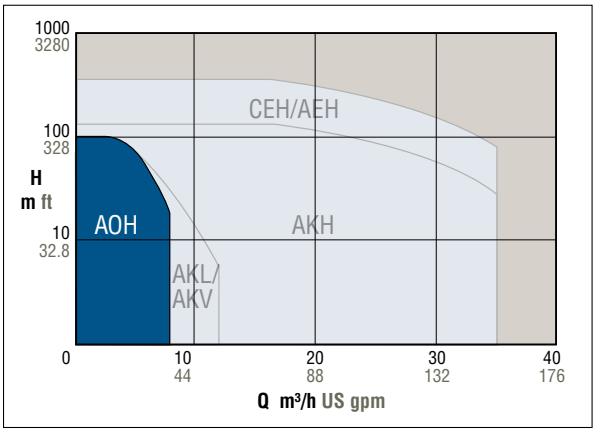
Applications

- Waste-water disposal
- Irrigation and drainage
- Water circulation
- Cooling water systems
- Pressure boosting
- Mixing and cleaning systems

Construction

Materials: Cast iron

Shaft sealing: Gland packing



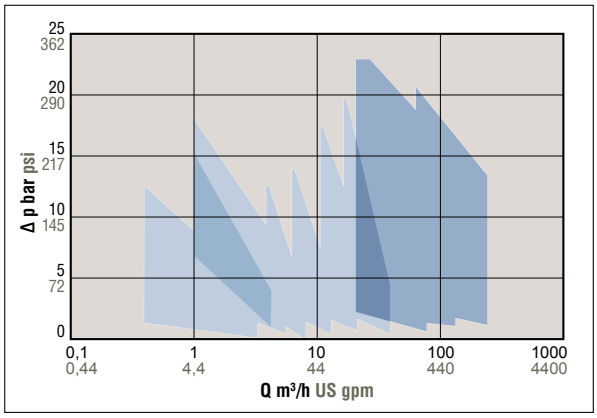
Performance data

Capacity:	max. 7.5 m³/h (33 US gpm)
Delivery head:	max. 98 m (321 ft)
Speed:	max. 1,800 rpm
Temperature:	max. 120 °C (248 °F)
Casing pressure:	PN 10

Side channel pumps for LPG

During the various stages of distribution, pumps are required to transfer LPG in order to compensate for the pressure losses in the flow process.

Under normal atmospheric conditions, liquified gases would be gaseous. Depending on the temperature at certain pressures, they can be liquefied.

