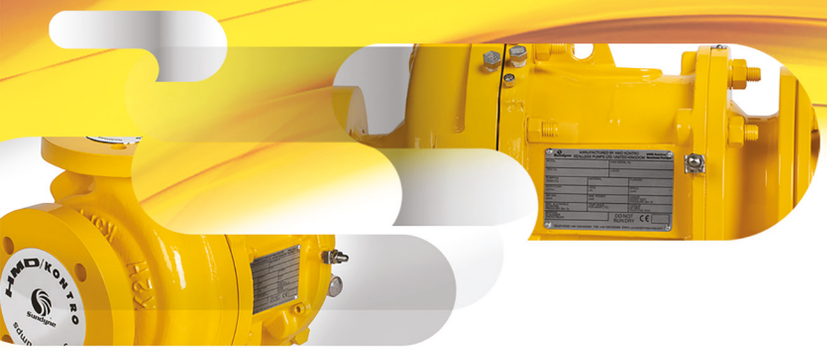


HMD KONTRO
Sealless Pumps

Sealless Magnetic Drive Pumps for Chemical & Industrial Markets

Sundyne®

ANSIMAG

A Full Range of Chemical and General Service Sealless Pumps

The Magnetic Drive Solution for Chemical & Industrial Applications

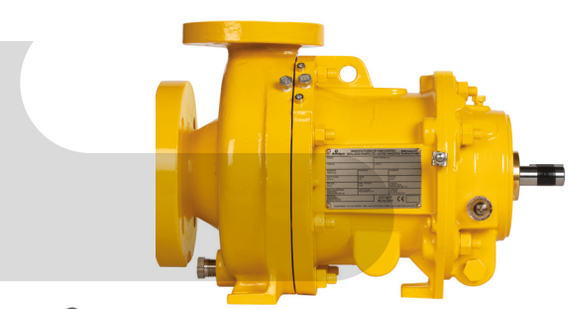
Featuring a broad portfolio of sealless magnetic drive pumps, Sundyne HMD Kontro and ANSIMAG are leading suppliers of world-class fluid handling equipment to the chemical and industrial sectors. Delivering high efficiency pumping solutions with industry-leading reliability and optimum overall life-cycle value, the Sundyne HMD Kontro metallic and ANSIMAG non-metallic sealless pump ranges incorporate the latest magnetic drive pump technology meeting the needs of a wide range of pumping applications.

The chemical, petrochemical, pharmaceutical and general process industries demand greater operational safety and environmental protection. With full compliance to design standards, HMD Kontro and ANSIMAG are well positioned to satisfy a wide range of fluid handling needs whilst meeting a broad spectrum of specific industry requirements.

Innovators in Sealless Pump Technology

Since HMD Kontro pioneered the first magnetic drive pump in 1947 and ANSIMAG developed the first ETFE-lined sealless pump in 1985, both companies have continued to be at the forefront of sealless pump development supplying technologically advanced pump solutions to the chemical and industrial sectors.

With both HMD Kontro and ANSIMAG brands in the portfolio, Sundyne offers the broadest range of metallic and lined sealless magnetic drive pump products on the market providing an alternative to the traditional mechanical seal pump.



Sealless Pumps to ASME/ISO Standards

HMD Kontro and Ansimag pumps are designed in accordance with current ASME and ISO industry standard requirements for pump designs, sizes and dimensions:

- ASME B73.3
- ISO 2858
- ISO 15783

Chemical and Industrial Applications for HMD Kontro and ANSIMAG Sealless Pumps

HMD Kontro and ANSIMAG sealless pumps have been developed to safely handle hazardous, toxic, corrosive and aggressive liquids with zero leaks or product emissions, meaning they are well suited to many of the pumping services found within these chemical markets.

Chlor-Alkali

A significant industry within the chemical market that produces chlorine (sodium chloride) and caustic soda (sodium hydroxide), which are used in the production of many other chemical products.

Agricultural Chemicals

The production of various agricultural chemical agents including herbicides, insecticides and fertilizers.

Fine / Inorganic Chemicals

Includes water, salts, acids and bases which are used in virtually every industry. Specialty chemicals such as acids require safe handling.

