



Specialist for Pumping Technology



A-LINE

Horizontal Heavy Duty Barrel Pumps

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+75 years developing the pumping technology that drives progress

Ruhrpumpen is an innovative and efficient pump technology company that offers highly engineered, custom made solutions for oil & gas, chemical processing, power generation, industrial applications and water.

Implementation of cutting-edge technology and world-class engineering, combined with our unique vertically integrated structure, allows Ruhrpumpen to design complex technical solutions, creating the most robust and powerful pump systems in the marketplace.

Our broad product line complies with the most demanding quality standards and industry specifications such as **American Petroleum Institute (API), American National Standards Institute (ANSI), Underwriter's Laboratories (UL), Factory Mutual (FM), National Fire Protection Association (NFPA), ISO and Hydraulic Institute.**

Products Include:

- Single stage overhung pumps
- Vertical in-line pumps
- Single and multi-stage between bearing pumps
- Multi-stage vertical pumps
- Reciprocating plunger pumps
- Sealless magnetic drive pumps
- Fire protection systems
- Pitot tube pumps
- Hydraulic decoking systems
- Horizontal pumping systems



Ruhrpumpen is your single source supplier

- Original Equipment
- Spare parts
- Installation and startup support
- Repair and maintenance
- Engineering, training and consulting
- Re-Engineering (REAP)

Benefits of our pumps

- Proven reliability
- High efficiency designs ensure lowest operating cost
- Robust design allows for long system life with minimal maintenance
- Optimized total cost of ownership

A Line Pumps

Our A-Line pumps are horizontal, radially split, multistage diffuser type pumps (BB5 configuration) engineered and manufactured to the latest edition of the ISO 13709 (API 610). The A-Line Pumps are available with either Inline or Back-to-Back Impeller arrangement. For ease of assembly and high overhaul times the cartridge element can be supplied as full-pullout design.

A-Line pumps are generally in compliance with ATEX and the CE Machinery Directive and are designed for heavy duty applications, such as:

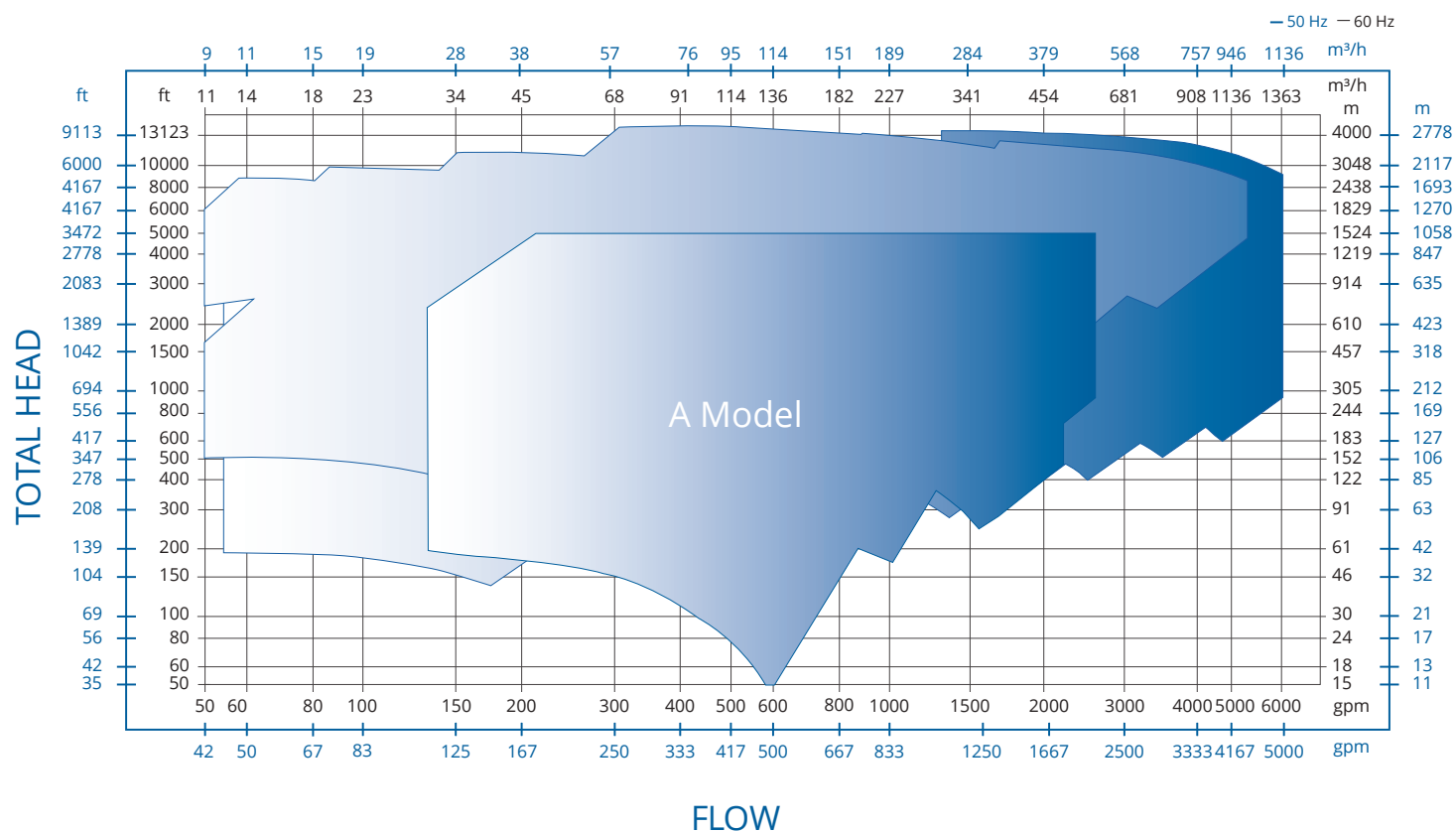
- Water Injection
- Hydraulic Decoking
- High-Pressure Applications
- Refinery / Boiler Feed
- Cogeneration
- Pipeline
- Amine / Ethylene Feed
- Hydrocarbon Charge



