RUHRPUMPEN

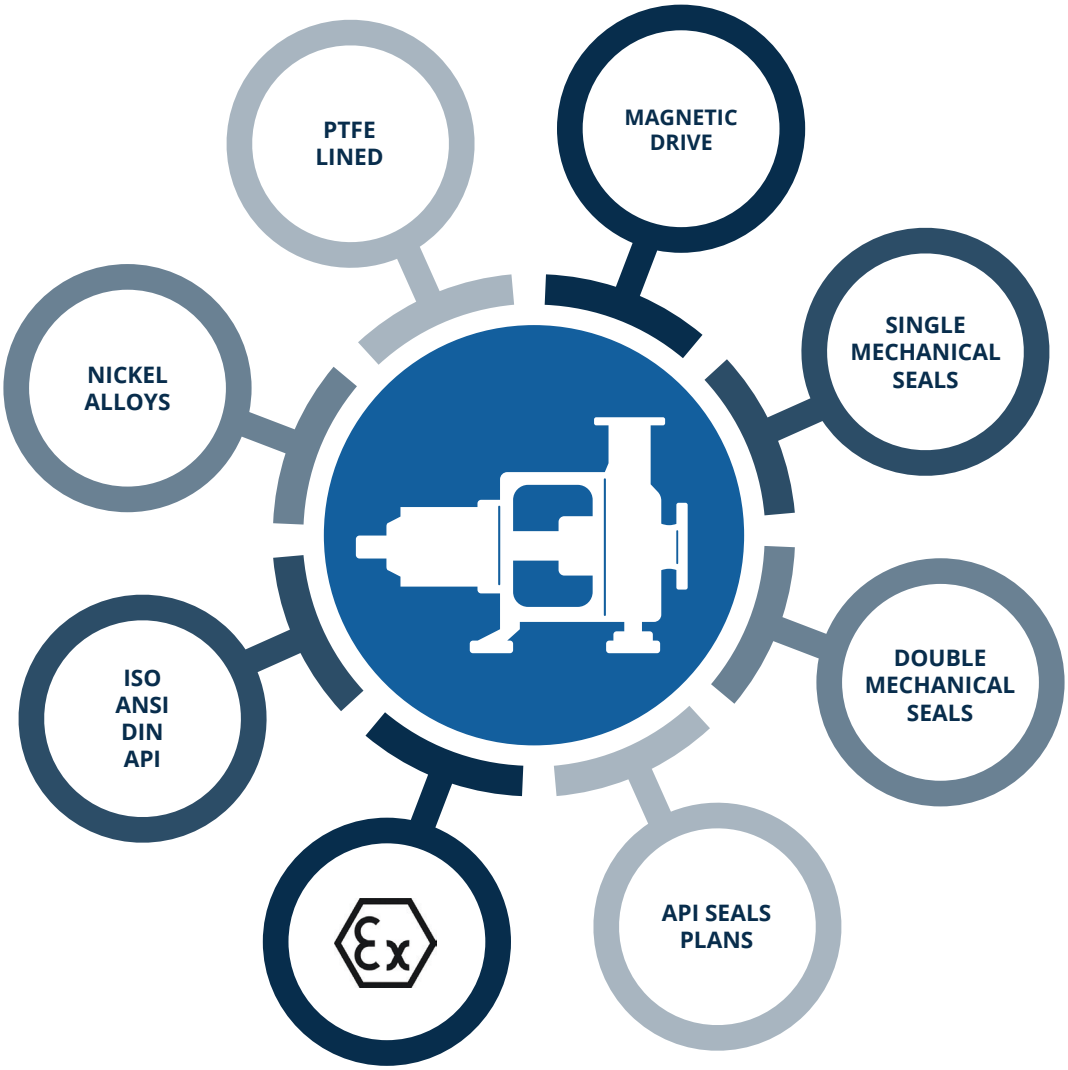
PUMPS FOR THE CHEMICAL INDUSTRY

CATALOGUE

CHEMICAL, PROCESS AND PHARMACEUTICAL **APPLICATIONS**

Ruhrpumpen offers 75 years of pump and sealing experience with toxic, corrosive and explosive fluids.

Chemical processing End-Users, OEM's, EPC's licensors and distributors across the world can all be sure that Ruhrpumpen is constantly developing more reliable and efficient pumping solutions.



Acids

Alkalis

Thermal Media

Aromatics with entrained solids

Basic Corrosive Chemicals

Cryogenic Refrigerants

Toxic Chlorine derivates

Mixed Waste Effluent

... All possible with the RUHR^{Chem} Family

SUPPLIER OF CHOICE...

PUMPING CHEMICALS WITH SECURITY...

Process and application knowledge is essential for long term reliability. Making the correct pump, seal, driver, base-plate and material selection is critical for long term trouble-free operation.

Long-Term Security: ISO 2858 full compliance is critical for long-term pump interchangeability. Ruhrpumpen is proud to match dimensional compatibility with Flow & Head conformity. Hydraulic curves are not stretched – they meet the ISO standard – and this gives owner and specifier added security. ISO 5199 / ISO 15783 and ANSI B73.1 / ANSI 73.3 (Sealed and Magnetic-drive) are rigorous design standards which underpin our European and USA based product families.

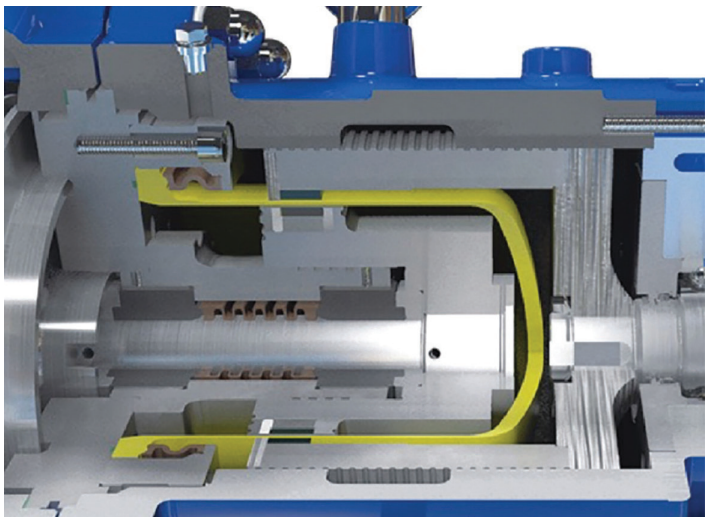
Corrosion Security: Ruhrpumpen offers four fundamental means of corrosion protection:

1. **Stainless Steel grades:** Superior 316L/CF3-M is the standard Ruhrpumpen grade for wetted pump parts. <0.03% controlled carbon content is a proven way to minimize the effects of intergranular corrosion by avoiding precipitated carbon at the grain boundaries. Higher carbon content options rely on heat treatment and added elements.
2. **Ni-Alloy Materials:** Ruhrpumpen has decades of metallurgical expertise with its in-house foundry. Duplex, Super-Duplex, Alloy-20, Hastelloys C & B, are corrosion-resistant alloys frequently produced.
3. **Titanium and Zirconium:** Pumps typically for high Chlorine-content media when only the highest level of solution is acceptable.
4. **PTFE-lined derivatives:** When corrosive media are being pumped at temperatures less than 180°C, our customers often prefer to use a pump that is lined with a universally corrosion resistant material like PTFE, PFA, PP, or PE.

Sealing Security: Statistics show us that the #1 mode of pumping failure lies with the sealing. Cartridge & Component **Mechanical Sealing** solutions run within an innovative seal chamber that maximises lubrication and cooling while facilitating gas/vapour/solids escape. Along with a wide range of single, double, and dry-gas mechanical seals; Ex-rated API sealing plans 52 and 53 are held in stock, so that our customers feel supported. Mechanical seals according to API682 are possible within the Ruhrpumpen Chemical pump family.

Magnetic Drive technology is available for the whole range of Ruhrpumpen Chemical pumps. ISO, ANSI, and API pumps are available in this seal-less design, and cover the very large "transnorm" sizes. Containment shells from Hastelloy and ceramic ZrO2 provide almost inert material compatibility with the most aggressive fluids. Ceramic has the benefit of reduced magnetic-field losses. Coupled to the Ruhrpumpen best-in-class hydraulic efficiencies; the ceramic containment option offers the ecologically-aware users a solution to low carbon footprint through reduced shaft power.

Dry running gas seals and Double-Containment Shell options are available when toxic, dangerous, and pungent liquids are being handled. Patented Secondary control features are standard pre-configured options with the Magnetic-drive pumps, and offers alarm possibilities for added safety and security in the event of any liquid breach.



Bearings Security: Up to 5 year (L_{10} 40,000hrs) life is available with the Ruhrpumpen Chemical Pump range. Three standard options are available: L_{10} 17,500, L_{10} 25,000, and L_{10} 40,000 hour life.

The bearings are protected from a choice of ISOMag, Labyrinth, or basic lip seals in which to preserve the rotating life-time.