Isocyanates / Polyurethane

Used primarily in the automobile industry to make paints, coatings, foams, car seats and rubber, but also in construction for varnishes and building insulation materials. Isocyanates can include carcinogenic compounds and are harmful to human health, so safe handling is a priority.

Petrochemical

The organic chemicals derived from oil and gas via hydrocarbon cracking and chemical processing. Feedstocks from refineries such as ethylene, propylene, methanol, hydrogen are used in petrochemical processing to produce polymeric chemicals for industrial use.

HMD Kontro and ANSIMAG pumps for safe handling of chemicals worldwide

Typical chemical pump applications for HMD Kontro and ANSIMAG Sealless Magnetic Drive Pumps include:

Chemical Processing

- Chlor-Alkali
- Pesticides
- Insecticides
- Herbicides
- Fertilizer
- Solvents
- Isocyanates
- Polycarbonates
- Ammonia
- Methanol
- Inorganic Chemicals

Water / Wastewater Treatment

- Sodium Hydroxide
- Sulphuric Acid
- Sodium Hypochlorite

Battery Manufacturing

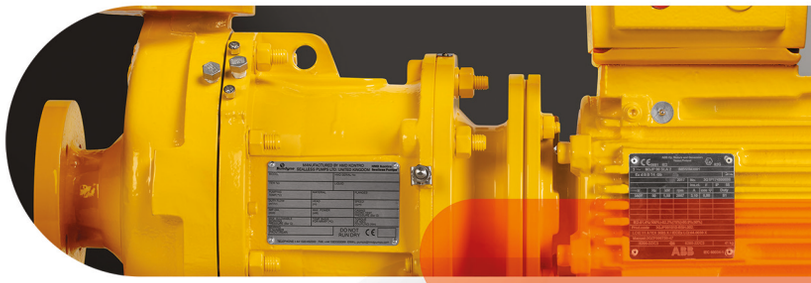
- Sulphuric Acid
- Potassium hydroxide
- NMP

Other General Industries

- Mining applications such as Sodium Cyanide, Sulphuric Acid, Hydrochloric Acid
- Pharmaceutical applications such as Heat Transfer Liquids
- Pulp & Paper such as Sulphuric Acid

Petrochemical

- Olefins
- Aromatics
- Hydrocarbons
- Wash Water

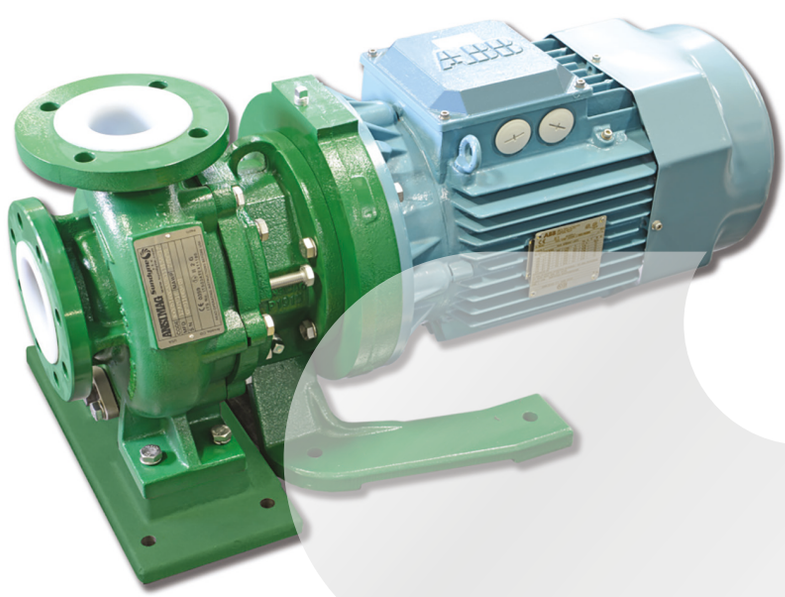


Why Sealless Magnetic Drive Pumps are ideal for Chemical Applications

A sealless pump is a conventional centrifugal pump without packed glands or mechanical seals.