Performance Range

2 POLES

SELECTION CHART A-LINE



A-LINE PERFORMANCE DATA

Capacity	up to 80 m³/h	352 gpm
Head	up to 1,480 m	4,856 ft
Pressure	up to 160 bar	2,320 psi
Temperature	up to 200°C	390°F
Speed	6,000 min ⁻¹	6,000 rpm

Notes:

For pump operations outside this range, please contact a Ruhrpumpen Representative.

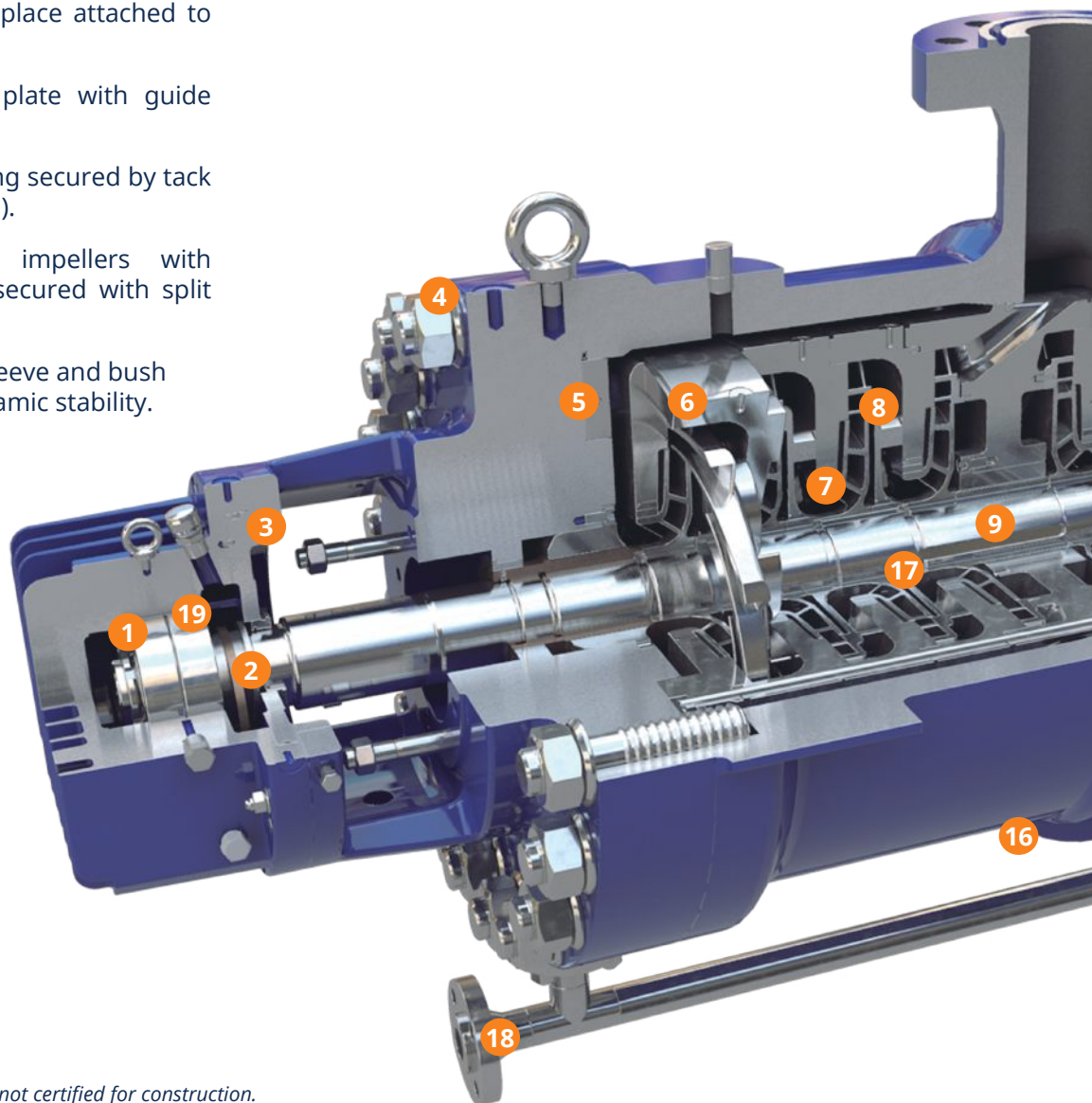
A- Line Barrel Pumps are suitable for almost every Oil & Gas application, including high-temperature and high-pressure services.

Materials of Construction

Material combinations per API 610 as standard. Other materials on special request.