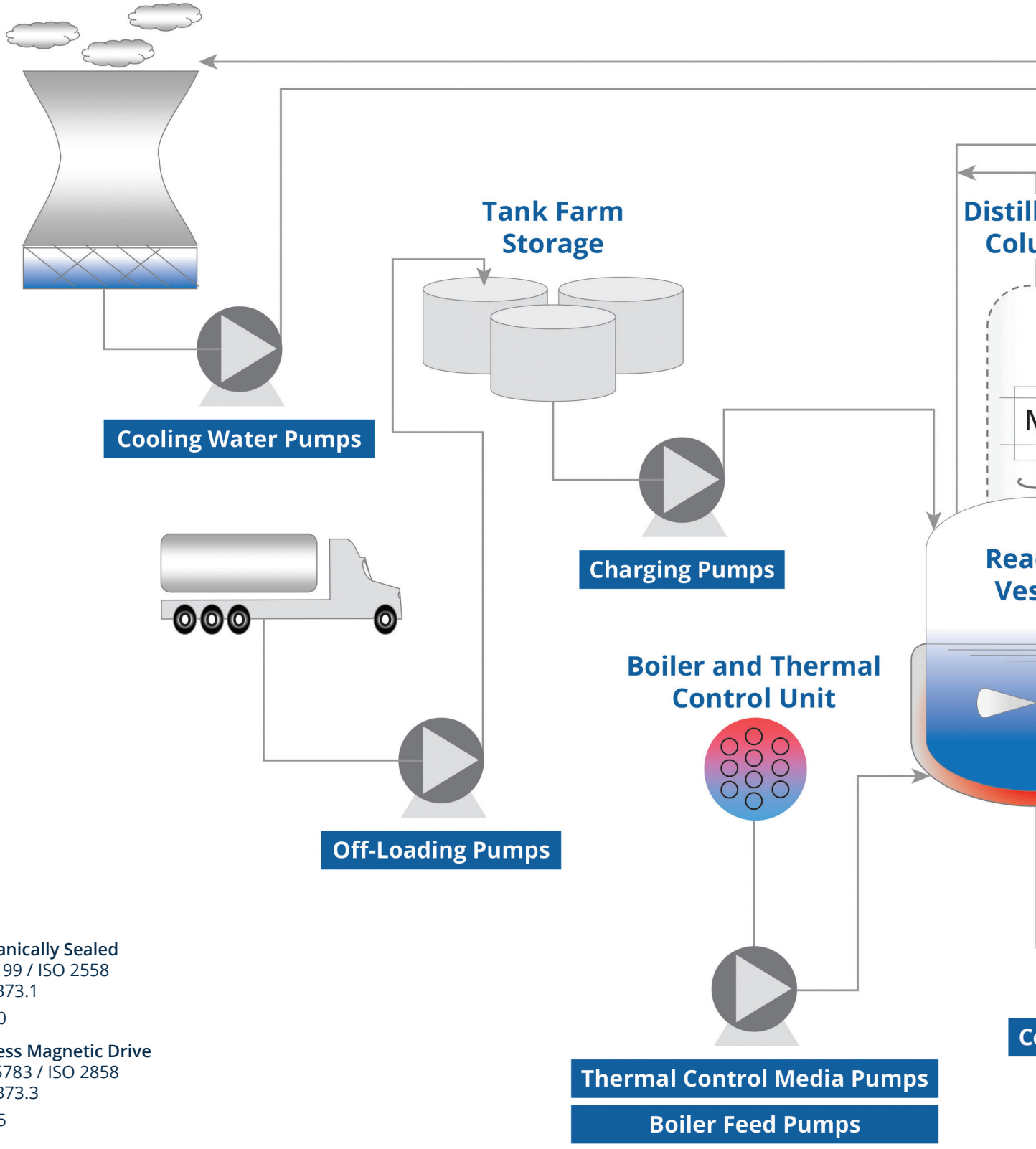
Base-Plates & Spill Security: Fabricated baseplates with drip-pans, drains, earthing, motor-alignment, and lifting provision are common-place in the chemical industry. ISO/ANSI PIP-type base-plates are offered as a pre-configured option with high-grade chemical works or marine based painting system. Stainless steel is also a standard option.

Underpinning the Chemical norm products, is the Ruhrpumpen API 610/685/674 portfolio for the applications where nothing but the toughest solution is acceptable.

True ISO 2858 curves, dimensions and interchangeability with the Ruhrpumpen ISO families

RUHRPUMPEN

CHEMICAL **APPLICATIONS...**



Mechanically Sealed
ISO 5199 / ISO 2558
ANSI B73.1

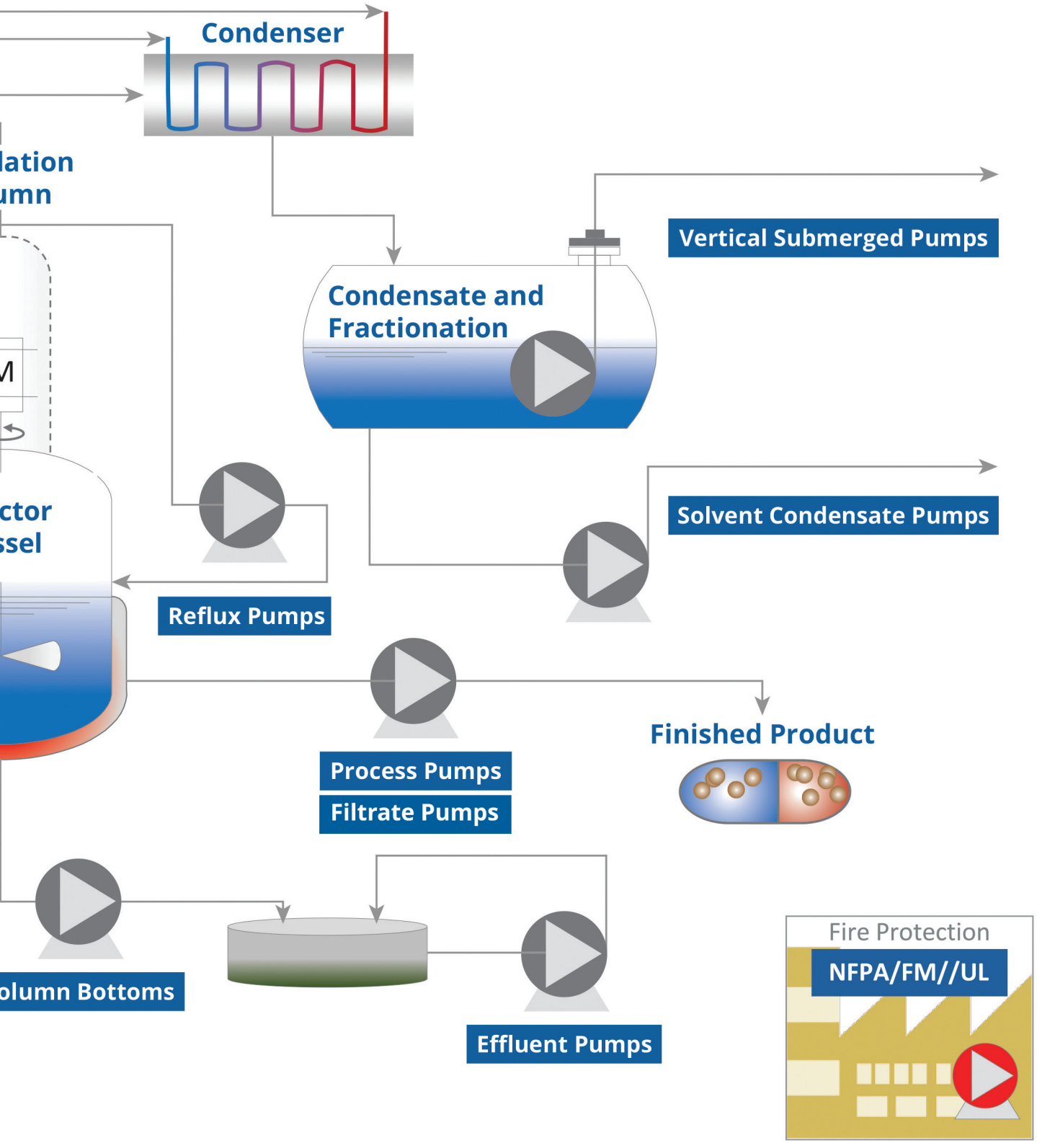
API610

Seal-less Magnetic Drive
ISO 15783 / ISO 2858
ANSI B73.3

API685

SUPPLIER OF CHOICE...

... BASIC **OVERVIEW**



CRP

ISO 2858 / 5199 Mechanically Sealed (OH1)

CHARACTERISTICS AND DESIGN FEATURES

- Single stage, radially split, overhung centrifugal pump.
- High-end shaft rigidity for reduced seal-face deflection.
- Single and dual mechanical seal and thermosyphon system options.
- True ISO 2858 hydraulic performance with enclosed impeller.
- Corrosion resistant material options.
- 17.500, 25.000 and 40,000 bearing life options.
- Replaceable wear rings.

OPERATING LIMITS

Capacity	up to 11,000 m³/h	Pressure	up to 25 bar
Head	up to 215 m	Temperature	-60 to 300 °C

CRP-M

ISO 2858 /15783 Seal-less Magnetically Driven (OH1)

CHARACTERISTICS AND DESIGN FEATURES

- Single stage, radially split, overhung sealless centrifugal pump.
- Multiple patented high-end features.
- 100% leakage free containment shell.
- Secondary containment and control options.
- Highly efficient magnetic drive, fully drainable.
- Corrosion resistant materials with Fluoropolymer lined options.
- Ceramic, Hastelloy, Titanium containment shell options.

OPERATING LIMITS

Capacity	up to 750 m³/h	Pressure	up to 25 bar
Head	up to 215 m	Temperature	-120 to 450 °C

CLP-M

ISO 2858 /15783 Seal-less Magnetically Driven (OH1)

CHARACTERISTICS AND DESIGN FEATURES

- Single stage, radially split, overhung sealless centrifugal pump.
- PTFE/PFA and other plastic lined options within a ductile cast iron casing.
- 100% leakage free containment shell.
- Positively keyed isostatically pressed lining.
- Metal core rigid impeller.
- High operating temperatures.