Sealless pumps are built using modern engineering and technologies to deliver high performance, superior reliability, greater safety and full industry compliance. As a result, sealless magnetic drive pumps offer multiple benefits and advantages:

- **Total fluid containment** providing better environmental protection & operator safety
- **No seals or seal support systems** simplifying procurement, installation, operation and maintenance and reducing lifecycle costs
- World class sealless pump technology that offers the highest levels of robustness in the field, **increasing MTBF and plant uptime**
- **Compliance to industry standards** and global availability



HMD Kontro
Metallic Sealless Magnetic Drive Pumps

Chemical Service – CSA/CSI

The CSA / CSI is HMD Kontro's newest range of chemical service sealless pumps with full compliance to ASME and ISO standards. Incorporating latest magnetic drive technology, the range features a simple, modular design with maximised interchangeability, high efficiency hydraulics and a number of upgrade options to ensure suitability with a wide range of applications.

General Service – GSA/GSI

The GSA / GSI General Service pump ranges are designed to ASME and ISO standards and feature a vast range of hydraulics with various engineered options to meet the needs of more challenging pumping applications.

General Transfer – GTA/GTI

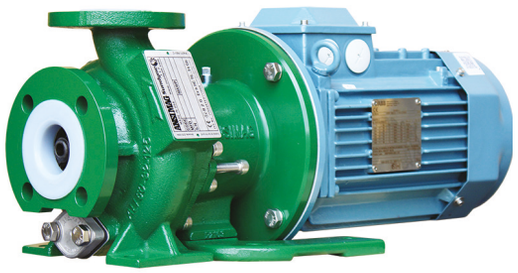
The HMD Kontro General Transfer pump provides a compact and cost-effective solution for smaller duties. The range is sized below ASME / ISO dimensions, and features a close-coupled, space-saving design with optimised interchangeability and simplicity of maintenance.

Other Sealless Magnetic Drive Pump ranges available from the HMD Kontro portfolio include;

- HPGS High Pressure pump for high system pressure applications up to 185 bar
- SPGS Self-priming pump
- GSV Vertical In-line pump
- GSP Horizontal OH2 pump designed to API 685
- GSPV Vertical In-line OH4 pump designed to API 685
- HPGSP High Pressure Horizontal OH2 pump designed to API 685
- LMV-801S Low-Flow Vertical In-line OH4 pump designed to API 685
- GSPLF Horizontal OH2 pump designed to API 685

Please visit www.hmdkontro.com for further details.

ANSIMAG
Lined Sealless Magnetic Drive Pumps



ANSIMAG ALI

A full range of ISO 2858 compliant ETFE-Lined horizontal magnetic drive pumps, incorporating optimised high efficiency hydraulics and a compact design. Featuring only nine individual wetted parts allowing for ease of on-site maintenance, the ALI is the ideal pumping solution for aggressive liquid ISO applications.

ANSIMAG K+

The K-Plus is an ASME B73.3 compliant ETFE-Lined range of horizontal magnetic drive pumps. Featuring the same simple nine-wetted part design and small footprint, the K-Plus is well suited to aggressive liquid ASME applications with smaller duty requirements.