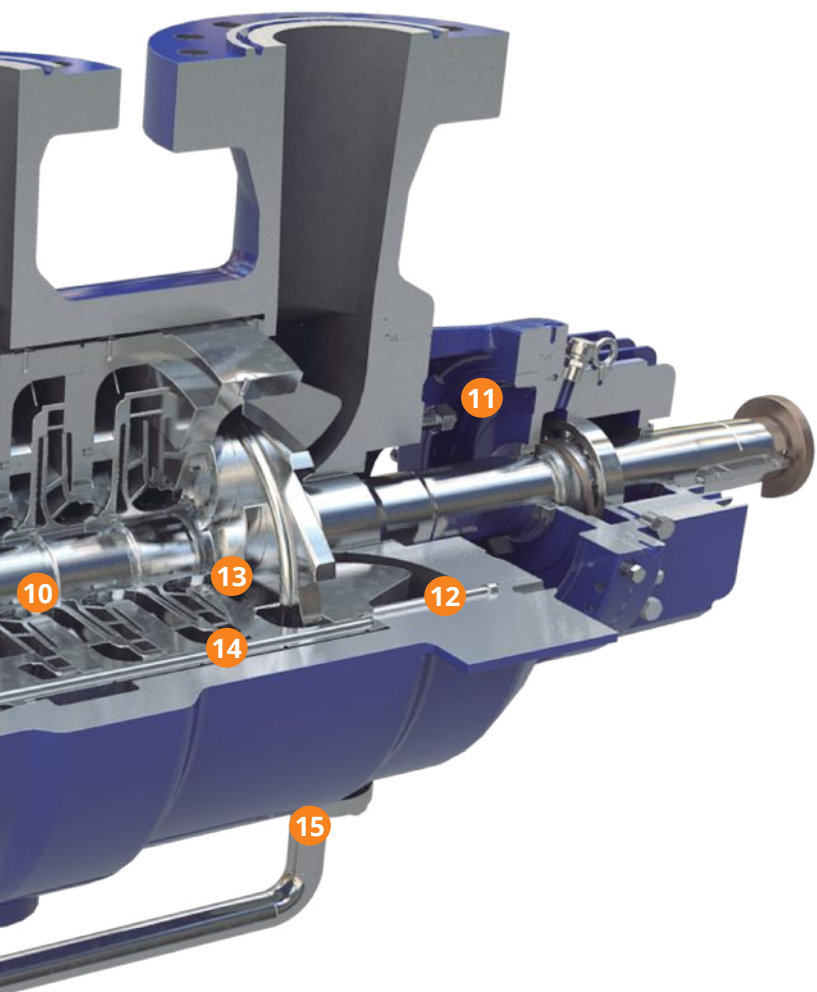
Characteristics

- 1** Rigid 360° bearing bracket support. No bearing housing end cover.
- 2** Lubrication sleeve can be used for bearing pull-off.
- 3** Clamped bearing cover without screws in direction of mechanical seal.
- 4** Option for mutli-screw mechanical tensioners (eg Superbolts) in place of standard bolting. These provide even faster disassembly by use of conventional hand tools only.
- 5** Bolted cover sealed by self-reinforcing metal o-ring. Ruhrpumpen's axial sealing solution allows fast removal of the inner cartridge, while leaving the barrel in place attached to the pipework.
- 6** Stage casing - interstage plate with guide vanes and diffuser.
- 7** Impeller and casing wear ring secured by tack welding (set screws optional).
- 8** Investment cast, closed impellers with transition fit and keyway, secured with split ring.
- 9** Close clearance throttling sleeve and bush provide additional rotordynamic stability.
- 10** Impellers axially secured in either direction by split rings.
- 11** Seal chambers designed for full MAPW and sized to accommodate any API 682 cartridge seal.
- 12** Bearing bracket bolted directly to Pull-Out-Cartridge.
- 13** Access to diffuser, guide vanes and channels from both sides.
- 14** Cartridge secured by tie-rods for easy assembly.
- 15** Balancing line, ASME B16.5 600 lbs, integrally flanged casing connections remove the need for welding to the pressure casing and allow easy removal/replacement of piping auxiliary piping.



Images for general arrangement use only, not certified for construction.

- 16** Discharge area drain. ASME B 16.5 rating according to MAWP.
- 17** Removable interstage sleeve acting as rotating wear ring.
- 18** Suction area drain via balancing line. ASME B16.5 600 lbs. Option for balancing line rated to full MAWP if required.
- 19** Double angular contact ball bearings 73 series BECB in O-arrangement.



PRODUCT DESCRIPTION

Horizontal Heavy Duty Barrel Pumps.

- API 610 11th edition BB5.
- Horizontal multi-stage arrangement.
- Opposed Impeller Design.
- Double-casing.
- Radially split.
- Barrel-type.
- Between bearings.
- Centerline mounted.
- Top-Top Nozzles as standard with options for sidetop and side-side orientations.

BENEFITS

- Material combinations per API 610 as standard. Other materials on special request.
- Barrel with integrated suction cover for high rigidity provides fast dis-assembly by requiring removal of only the DE bearing housing and mechanical seal, before removing the cartridge.
- Option for full pullout cartridge with separate suction cover, allowing the complete assembled cartridge to be removed from the barrel.
- Back to back rotor arrangement compensates axial thrust, allowing use of anti-friction bearings for many applications.
- Options for hydrodynamic bearings with forced feed lubrication system.