OPERATING LIMITS

Capacity	up to 300 m³/h	Pressure	16 bar
Head	up to 90 m	Temperature	-60 to 180 °C

CPP / CPP-L / CPO

ANSI B73.1 Mechanically Sealed with Choice of Open or Closed Impeller (OH1)

CHARACTERISTICS AND DESIGN FEATURES

- Single stage, radially split, overhung centrifugal pump.
- High-end shaft rigidity for reduced seal-face deflection.
- Single and dual mechanical seal and thermosyphon system options.
- Oversized bearings and oil frame.
- Corrosion resistant material options.
- Air-fin and liquid cooled bearing bracket options.
- Low flow / High head standard models available.

OPERATING LIMITS

Capacity	up to 1,150 m³/h	Pressure	up to 26 bar
Head	up to 235 m	Temperature	-60 to 315 °C

CPA-M

ANSI B73.3 Seal-less Magnetically Driven (OH1)

CHARACTERISTICS AND DESIGN FEATURES

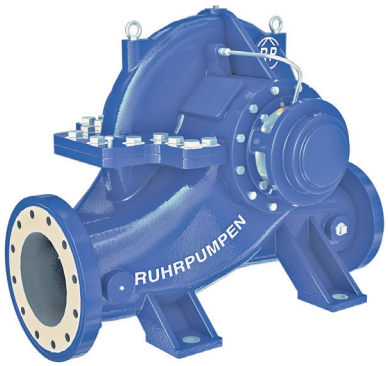
- Single stage, radially split, overhung sealless centrifugal pump.
- Multiple patented high-end features.
- 100% leakage free containment shell.
- Secondary containment and control options.
- Highly efficient magnetic drive, fully drainable.
- Corrosion resistant materials with Fluoropolymer lined options.
- Ceramic, Hastelloy, Titanium containment shell options.

OPERATING LIMITS

Capacity	up to 750 m³/h	Pressure	up to 25 bar
Head	up to 215 m	Temperature	-120 to 450 °C

ZW / HSC / HSD / HSL / HSR

Horizontal Split Casing Double Suction Pump (BB1)



CHARACTERISTICS AND DESIGN FEATURES

- High efficiency double suction impeller.
- Component or Cartridge Mechanical seals or packed gland sealing.
- Simple rotor removal for seal and bearing access.
- Vertical mounting options.
- Corrosion resistant material options (Stainless steels, duplex, super duplex, and other Ni Alloys).
- DIN & ANSI flange drilling options.

OPERATING LIMITS

Capacity	up to 31,800 m³/h	Pressure	up to 34 bar
Head	up to 673 m	Temperature	-60 to 150 °C

VTP

Multistage Vertical Turbine Suspended Bowl Pump (VS1)

CHARACTERISTICS AND DESIGN FEATURES

- Multi-stage vertical turbine centrifugal pumps with diffuser type bowl.
- Rigid shaft design with low deflection.
- Cartridge mechanical seal options.
- Collet or positively keyed impeller mounting options.
- Highly efficient hydraulic design.
- Up to 30 stages to efficiently match application requirement.
- Modular design with Canned/Caisson options (VS6).
- Various materials for pumping erosive & corrosive media.
- API 610 options.

OPERATING LIMITS

Capacity	up to 13,636 m³/h	Pressure	up to 74 bar
Head	up to 762 m	Temperature	up to 121°C

VSP / VSP-CHEM

Vertical Sump Pump with Open Sealing or Pressure Containing (VS4)

CHARACTERISTICS AND DESIGN FEATURES

- Up to 6m length and solids handling.
- ISO or ANSI volute and impeller hydraulic options.
- Semi-open, and closed, non-clog impeller options.
- Modular with other chemical pump ranges.
- Lip seal, packed gland, single & dual mechanical sealing.
- Ground pump-shaft quality.
- Free-flow filtered product and greased lubrication options.
- Highly efficient hydraulic design.
- Various materials for pumping erosive and corrosive media.
- API 610 options.

OPERATING LIMITS

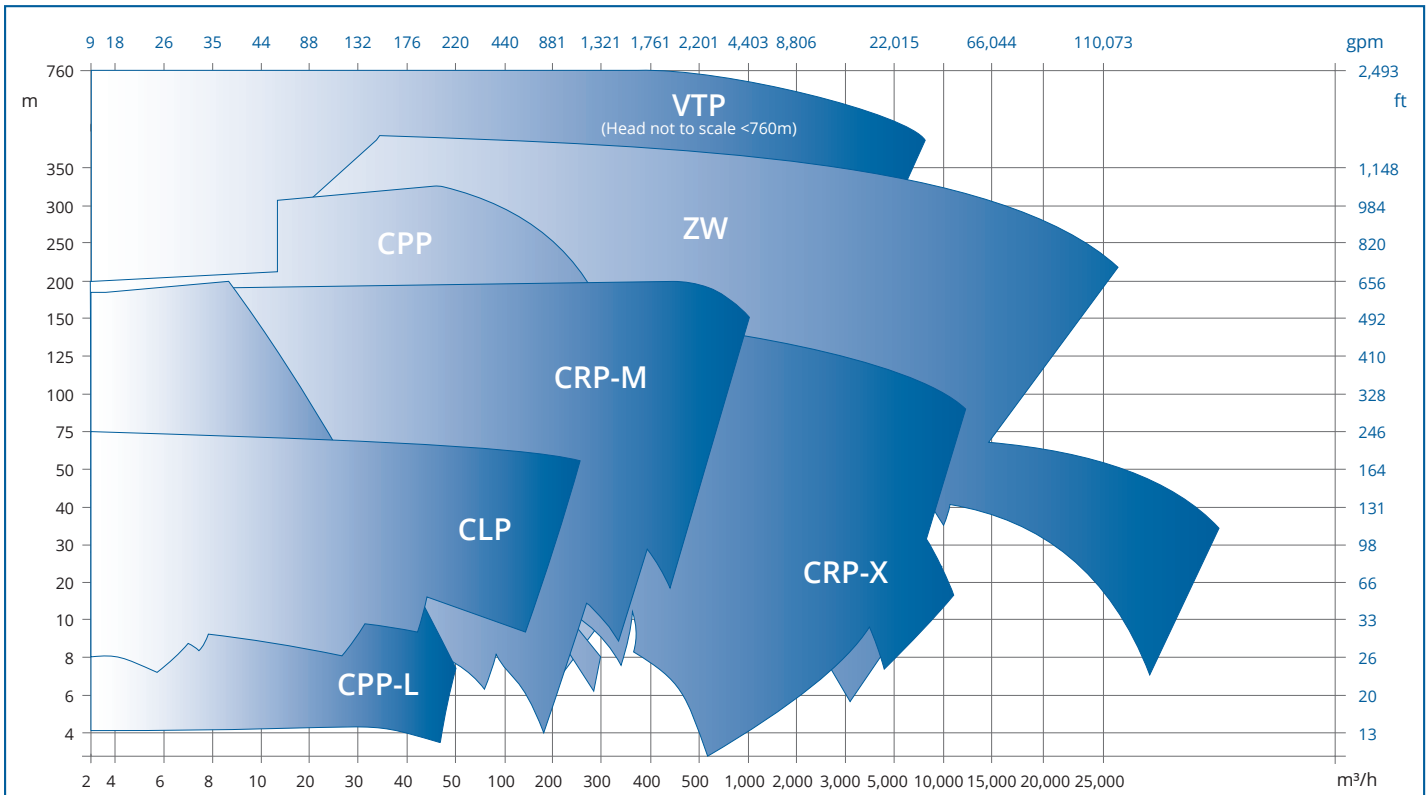
Capacity	up to 1,200 m³/h	Pressure	up to 40 bar
Head	up to 130 m	Temperature	up to 200°C

Wide Performance Envelope...

Select a technology that fits perfectly with your application, by choosing Ruhrpumpen hydraulics.

Efficiency plays a critical role in the Whole Life Cycle Cost of pumping equipment. With hundreds of available hydraulics within the Ruhrpumpen portfolio, there is always a curve that matches BEP (Best Efficiency Point) with the duty point of our customers.

A selection of common industrial pumps used within the chemical industry. Many more solutions available.