ANSIMAG KF

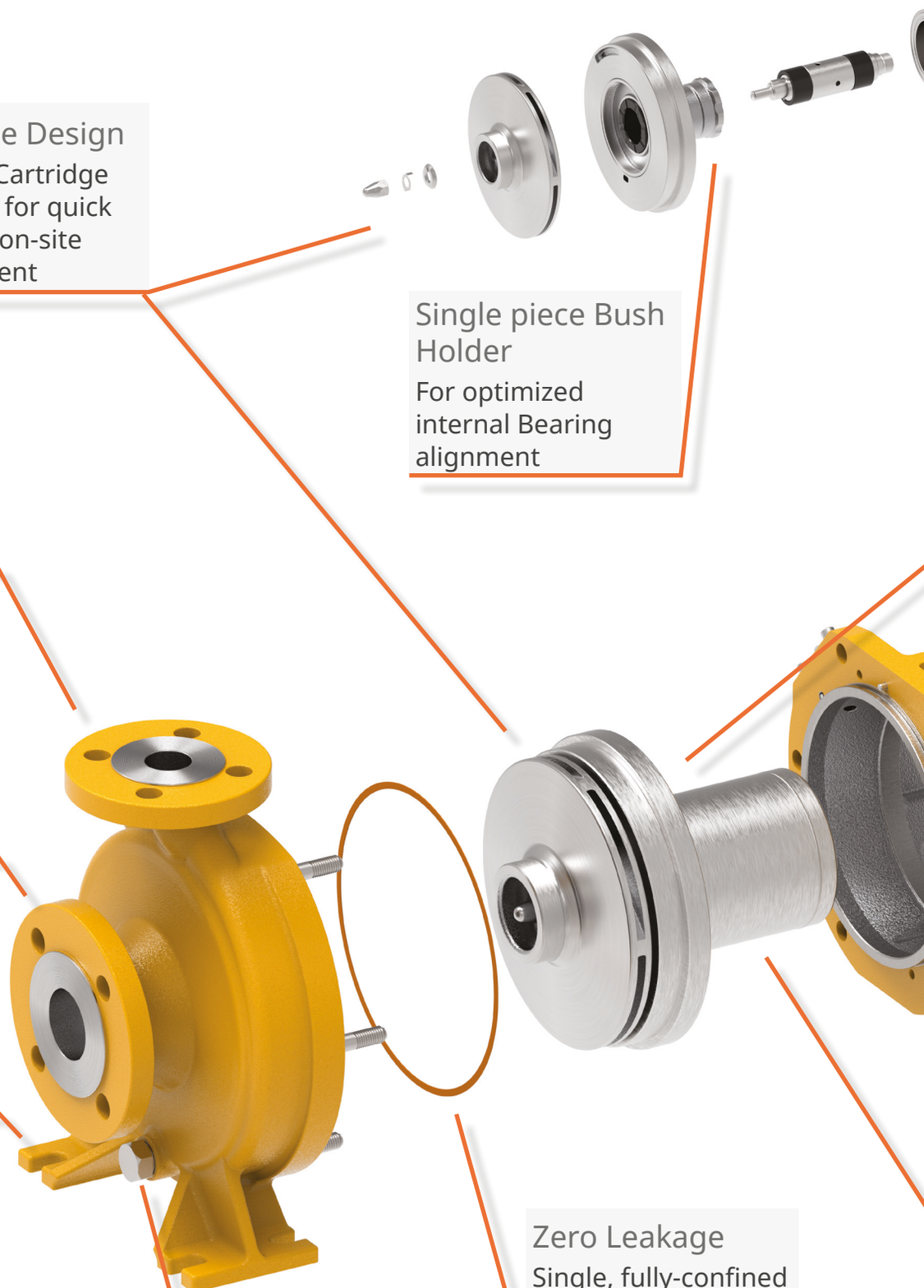
The KF range is an ASME B73.3 standard ETFE-Lined range of horizontal magnetic drive pumps, providing extended flow and head coverage, making the KF range the ideal choice for aggressive liquid ASME applications with larger duty requirements.

Other Lined Sealless Magnetic Drive Pump ranges available from the ANSIMAG portfolio include;

- KV Vertical ETFE-Lined Sealless Pump
- KP Self-Priming ETFE-Lined Sealless Pump
- KM Horizontal ETFE-Lined Sealless Pump for smaller duty applications

Please visit www.sundyne.com/products/ansimag-pumps for further details.

HMD Kontro Pump
Features & Benefits



Cartridge Design
Wet-end Cartridge assembly for quick and easy on-site replacement