TYPICAL APPLICATIONS

The Ruhrpumpen back to back AB Model is designed for heavy-duty applications, such as:

- Water Injections
- High Pressure Applications
- Boiler Feed
- Cogeneration
- Pipeline
- Reverse Osmosis
- Amine / Ethylene Feed
- Hydrocarbon Charge

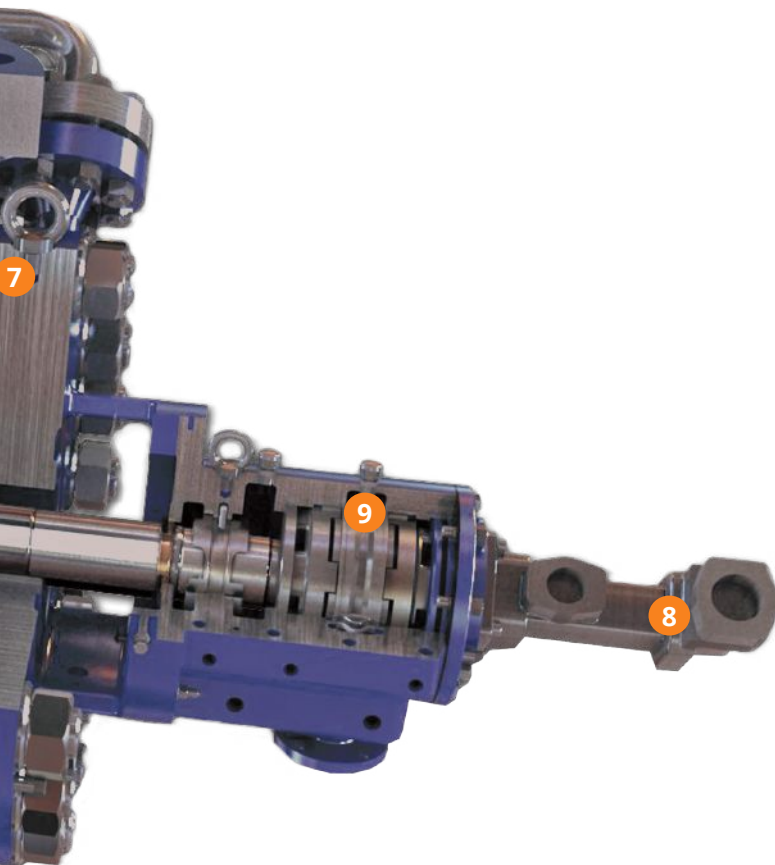
Characteristics

- 1** Bearing housing equipped with INPRO bearing isolators.
- 2** Rigid, 360° bearing bracket support for heavy-duty service and low vibration levels.
- 3** Investment cast, closed impeller with transition fit and keyway, secured with split ring.
- 4** Replaceable casing wear rings shrink fitted and secured by tack welding.
- 5** One-piece inter stage plate with guide vanes and integrated diffuser.
- 6** Optimized outlet for low noise level.
- 7** Radially split casing, full design pressure, centerline mounted. Forged and welded as well as cast version available.
- 8** Shaft driven lube oil pump available if required, for hydrodynamic bearings.
- 9** Force Fed Lubrication. Radial sleeve bearings and tilting pad thrust bearing available if required.
- 10** Balance drum designed to compensate axial thrust.



Images for general arrangement use only, not certified for construction.

- 11** Replaceable impeller wear rings. Wear ring coating on special request. Shrink fit and secured by tack welding for optimal run-out.
- 12** Mechanical seal chamber sized according to API 610 and API 682.
- 13** Rigid rotor design. Shaft end tapered with key as standard. Hydraulic fit optional.



PRODUCT DESCRIPTION

Horizontal Heavy Duty Barrel Pumps.

- API 610 11th edition BB5.
- Horizontal multi-stage with in-line impeller arrangement.
- Single suction impeller. Double suction on special request.
- Double-casing.
- Radially split.
- Barrel type.
- Between bearings.
- Centerline mounted.
- Centrifugal pump with axial thrust compensation by balancing drum.
- Top-top suction and discharge nozzles.