Typical Market Segments

- Chemical and Petro-Chemical Processing
- Pharmaceuticals and Fine Chemistry
- Steel and Primary Metal Manufacture
- Battery Manufacturing
- Agricultural Chemical Production
- Hydrogen Production
- Food and Beverage Processing
- Pulp and Paper
- Water, Waste-Water and Seawater Processing
- Textiles, Man-Made Fibers and Dyes
- Polymer Processing
- Mining and Mineral Extraction

Typical Applications

- Acid & Alkali Transfer
- Condensates and Distillation
- Solvents & Volatile Organic Compounds
- Boiler Feed
- Chemical Slurries
- Water and Wastewater Treatment
- Flood Defence
- Effluent and Waste
- Edible Oil Processing
- Thermal Control and Heat Transfer
- Filtration
- Cooling Water

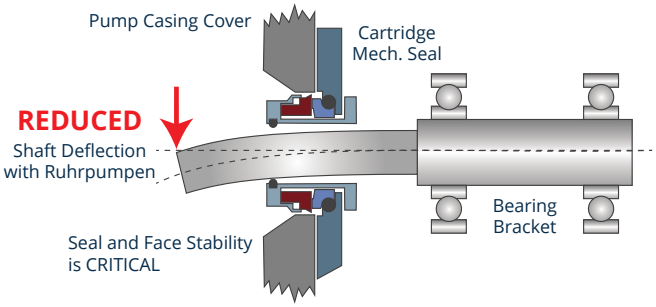
EN ISO 10204 3.1 / ISO 10474: Material traceability is prerequisite with Ruhrpumpen Chemical Pumps

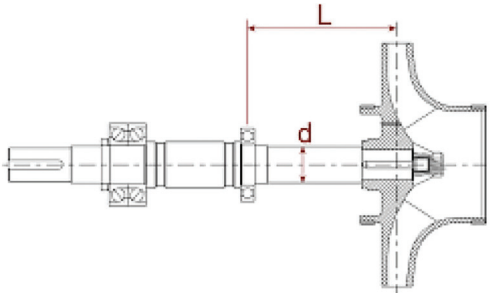
Ruhrpumpen Features for extended life and low cost of ownership

Shaft Stiffness to Reduce Shaft Deflection

Bearing life and seal performance can both be improved by increasing the shaft stiffness; a measure of which is the L^3 / d^4 ratio. We have designed our pumps with increased shaft diameters and short cantilever lengths to give class leading shaft deflections and improved reliability. Stable Shaft defection improves mechanical seal life.

Example: B48 Power Frame with CRP-X 200-150-400	
Overhung Shaft Length (mm)	188
Shaft Diameter (mm)	55
L^3/d^4	0.7



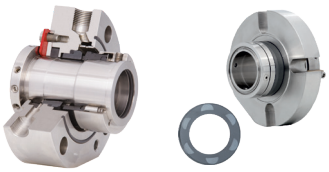


Mechanical Seals

Mechanical Seals benefit from a greatly improved lifetime if they are running in optimum conditions. Our seal chambers are designed to ensure that is possible. Conical shapes allow the liquid to flow around the seal, providing flushing and cooling of the seal faces. Flow modifiers prevent vortexes. This conical shape provides escape for vapour and/or entrained air rather than clinging to the shaft and restricting lubrication. Low shaft deflection, as above, ensures that the seal faces run evenly aligned and vibration is limited.

These are the options:

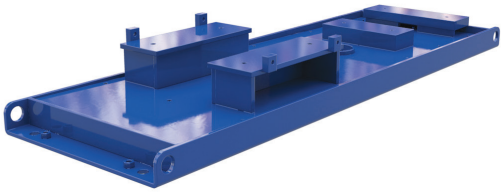
- Single component seals
- Single, double and dry gas cartridge seals
- API682 mechanical seals
- Various seal chambers: conical, cylindrical, and large bore
- Seal support systems, typically API plans 11, 52 or 53...



Baseplates

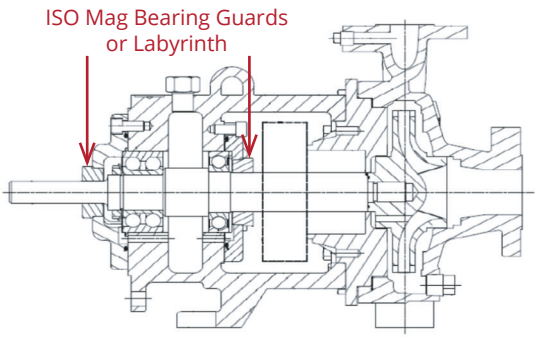
Standard painted carbon steel folded baseplates, with a flexible coupling, and non-sparking guard for Ex applications.
Options include:

- Stainless steel fabricated baseplate
- Cast iron baseplate
- PIP baseplate and industrial PIP-lite in carbon steel
- Lifting lugs and motor alignment screws
- Anchor bolts or anti-vibration mounts
- Drip-pans with flanged drain



SUPPLIER OF CHOICE...

Bearing Design

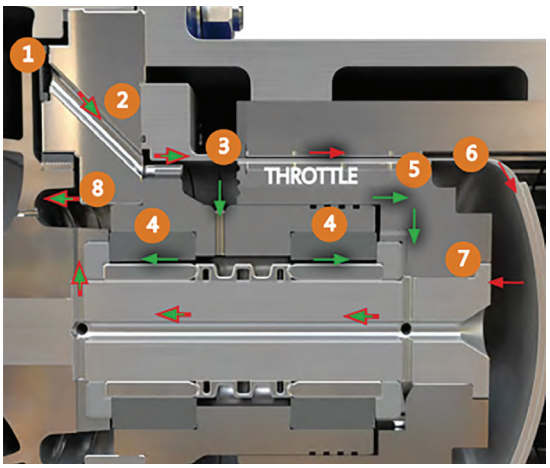


The double row, angular contact thrust bearings maximise stability and long-term reliability. Together with a robust shaft, the non-drive-end ball bearing optimises mechanical seal life and L_{10} bearing life up to 40,000 hours.

Our standard configurations use deep groove ball bearings to give L_{10} life of 17,500 or 25,000 hours. We can also fit roller bearings in which to offer more than 40,000 hours.

Seal-less Magnetic Drive

The containment shell, and internal pump clearances, are central to maintaining overall efficiency with this design. Ruhrpumpen offers a choice of ceramic and Hastelloy shells, coupled to a very high-end tolerance machine.

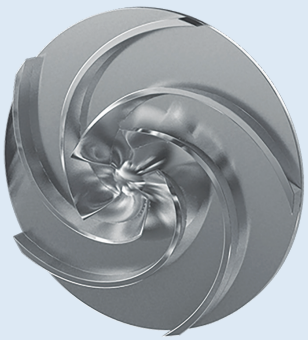


This gives our customers a best-in-class efficiency envelope across a wide range of pressures, at both cryogenic and elevated process temperatures. Highly elevated temperature reliability is achieved through an innovative pre-compression arrangement of the process-lubricated ceramic or carbon bearings. Together with a locking spring; this ensures internal stability as metallic components expand six-times more than ceramic. Internal flow effectivity is one more critical element for trouble-free operation, and this was modelled for extreme applications with our advanced Computational Fluid Dynamics software.

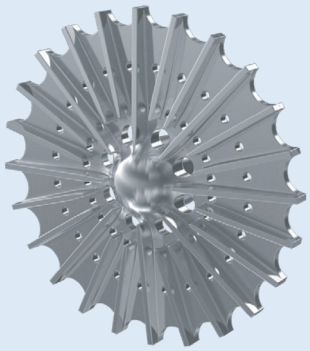
Impellers

Whether our customers require a closed, semi-open, non-clog, or radial impeller design, Ruhrpumpen has a solution. Closed impellers are fitted to our ISO range, and employ a shaft key with domed low NPSH nut. This helps when there is any chance of reverse rotation and aids with maintenance. Semi-open impellers are commonplace across the ANSI pump range, and benefit from solids handling with simple wear adjustment. Radial impellers offer a low-flow and high head relationship.

Closed Impeller
High Efficiency



Semi-open Impeller
Entrained Solids
Simple Wear Adjustment

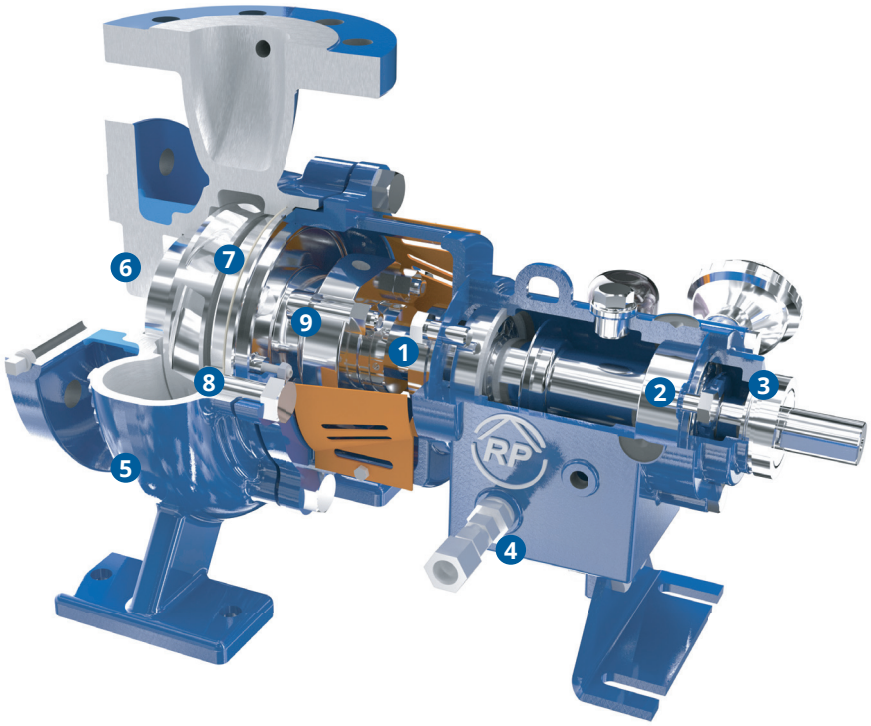


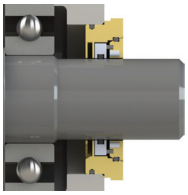
Radial Impeller
Low Flow/High-Head Applications

DISCLAIMER: All images throughout this brochure are for general illustration use only; not certified for construction.

CRP-X

Single stage, end suction, ISO process pump with mechanical sealing





ISOMag Bearing Guard

PUMP TYPE

Closed Impeller - ISO 5199 / 2858 Chemical Process Pump (OH1)

APPLICATIONS: Off-loading, Chemical transfer, Distillate, Waste Acids, Alkalis, Fuels, Solvents, etc.