Single piece Bush Holder
For optimized internal Bearing alignment

Simple start-up
Fully self-venting design

Optimum Performance
Wide range of hydraulics available

ASME & ISO Compliance
Dimensionally compliant to ASME and ISO standards

Zero Leakage
Single, fully-confined Gasket to contain fluid

Choice of Casing Drain Options
To meet site requirements

Simple Maintenance
Back pull-out design for easy maintenance

Robust Containment Shell

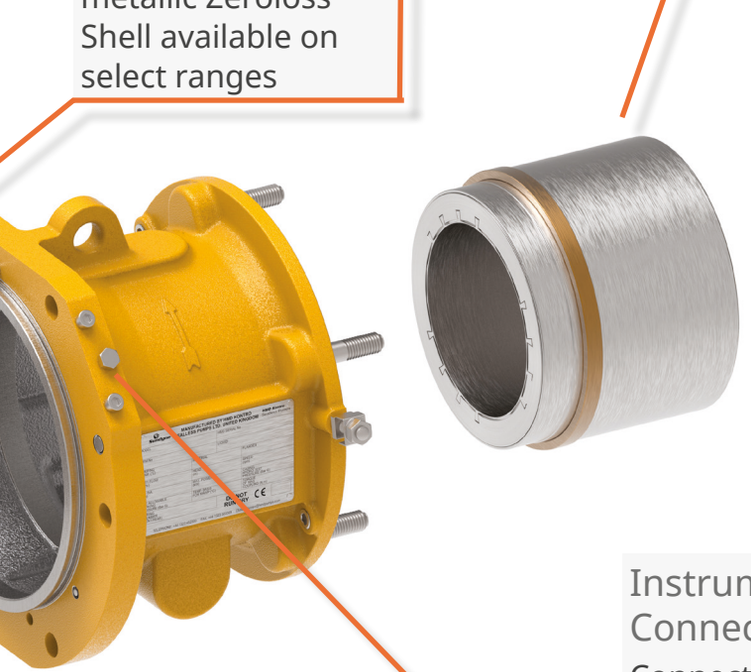
Alloy C276 metallic design with high efficiency non-metallic Zeroloss Shell available on select ranges

Fully Encapsulated Magnets

Magnets in Inner & Outer Magnet Rings are fully protected

Configuration Options

Space-saving close-coupled or separately mounted/ long-coupled configurations



Secondary Control & Containment Options

Optional Secondary Control and Containment systems available on select ranges for enhanced safety

Instrumentation Connections

Connection ports for protective instrumentation such as RTD temperature monitor or liquid level sensor

Magnetic Drive

Optimized Magnetic Couplings sized for specific application requirements

Corrosion Resistant Metallic Material Design

Liquid-contact material of construction is 316 St St with options available on select ranges for Alloy C276, Alloy 20, Alloy B, Duplex & Titanium

Ansimag Pump
Features & Benefits

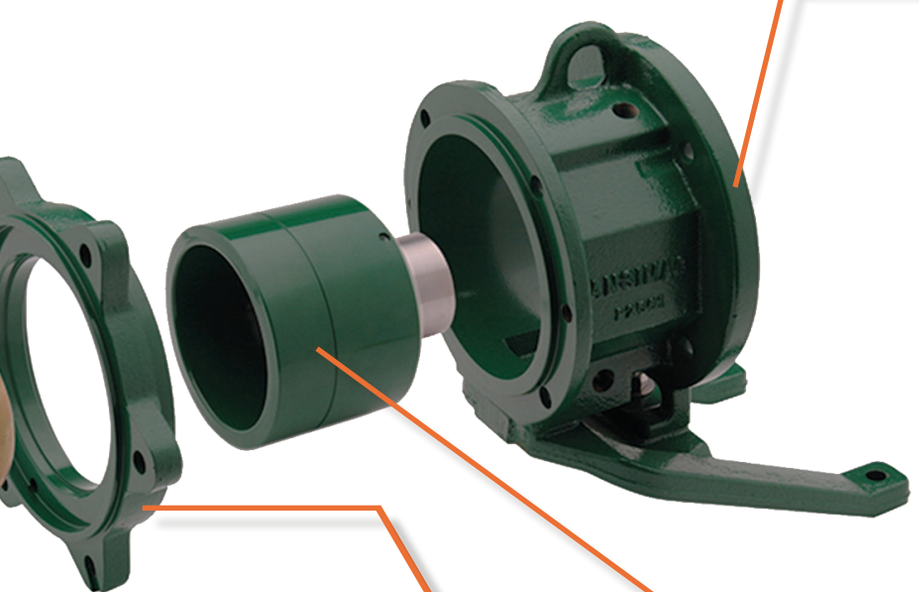
-Locking mechanism permits impeller to be used with multiple magnet drive sizes for maximum parts interchangeability
-Fully enclosed design minimises axial thrust over wide operating range.