BENEFITS

- Material combinations per API 610 as standard. Other materials on special request.
- Modular design for small and large number of stages.
- "Blind"-stages for future upgrades available.
- Standard or Full-Pull-Out cartridge available.
- Stiff shaft design.
- Stepped shaft and transition fit for easy maintenance.
- Thrust balancing by balance drum.

BROAD APPLICATION RANGE

The Ruhrpumpen In Line A Model is designed for heavy-duty application, such as:

- Special Design for Hydraulic Decoking Applications Available
- Water Injection
- High Pressure Applications
- Boiler Feed
- Cogeneration
- Pipeline
- Reverse Osmosis
- Amine / Ethylene Feed
- Hydrocarbon Charge

Main Features and Options

A-LINE PRODUCT (A, AB, ADC, ADSL)

- Inline and Back-to-Back impeller arrangements.
- Up to 16 stages available.
- Short builds and small number of stages possible.
- Modular casing patterns with varying wall thicknesses to accommodate wide range of pressures with optimum weights.
- Straight bore, keyed tapered bore or hydraulic fitted tapered bore shafts available.
- Balancing of axial thrust load by opposed impeller arrangement or balance drum design.
- Antifriction bearings with ring oil lubrication and fan or water cooling as needed.
- Hydrodynamic bearings with force fed lubrication available.
- Double suction first stage for low NPSH applications.
- Standard balancing to grade G2.5 - G1.0 on special request.
- Drivers can be electric motors, turbines or combustion Engines.
- Speed regulation by API compliant gear boxes, variable frequency drives and variable speed fluid couplings.
- High speed running, up to 6000rpm, for high pressure applications using gearbox or fluid coupling.
- API 682 latest edition single, tandem or double seal arrangements. Pressurized or unpressurized seal supply systems.
- Lubrications systems per API 610 and API 614 chapter 2 or 3.
- Heavy duty flexible disc coupling - also acc. to API 671.
- Heavy duty baseplate design per API 610. Special designs e.g. for offshore applications with 3 point or 4 point mounting with AVLS or Gimbals available.
- Wide range of conditions monitoring instruments available.
- Special designs and features for the highly demanding services such as Decoking System Jet Pumps and Water Injection Pumps.
- Complies with major Industry and End-User standards such as NACE, Norsok and Shell DEP.
- High alloys, coatings and alloy cladding options for erosive and corrosive services.

Ruhrpumpen Design Supports Fast and Efficient Maintenance

- "Full pullout cartridge" with separate suction cover, allows the complete assembled cartridge to be removed from the barrel.
- Bolted cover sealed by self-reinforcing metal o-ring allows fast removal and replacement of the inner cartridge without the need for hydraulic tools and no risk of damaging elastomeric o-rings.
- Option for multi-screw mechanical tensioners (eg Superbolts) in place of standard bolting. These provide even faster disassembly by use of conventional hand tools only.



Other Ruhrpumpen Products

Horizontal Process Pump Single Stage with Permanent Magnetic



Heavy duty centrifugal process pump with permanent magnetic drive, API 685 pump standards, horizontal overhung, single stage, radially split, end suction.

Petroleum Refining, Production and Distribution, Petrochemical, Refineries, Heavy-duty Chemical, Gas Industry Services, Power Plants and Utilities.

Multi-Stage, Axially Split Casing Pump



Near-centerline mounted, Double volute casing, single or double suction, radial, closed impeller. Heavy duty process design according to API 610 latest edition (type BB3).

Fluid Injection, Oil Fields & Terminals, Water, Crude Oil & Oil Product Pipelines and Power Plants.

End Suction Fire Pump



Single-stage, radially split casing with flanged connections, enclosed impeller, foot mounted.