Description

1 **Outstanding shaft stiffness:**
- Improved mechanical seal and bearing life, with high-end L^3/d^4 ratio.

2 **High performance bearings:**
- 17,500, 25,000, and 40,000 L_{10} Life options.
- Reduced vibration, and improved mechanical seal life.

3 **Magnetic or labyrinth bearing protectors:**
- Extended bearing life through enhanced long term lubrication.
- Magnetic bearing protectors are the next generation in oil-lubrication technology.

4 **Cooling coil bearing bracket options:**
- Improved bearing life in extreme temperatures.

5 **Wide range of materials available:**
- DCI, carbon steel (LCB), stainless steel (316L), duplex, hastelloy, zirconium...
- Optimum material selections. PFA lined options.

6 **Low NPSH requirement with inducer options:**
- Improved pump life and optimized power consumption.

7 **Highly modern shell-moulded True ISO 2858 Hydraulics:**
- High system efficiency with controlled velocities and long term interchangeability.

8 **Robust against reverse rotation and long lasting efficiencies:**
- Simplified maintenance.
- Positively keyed impeller.

9 **Multiple mechanical seal options within an innovative flow-modifying chamber:**
- Vapours, gasses and solids are routed away from the seal faces.
- Component, Cartridge, AP682 and packed gland options for maximum lifetime.

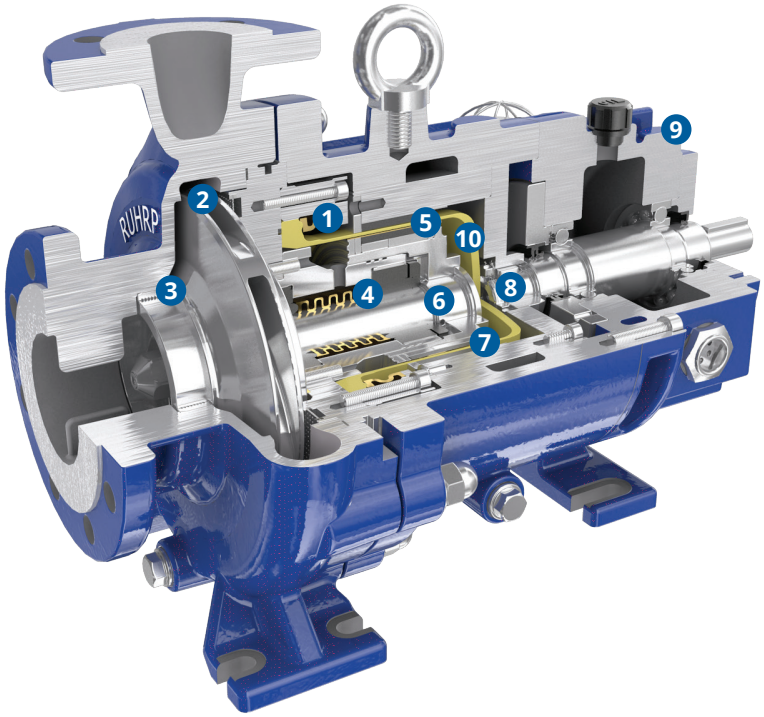
Benefits

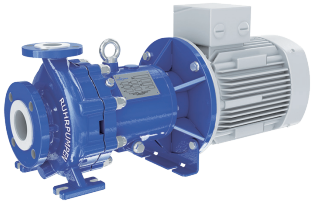
- True ISO 2858 Hydraulics.
- Best in class shaft deflection.
- Oversized bearing options.
- Replaceable wear rings.
- High reliability and low downtime.
- Multiple mechanical seals and systems.

SUPPLIER OF CHOICE...

CRP-M

Seal-less, single stage, end suction, ISO process pump with permanent magnet drive





Close coupled option.

PUMP TYPE

Closed Impeller - ISO 15783 / 2858 Seal-less Chemical Process Pump (OH1)

APPLICATIONS: Toxic, Pungent, Environmentally Unstable, Highly Corrosive, and High Vapour Pressure Liquids.

Description

1 **Thermally stable, sprung ceramic containment-shell joint:**
- Stability at extreme temperatures.

2 **Free-Flow filter:**
- Self cleaning, non clogging.

3 **Profiled wear rings:**
- High efficiency, over the life-time and replaceable.

4 **Thermal stability spring:**
- Pre-stressed ceramic bearing stability, for -50°C to +450°C.

5 **Pure magnet quality:**
- Long life and high temperature.
- 100% leakage free pump.

6 **Internal flow:**
- Balanced flow path for improved bearing lubrication and cooling, with reduced minimum safe flow and vibration.

7 **Secondary control and containment options:**
- Contact free Fluoropolymer lip seal.
- Double-wall containment shell.
- Non-contacting dry gas mechanical seal.
- Counter rotating spiral-grooved outer magnet carrier to resist potential leakage flow.

8 **Power-Boost propeller:**
- CO_2 reduction from reduced internal power and containment shell vortexing.

9 **High thermal conductivity heat-dissipating bearing bracket:**
- Effective bearing cooling.
- Water cooled bracket options available.

10 **Multiple containment shell options:**
- Hastelloy, Ceramic, Titanium, for inert compatibility.

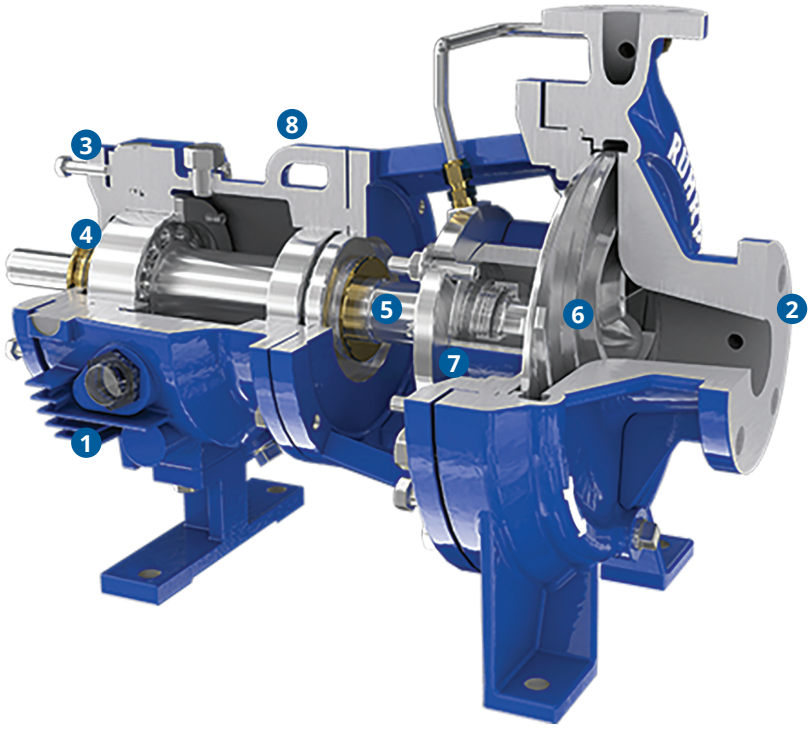
Benefits

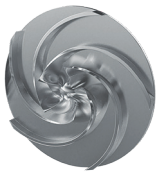
- Standard secondary control options.
- HIGHLY efficient hydraulic and internal flow path.
- Thermal stability.
- True ISO2858 Hydraulics.
- Keyed shaft and impeller.
- High reliability and low downtime.
- Replaceable wear rings.
- Air-cooled bearing bracket.

RUHRPUMPEN

CPO

Single stage, end suction, ANSI process pump with mechanical sealing





Semi-open Impeller
Entrained Solids
Simple Wear Adjustment

PUMP TYPE

Semi-Open Impeller - ANSI B73.1 Process Pump (OH1)

APPLICATIONS: Solids handling, Off-loading, Chemical transfer, Distillate, Waste Acids, Alkalis...

Description

1 **Best-In-Class power frame:**
- Only 3 oversized bearing frames for reduced spare-parts.
- Bearing L_{10} life up to 75,000 hours at max. speed & impeller diameter.
- Retaining plate on axial bearing for stability, rather than Circlip Snap-ring. Reduced Spare-parts.
- Fin-cooled.

2 **Low NPSH(r):**
- Highly modern CFD modelled impeller design.

3 **Long-Term efficiency:**
- Simple and accurate micrometer type impeller adjustment feature rather than jack-screws.

4 **Long-Term oil lubrication and bearing life:**
- Inpro VB45-S Labyrinth or Mag-bearing isolators as standard.
- 360° robust, self-oiling, sight glasses.
- Larger oil sump capacity.

5 **Extended seal life:**
- Robust solid shaft with outstanding shaft-deflections (L^3/d^4 ratio).
- Engineered seal chambers provide advanced seal flushing and cooling for longer life.

6 **Open impeller:**
- Simple wear adjustment.
- Solids handling.

7 **Mechanical seal options within an innovative flow modifying chamber:**
- Vapours, gasses and solids can escape away from the seal faces.
- Component, Cartridge, AP682 and packed gland options.
- Multiple mechanical seal piping plans and thermosyphon systems. Eg. Plan 52, 53, ...

8 **Simplified maintenance:**
- Back pull-out.
- Wear adjustment.
- Ergonomic lifting.
- Standard bearings and consumables.