Single piece Bush Holder For optimized internal Bearing alignment

Simple Maintenance
Back pull-out design for easy maintenance

ushing

Housing



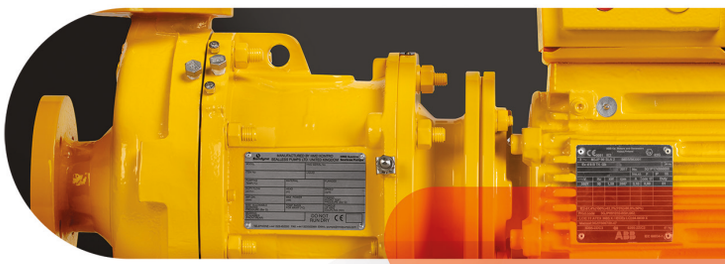
Outer Magnet Drive:
-Neodynium Iron Boron magnets for hard-start, synchronous operation
-Magnets are fully encapsulated for protection against corrosion and physical damage

Rear Casing Support

Shaft:
-Fully supported, oversized shaft eliminates deflection for maximum durability.

-Patented groove enables unexpected particles to pass through the pump without disturbing flow or damaging the bushings.
-Solid, non-rotating design eliminates need for internal fasteners or o-rings

Performance Characteristics by pump



	Product	Flow	Head	Pressure	Temperature
	**ANSIMAG K+**	Up to 675 gpm (153 m³/hr)	Up to 320 ft (97 m)	285 psi (19.6 bar)	-20 to 250°F (-29 to 121°C)
	**ANSIMAG KF**	1,470 gpm (334 m³/hr)	520 ft (110 m)	350 psi (24 bar)	-20 to 250°F (-29 to 121°C)
	**ANSIMAG KV** Vertical	325 gpm (74 m³/hr)	325 ft (69 m)	285 psi (19.6 bar)	-20 to 250°F (-29 to 121°C)
	**ANSIMAG KP** Self-priming	285 gpm (65 m³/hr)	150 ft (32 m)	285 psi (19.6 bar)	-20 to 250°F (-29 to 121°C)
	**ANSIMAG KM**	147 gpm (33 m³/hr)	140 ft (30 m)	150 psi (10.3 bar)	-20 to 250°F (-29 to 121°C)

ANSIMAG pumps are more energy-efficient than mechanically sealed pumps. An innovative rear casing generates no eddy currents thus eliminating heat generation and reducing energy costs. Because ANSIMAG pumps do not have seals – there are no leaks, no emissions and no costs related to seal maintenance.

	Product	Flow	Head	Pressure	Temperature
	**GTA/GTI** Horizontal Metallic Sealless General Transfer	Up to 115 gpm (26 m³/hr)	Up to 125 ft (38 m)	275 psi (18.9 bar)	-40 to 500°F (-40 to 260°C)
	**CSA/CSI** Chemical Service	Up to 340 gpm (77 m³/hr)	Up to 296 ft (90 m)	275 psi (18.9 bar)	-40 to 500°F (-40 to 260°C)
	**GSA/GSI** Horizontal Metallic Sealless Engineered General Service	Up to 1420 gpm (320 m³/hr)	Up to 485 ft (150 m)	275 psi (18.9 bar)	-40 to 600°F (-40 to 315°C)
	**HPGS** High Pressure General Service	Up to 317 gpm (72 m³/hr)	Up to 305 ft (93 m)	2,680 psi (185 bar)	-40 to 500°F (-40 to 260°C)
	**SPGS** Horizontal Metallic Sealless Self-Priming	Up to 200 gpm (45 m³/hr)	Up to 170 ft (52 m)	145 psi (10 bar)	-40 to 248°F (-40 to 120°C)

Pumping toxic chemicals presents health & safety risks to personnel and the environment. HMD sealless pumps are designed to handle hazardous, toxic, corrosive and aggressive liquids with zero leaks or emissions. HMD pumps are easy to maintain, have fewer working parts, no potential leak paths and no seal support systems to maintain. Maintenance is simple, and lifecycle costs are lower than mechanical sealed pumps. HMD pumps meet all industrial regulations, including ISO, API, ASME, ANSI, DIN and ATEX.