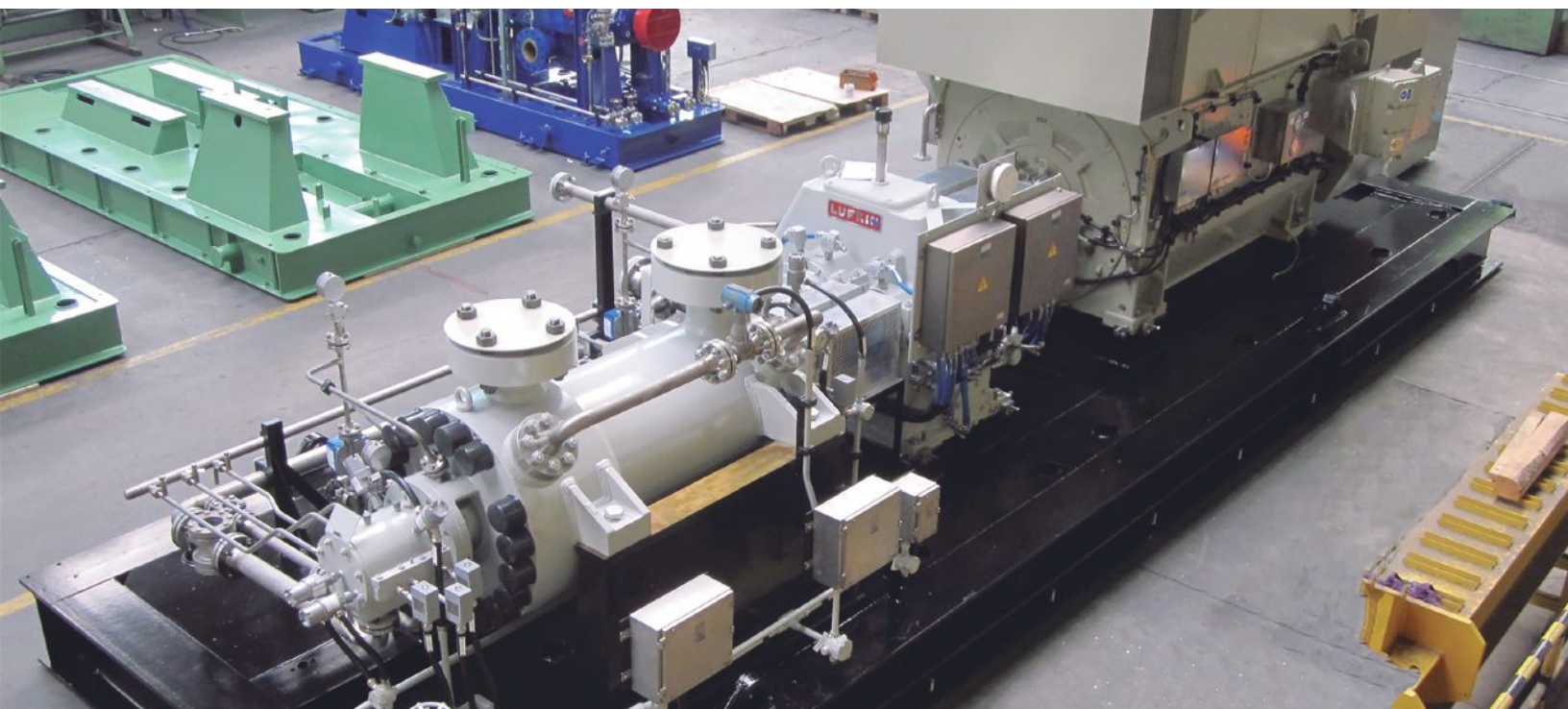
Petrochemical, Oil & Gas, Steel Industry, Automotive, Power Generation, Water Treatment, Pharmaceutical and General Process.



Vertical Barrel Pump

Low NPSH "Shockless Entry" first stage impeller (single or double suction), Single or multi-stage. Standard construction materials according to API 610 latest edition (type VS6).

Condensate, Power Plants, Municipal, Hydrocarbons, Pipeline and Refineries.



+75 years creating the pumping technology that moves our world

Ruhrpumpen is an innovative and efficient pump technology company that offers highly-engineered and standard pumping solutions for the oil & gas, power generation, industrial, water and chemical markets. We offer a broad range of centrifugal and reciprocating pumps that meet and exceed the requirements of the most demanding quality specifications and industry standards such as API, ANSI, UL, FM, ISO and Hydraulic Institute.