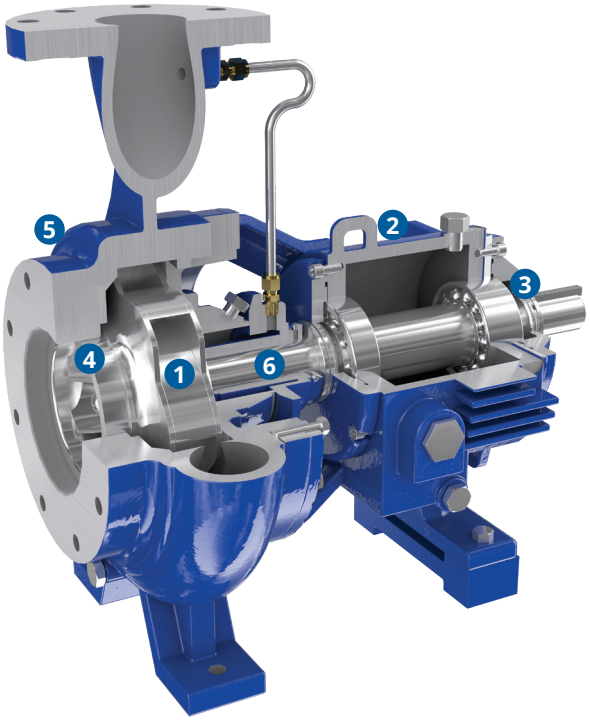
Benefits

- 75,000 highly robust power frame.
- Simple wear adjustment.
- Oversized oil capacity for bearing lubrication.
- Open impeller for solids.
- Extended seal life with reduced shaft deflection and innovative seal chamber.

SUPPLIER OF CHOICE...

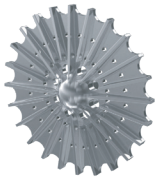
CPP

Single stage, end suction, ANSI process pump with mechanical sealing



Impeller Options

Closed Impeller
Simple Wear Ring
Replacement



Radial Impeller
Low Flow/High-Head
Applications

PUMP TYPE

Closed and Low-Flow-High-Head Radial Impellers - ANSI B73.1 Process Pump (OH1)

APPLICATIONS: Extreme flow and head envelopes ranging from very low-flow and high-head, to transnorm flow rates. Chemical, acids, waste effluent, distillate, column bottoms...

Description

1 **Dual flow-head model:**
- Low-Flow, High-Head option with Radial Barske type impeller for balanced hydraulics.
- Very large flow rates available with enclosed impeller.
- Modular design.

2 **Best-in-Class power frame:**
- Bearing L_{10} life up to 40,000 hours.
- Fin-cooled and cooling coil options.
- Double-row angular contact thrust bearings.
- Oil, Oil-Mist, and Grease lubrication.

3 **Magnetic or labyrinth bearing protectors:**
- Extended bearing life through enhanced long term lubrication.

4 **Long-Term efficiency:**
- Highly efficient hydraulic profile.
- Replaceable wear rings.
- Positively keyed enclosed impeller.

5 **Wide range of materials available:**
- Optimum material selections.
- DCI, carbon steel (LCB), stainless steel (316L), duplex, hastelloy, zirconium...
- PFA lined options.

6 **Extended seal life:**
- Outstanding L^3/d^4 stiffness levels of 0.7.
- Large bore seal chamber for seal cooling and flushing.
- Robust solid shaft.
- Multiple single & double mechanical seal options including component, Cartridge, and API682.

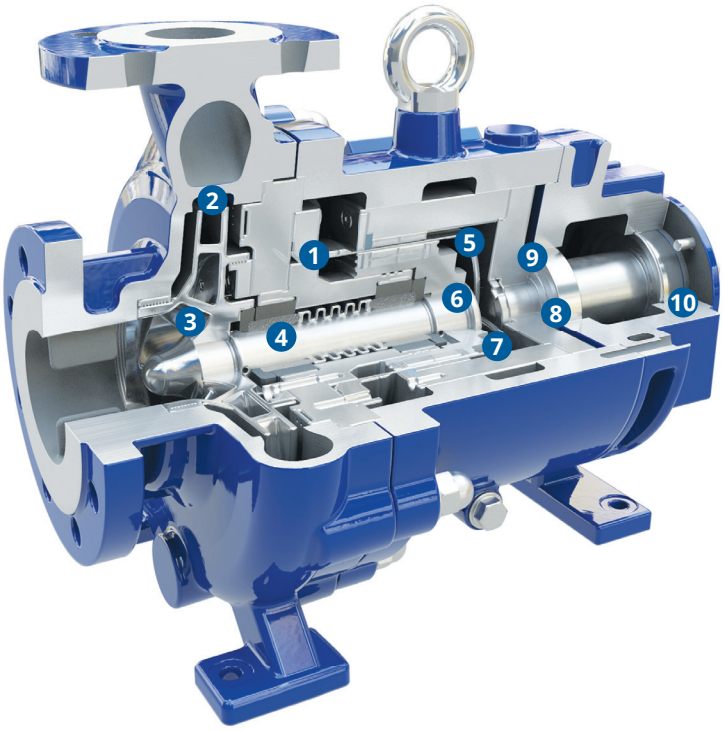
Benefits

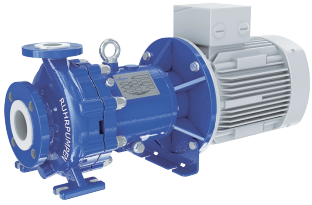
- Wide capacity range from 1 to 1150 m3/hr.
- Outstanding shaft deflection.
- Enclosed impeller.
- High thermal stability with cooled & jacketed options.
- Long-term efficiency and simple wear ring replacement.
- Positively keyed impeller.

RUHRPUMPEN

CPA-M

Seal-less, single stage, end suction, ANSI process pump with permanent magnet drive





Close coupled option.

PUMP TYPE

Closed Impeller - ANSI B73.3 Seal-less Chemical Process Pump (OH1)

APPLICATIONS: Toxic, Pungent, Environmentally Unstable, Highly Corrosive, and High Vapour Pressure Liquids.

Description

1 **Thermally stable, sprung ceramic containment-shell joint:**
- Stability at extreme temperatures.

2 **Free-Flow filter:**
- Self cleaning, non clogging.

3 **Profiled wear rings:**
- High efficiency, over the life-time and replaceable.

4 **Thermal stability spring:**
- Pre-stressed ceramic stability, for -50°C to +450°C .

5 **Pure magnet quality:**
- Long life and high temperature.
- 100% leakage free pump.

6 **Internal flow:**
- Balanced flow path for improved bearing lubrication and cooling, with reduced minimum safe flow and vibration.

7 **Secondary control and containment options:**
- Contact free Fluoropolymer lip seal.
- Double-wall containment shell.
- Non-contacting dry gas mechanical seal.
- Counter rotating spiral-grooved outer magnet carrier to resist potential leakage flow.

8 **Power-Boost propeller:**
- CO_2 reduction from reduced internal power and containment shell vortexing.

9 **High thermal conductivity heat-dissipating bearing bracket:**
- Effective bearing cooling.
- Water cooled bracket options available.

10 **Multiple containment shell options:**
- Hastelloy, Ceramic, Titanium, for inert compatibility.

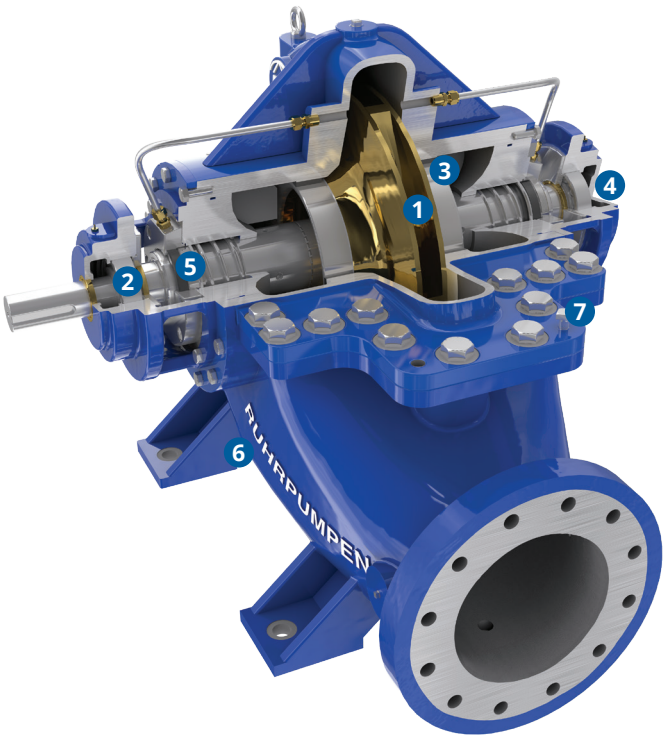
Benefits

- Standard secondary control options.
- Replaceable wear rings.
- HIGHLY efficient hydraulic and internal flow path.
- Keyed shaft impeller.
- Thermal stability.
- High reliability and low downtime.

SUPPLIER OF CHOICE...

ZW

Horizontal split case pump



Verticalised option.

PUMP TYPE

Double-Suction Impeller - Cooling Water Pump (BB1)

APPLICATIONS: Large flow rate cooling waters, chemicals, fuels, and other process liquids that require superior energy efficiency.

Description

1 **Superior hydraulic efficiency:**
- Double suction impeller reduces inlet losses.
- Highly modern design.

2 **High performance bearings:**
- L_{10} life up to 100,000.
- Short bearing span improved life.
- Grease or oil lubrication options.
- Robust 360° bearing cups.

3 **Simplified maintenance:**
- "Easy-out" rotating assembly for bearing, wear-ring and seal replacement.