Sealless Savings

Time is money. Whether it is the time management of your people, the time taken to bring a new product to market or to progress a new project to completion, all have significant financial implications.

Sealless pumps bring savings in time, resources, skill sets, ongoing maintenance and lost production. They also reduce health and safety risk and potential damage to the environment.

Sealless pumps can achieve the step change savings that are needed from concept to completion of a project and beyond, throughout the life of the pump.

Sealless pumps can achieve the step change savings that are needed from concept to completion of a project and beyond, throughout the life of the pump.

- Installation Costs
- Commissioning Costs
- Scheduled Maintenance Costs
- Unscheduled Maintenance Costs
- Lost Production
- Decommissioning and Disposal Cost
- Environmental Clean Up & Fluid Disposal

Sealless Safety

Health & safety is everybody's responsibility. From the production and maintenance staff on the shop floor right up to the members of the board, the Chairman and Chief Executive who could take the punishment of any prosecution.

Minimising the impact of manufacturing and other operations also on both the local and wider environment is an essential, legal and a moral obligation.

Sealless pumps are self-contained. The pumped product or liquid is completely enclosed within the body of the pumps exactly where it should be. The containment shell provides a complete mechanical barrier, preventing leaks, escapes and emissions. There is no reliance on any external system or method of prevention.

Magnetic drive pumps are hermetically sealed. There is absolutely no potential for leaks or emissions.

Sealless Skills

Staff and people are a major cost of any operation. The need to employ people, and their level of skill can mean the difference between a plant being economic or expensive to run.

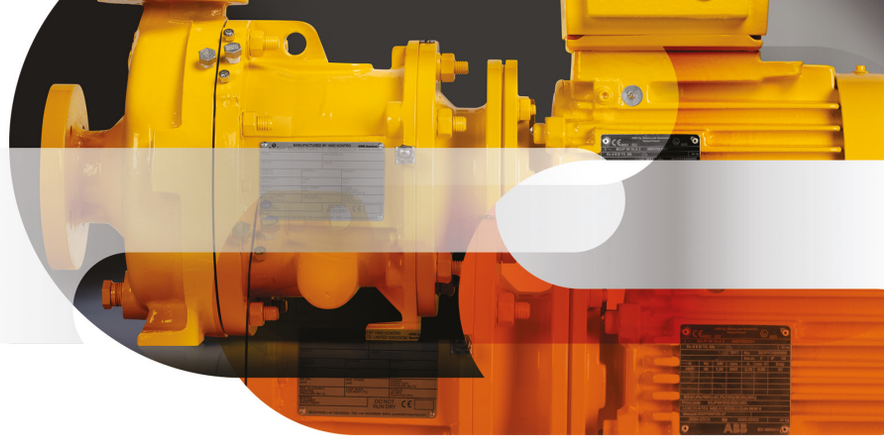
Due to the simplicity of the sealless pump, the ease of commissioning and the minimal maintenance requirements, less people are needed and less specialist skills are needed.

Reducing headcount and training budgets can be done with less skilled personnel, fewer maintenance ecents, less skill required, no special tools and no realignment.

Sealless Standards

Pumps using sealless technology can be supplied to the relevant international standards including API, ASME, ANSI, ISO.

Being industry certified means that global quality programmes have been met, together with conformity to environmental and occupational health and safety specifications.



Sealless Services
Through-life Technical Support

HMD Kontro and ANSIMAG sealless magnetic drive pumps deliver the highest levels of safety, reliability and efficiency. Supported by a full range of through-life technical engineering services, our users can be confident that their Sundyne sealless pump will continue to provide years of dependable process operation, reducing downtime and delivering a trouble-free experience.

- Best Practise Sharing
- Competence Training
- System Diagnostics
- Repairs & Parts
- Upgrades & Retrofits
- Instrumentation

From assisting with design, installation and commissioning, through to optimisation of spares inventory and ensuring ongoing operating efficiency, our experienced field service team are on-hand to provide support where required, either remotely or in the field. Wherever you are located around the world, a Sundyne representative will be available to provide assistance.

To locate the global representative, distributor or authorised service centre nearest you, or for additional information please visit

www.HMDKontro.com

www.sundyne.com/products/ansimag-pumps

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