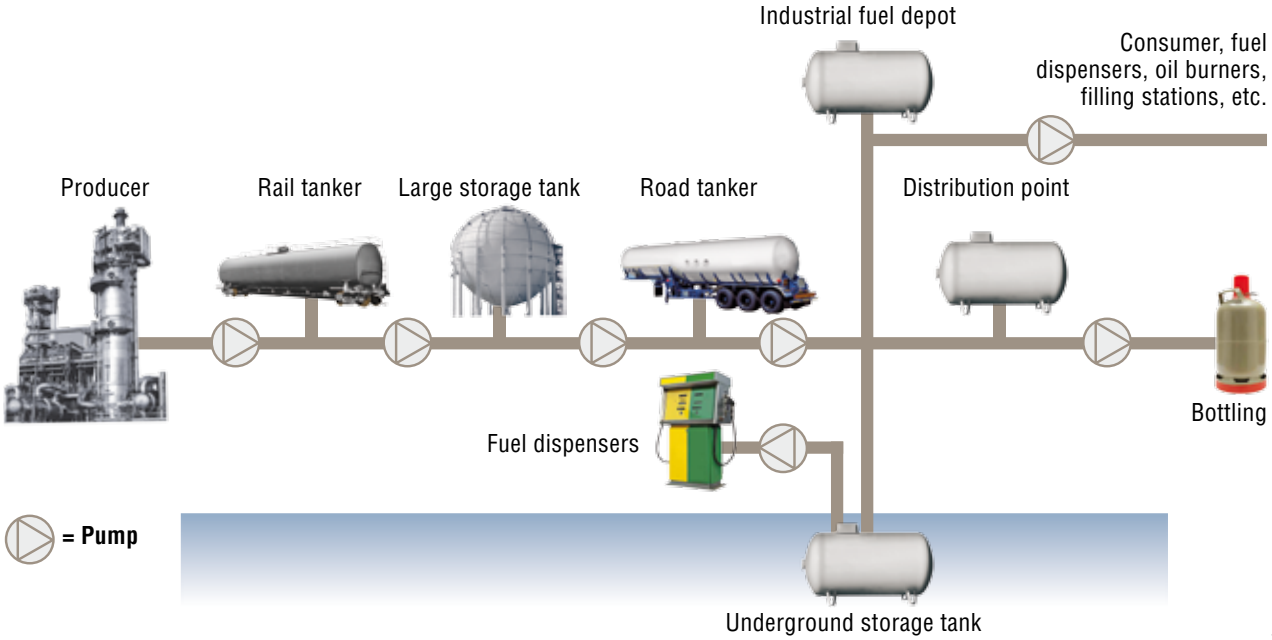


Underground tank

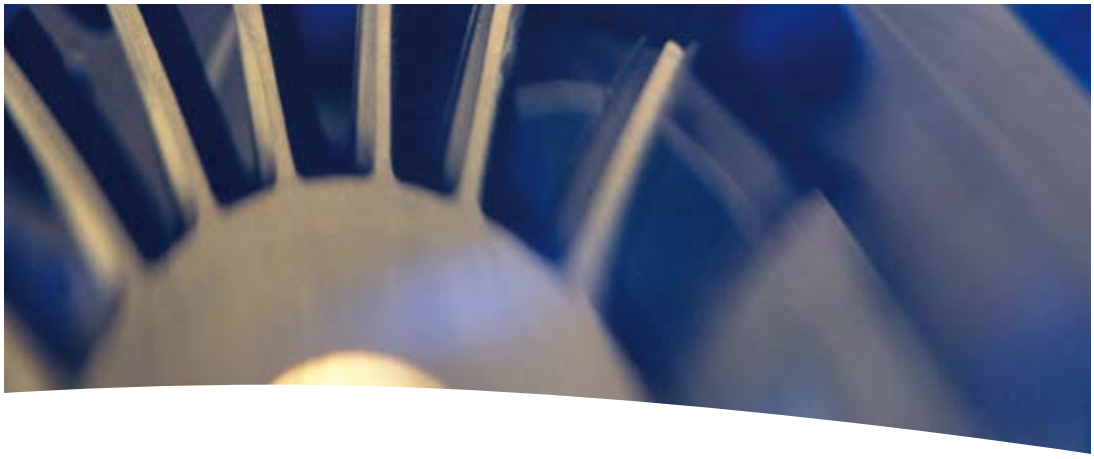
CEB PC SMX

Above ground tank

SC UEA CEH

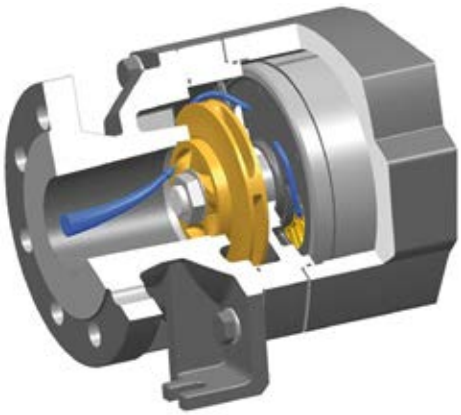


The side channel principle



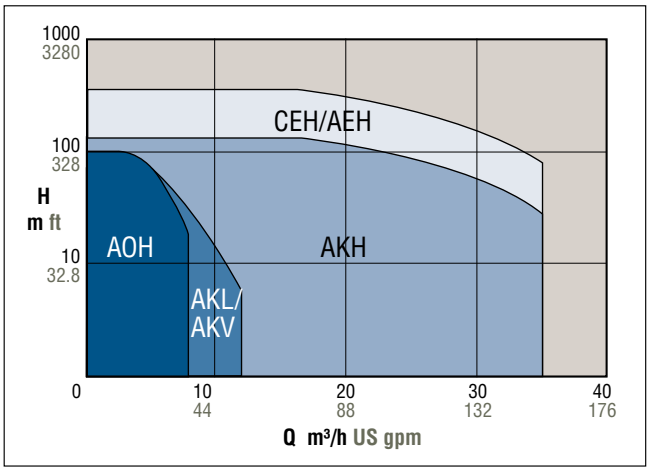
A side channel pump is capable of evacuating a suction pipe and can prime the medium for suction independently. Depending on the integrated positive displacement unit, it is possible to handle gas contents of up to 50 %.

The self-priming and gas-handling characteristics guarantee safe operation even in case of evaporation and therefore also a high degree of safety in industrial processes.



Benefits

- Self-priming
- Handling of liquid-gas mixtures
- Performance curve characteristics
- Capacity up to 35 m³/h (154 US gpm)
- Delivery head up to 354 m (1161 ft)
- Pumping of liquids under critical physical conditions
- ATEX



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:

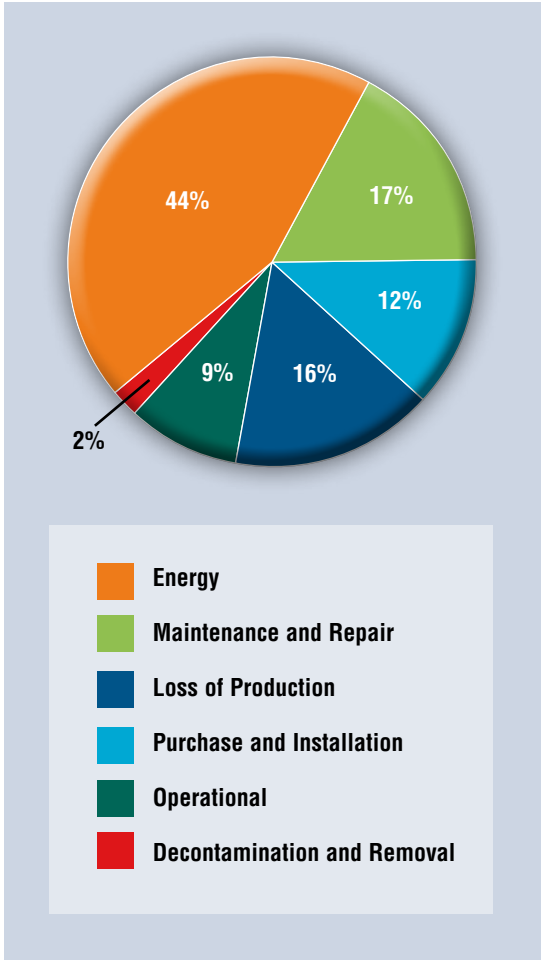
Capital Expenses
- Initial purchase
- Installation

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

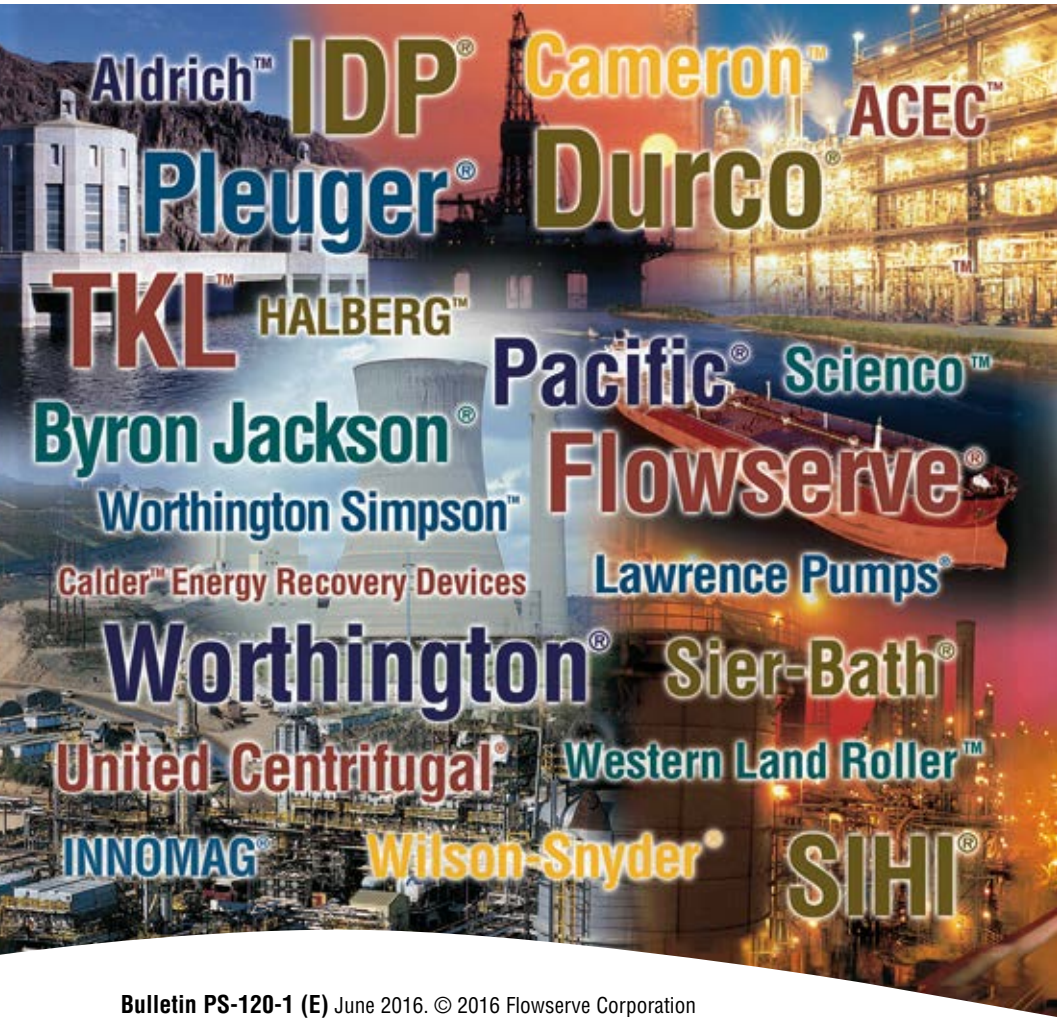
Innovative Life Cycle Cost Solutions

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

Typical Pump Life Cycle Costs[1]



[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.



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