4 **Heavy duty reliability:**
- Balanced internal rotating assembly.
- Free from axial thrust.
- Stable performance up to 26,000m3/hr throughout the full Ruhrpumpen BB1 portfolio.
- Double volutes.
- Solid shaft with Cr.Steel shaft sleeves.
- Replaceable wear rings.
- API 610 versions available throughout the whole Ruhrpumpen portfolio.

5 **Shaft sealing life:**
- Low shaft deflection, for improved life through increased seal face integrity.
- Component and cartridge mechanical sealing or gland packing.

6 **Various pump materials:**
- Ductile Cast Iron with 316 Stainless impeller as standard.
- Optional Bronze, Stainless Steels, Duplex, Carbon Steel, ...

7 **O-ring case-sealing:**
- Metal to metal contact for 100% internal alignment.
- Improved running efficiency.
- Extended pump life.

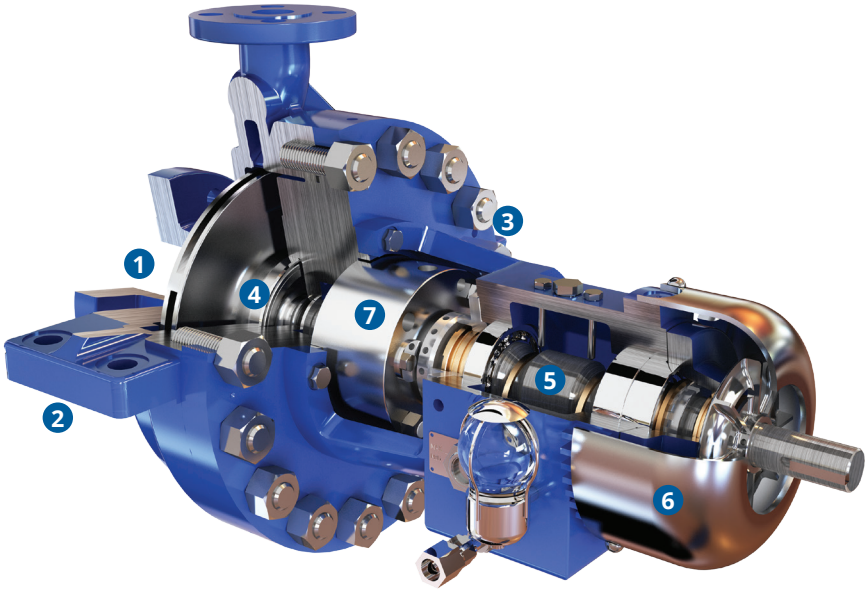
Benefits

- O-Ring casing seal for metal to metal contact and 100% alignment for improved life of bearings, seals and hydraulic efficiency.
- Simple "easy access" maintenance.
- Highly efficient and modern hydraulics.
- 100,000 bearing life options.
- Balanced internal rotating assembly.
- Free from axial thrust.

RUHRPUMPEN

SCE

API 610 Centre-line mounted process pump with mechanical sealing



SCE-M Magnetic Drive option.

Radial Impeller
Low Flow/High-Head
Applications

PUMP TYPE

Enclosed and Low-Flow / High-Head Radial Impellers - API 610 Process Pump (OH2)

APPLICATIONS: Petro-Chemical Processing, Ethylene Transfer, Hydrocarbon processing, Hot Oil, Liquid Gasses, Acids, Naptha injection and many more..

Description

1 **Hydraulic performance:**
- Low-Flow / High-Head option.
- More than 130 Hydraulic combinations for optimum fit.
- Low NPSH with inducer options.

2 **Heavy duty 90bar design:**
- High shaft-stiffness.
- Centre-line mounted.
- Back-pull-out design for easy maintenance.

3 **Highly configurable:**
- Almost any client specifications considered.
- NACE MR01-75, NORSOK, Shell ES135, ATEX, and more...

4 **Long-Term efficiency:**
- Highly efficient hydraulics.
- Discharge diffuser.
- Replaceable wear rings.
- Enclosed or axially-balanced Barske-type radial impeller.

5 **Best-in-Class power frame:**
- 4 oversized bearing brackets for heavy duty services.
- Exemplary low vibration levels.
- API610 compliant bearing life of minimum L_{10} 40,000 hours.
- Fin-cooled with cooling coil options.
- Oil and oil mist lubrication.

6 **Thermal reliability:**
- Temperature range -80°C to 450°C.
- Jacketed options for heating or cooling.
- Centre-line mounted.
- Cooled API Seal Plans.

7 **Extended seal life:**
- Outstanding L^3/d^4 shaft stiffness levels.
- Large bore seal chamber for seal cooling and flushing.
- Multiple single & double API682 3rd edition sealing options.
- Seal-less Magnetic Drive Option as Standard Product Line.

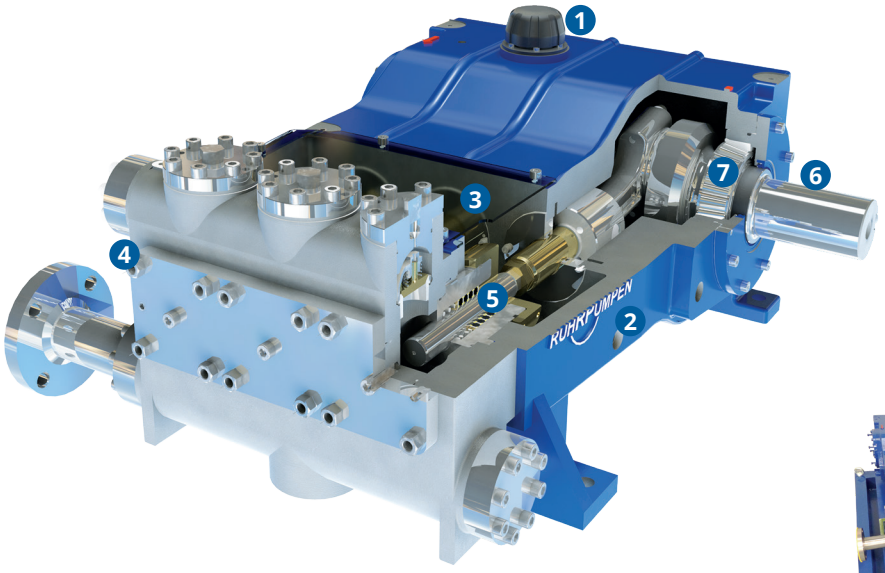
Benefits

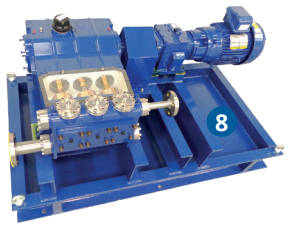
- Thousands of reliable installations across the whole World.
- Long term reliability and efficiency.
- Experienced with most engineered client specifications.
- Globally accepted API-level pump partner.
- Wide flow-head performance envelope.
- Flows up to 3200 m3/h and Head up to 480m.

SUPPLIER OF CHOICE...

RDP

API 674 Reciprocating Plunger Pumps





Engineered packages.

PUMP TYPE

Triplex and Quintuplex - API 674 / ISO 13710 High Pressure Process and Injection Pump

APPLICATIONS: Methanol injection, Glycol circulation, Water treatment, Hydrocarbon condensates, CO2, Ammonia & Fertiliser Production, ...

Description

1 **Highly robust:**
- Ductile cast iron crankcase.
- Solid cast rear cover.
- Low noise (<85dba).
- Extremely low vibration.

2 **Low emission options:**
- Sealed rod box option.
- N2 purging.
- Flanged rod box drain lines.
- Seal leakage detection systems.

3 **High-Performance:**
- Highly efficient modern design.
- Reduced NPSH(r) with in-line valve cartridges.

4 **Simplified maintenance:**
- Access plugs permit easy maintenance of valves, seats and plungers.
- "Cartridge Pull-Out" assembly.
- Tapered valve seats with reduced O-ring necessity.

5 **Highly reliable:**
- Packing lubrication systems.
- Multiple seal-plans.
- Carbide hard faced plungers.
- Titanium Nitride coated distance pieces for low friction with increased seal life and corrosion resistance.

6 **Space and ergonomics:**
- Direct drive mountings.
- Vertical and horizontal configurations.

7 **25 Year life acc API674:**
- High strength nitrided / ground wrist pins and crankshaft.
- Specialized plain bearings and connecting rod materials for higher inlet pressures.
- High load tapered roller bearings.

8 **Global client specifications:**
- NACE MR01-75.
- NORSOK.
- Shell ES135.
- Many others...

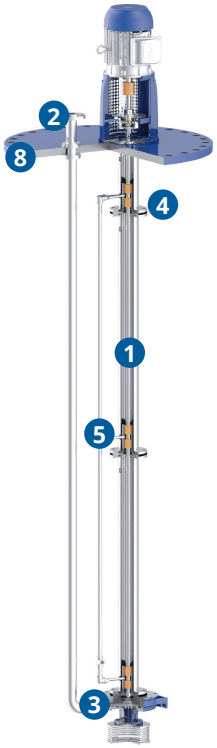
Benefits

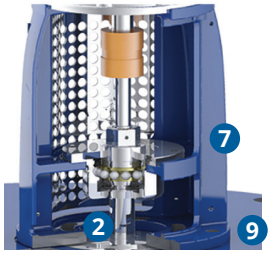
- Highly engineered design.
- Low emissions.
- 25 year life.
- Very quiet.
- Engineered to global client specifications.
- Bespoke packages.
- Flows up 400 m3/h and Pressures up to 1100 bar.

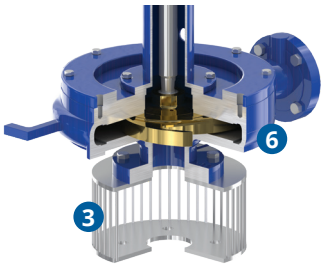
RUHRPUMPEN

VSP

Vertical Sump Pump with Mechanical Sealing, Lip Seals or Seal-less Configurations







PUMP TYPE

Closed or Semi-Open Impeller - Process Pump (VS4)

APPLICATIONS: Open Sump or Sealed/Pressurised closed Vessel Pump for aggressive chemicals undergoing process reaction, fractionation or effluent treatment.

Description

1 **Robust shaft design:**
- Long term reliability.
- Exact lengths available up to 6.1m.
- Heavy duty polished ground finish shaft.
- Shaft sleeve options.

2 **Flexible shaft sealing options:**
- Vented (open) seal.
- Lip or mechanical seals.
- Sealed gasketed mounting plate option for pressurised vessel integration.

3 **Basket strainer:**
- Reduced chance of clogging improved life.

4 **Anti-friction shaft bearings:**
- Bronze inside Cast Iron.
- Petro-coke tape or Fluoropolymer options.

5 **Shaft lubrication:**
- Product lubricated.
- Ergonomic grease nipples.
- Filtered product lubrication options.

6 **Impeller matched to process fluid:**
- Non-Clog type impellers for high solids.
- Inlet basket strainer.
- Keyed impellers.

7 **Simplified maintenance:**
- Standard drive and coupling options for IEC / NEMA off-the-shelf motors.
- Ergonomically positioned grease points.
- Replaceable petro-coke tape.
- Double row angular contact ball bearings.

8 **PED rated sole plate:**
- Sealed tank installations.

9 **Engineered options:**
- Level and vibration indication.
- PED fully sealed.
- Double seals and systems.
- Jacketed.

Benefits

- High-end build quality.
- Highly efficient hydraulic.
- Reliable anti-friction shaft bearings with polished shaft and effective lubrication.
- Wide non-clogging impellers or ISO 2858 hydraulics.
- PED Sealed sole-plate options for pressure vessel integration.
- Extended life with standard motor, muff-coupled, and enhanced with double row ball bearings.

SUPPLIER OF CHOICE...

VTP

Vertical Turbine Pump with Packed Gland or Mechanical Sealing Configurations

Vertical Barrel Pump

Low NPSH(r) first stage impeller
Sub-ground barrel for increased NPSH(a)
Heavy duty designs according to API 610 (VS6).

PUMP TYPE

Low NPSH Suction Impeller Vertical Suspended Bowl Pump (VS1)

APPLICATIONS: Cooling and process water coming from deep wells, rivers and other natural sources. Condensate extraction and other liquids held at their boiling point (eg. liquid gasses)

Description

1 **Highly efficient and lowest cost of ownership:**
- Coated internal options for enhanced efficiency.
- Polished ground shafts with low anti-friction bearing materials.
- Suction bell intake with vortex breaker.
- Low NPSH and high efficiency first stage impeller.
- Highly modern hydraulic design.

2 **Material options:**
- Process optimisation.
- Cast Iron, Stainless Steel, Carbon steel, Bronze, duplex, etc.

3 **Rigid shaft and column assembly:**
- Exact lengths available up to 50m (160ft).
- Optional shaft sleeves.
- Threaded or welded flange column pipe options.

4 **Long term reliability:**
- Ring and key or collet mounted impellers.
- Replaceable wear rings.
- Sand and grit resistance collar.

5 **Submersible motor options:**
- "Extended" length for deep-well.

6 **Shaft lubrication:**
- Product flow lubrication.
- Oil or grease lubrication options with ergonomically located grease nipples.

7 **Canned "Caisson" barrel options:**
- Increased NPSH(a).
- No interstage seals and gaskets.
- Totally enclosed stage hydraulics.
- Liquid gasses and condensates at their boiling point and vapour pressure.

Benefits

- Highly efficient and oversized bowl assembly.
- Low NPSH(r) anti-vortexing first stages with basket strainer and barrel options.
- Sand-resisting collar, replaceable wear rings and bearings.
- Epoxy coatings and efficiency enhancers.
- Submersible options.
- Interchangeable impellers throughout the whole pump.

RUHRPUMPEN

A SELECTION OF OTHER PROCESS PUMPS ...

SCE-M

Horizontal Single Stage Pumps with Permanent Magnetic Drive API 685 (OH2)

CHARACTERISTICS AND DESIGN FEATURES

- Radially split.
- Seal-less magnetic drive.
- Centre-line mounted casing and lantern.
- End suction arrangement.
- Best in class efficiency and power.
- Secondary containment options.
- Replaceable impeller and casing wear rings.
- Seal-less, no mechanical seal.

OPERATING LIMITS

Capacity	up to 2200 m³/h	Pressure	up to 40 bar
Head	up to 330 m	Temperature	-120 to 450 °C

ZM

Axially Split Case API 610 Centrifugal Pumps (BB1 type)

CHARACTERISTICS AND DESIGN FEATURES

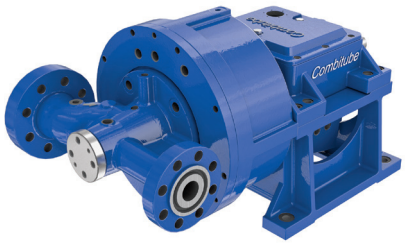
- Axially split, horizontal, single or double stage (for higher heads) centrifugal pump.
- Foot or near-centre-line mounted.
- Double volute casing.
- Highly efficient double suction, closed impeller.
- Thrust compensation by double suction impeller.

OPERATING LIMITS

Capacity	up to 20,000 m³/h	Pressure	up to 145 bar
Head	up to 1,200 m	Temperature	up to 205 °C

COMBITUBE

Low Flow, High Head, Pitot Tube Pumps



CHARACTERISTICS AND DESIGN FEATURES

- Stable operation at any point on the performance curve.
- High pressure pump with very low wear parts.
- Pulsation free technology.
- Only one mechanical seal at suction pressure.
- Trouble-free operation at very low flows.
- Solids and gas/vapour tolerance.

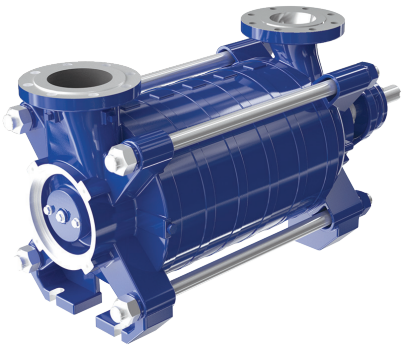
OPERATING LIMITS

Capacity	up to 80 m³/h	Pressure	up to 160 bar
Head	up to 1480 m	Temperature	up to 200 °C

... FOR CHEMICAL AND OIL & GAS APPLICATIONS.

GPA

Multistage Centrifugal Ring-Section Pumps



CHARACTERISTICS AND DESIGN FEATURES

- End-Suction option for low NPSH(r).
- Only one shaft seal, with product lubricated non-drive end sleeve bearing.
- NEW Highly efficient hydraulic design.
- Low pressure sealing chamber with many sealing options.
- Modular design.
- 400 bar high pressure API610 (BB4) GP version available.

OPERATING LIMITS

Capacity	up to 900 m³/h	Pressure	up to 62 bar
Head	up to 620 m	Temperature	up to 180 °C

AB

Radially Split, Multi-Stage, Double Case, Barrel Type Pump (BB5)

CHARACTERISTICS AND DESIGN FEATURES

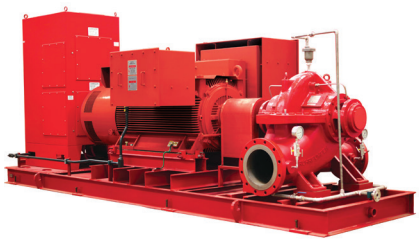
- Heavy-duty process design according to API 610 latest edition.
- Inline and back-to-back impeller arrangements.
- “Blind” stages for future upgrades available.
- Antifriction and hydrodynamic bearing arrangements.
- Forged and casted barrel designs.
- Axial sealing of barrel/cover for fast and trouble-free maintenance.

OPERATING LIMITS

Capacity	up to 1,400 m³/h	Pressure	up to 450 bar
Head	up to 4,200 m	Temperature	up to 450 °C

Fire Protection Packages

UL / FM / EN12845 Approved Electric and Diesel Engine Driven Fire Pumps



CHARACTERISTICS AND DESIGN FEATURES

- NFPA 20 design.
- Horizontally split case, Vertical Turbine, Vertical In-line, and Horizontal End-Suction Pump options.
- Electric motor and Diesel engine driven.
- Rigid base-frames, Controllers, Valves, Double wall fuel tanks, Jockey pumps, etc.
- Containerised Fire-Rated Pump House drop-in-place modular options.
- Material combinations for sea and brackish water.

OPERATING LIMITS

Capacity	150 to 5000 USgpm	Pressure	up to 16 bar
Head	up to 339 PSI	Temperature	up to 250 °C

RUHRPUMPEN

+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.

Ruhrpumpen Plants

- ARGENTINA, Buenos Aires
- BRAZIL, Rio de Janeiro
- CHINA, Changzhou
- EGYPT, Suez
- GERMANY, Witten
- INDIA, Chennai
- MEXICO, Monterrey
- UK, Lancing
- USA, Tulsa

Manufacturing plant & service center

Service center