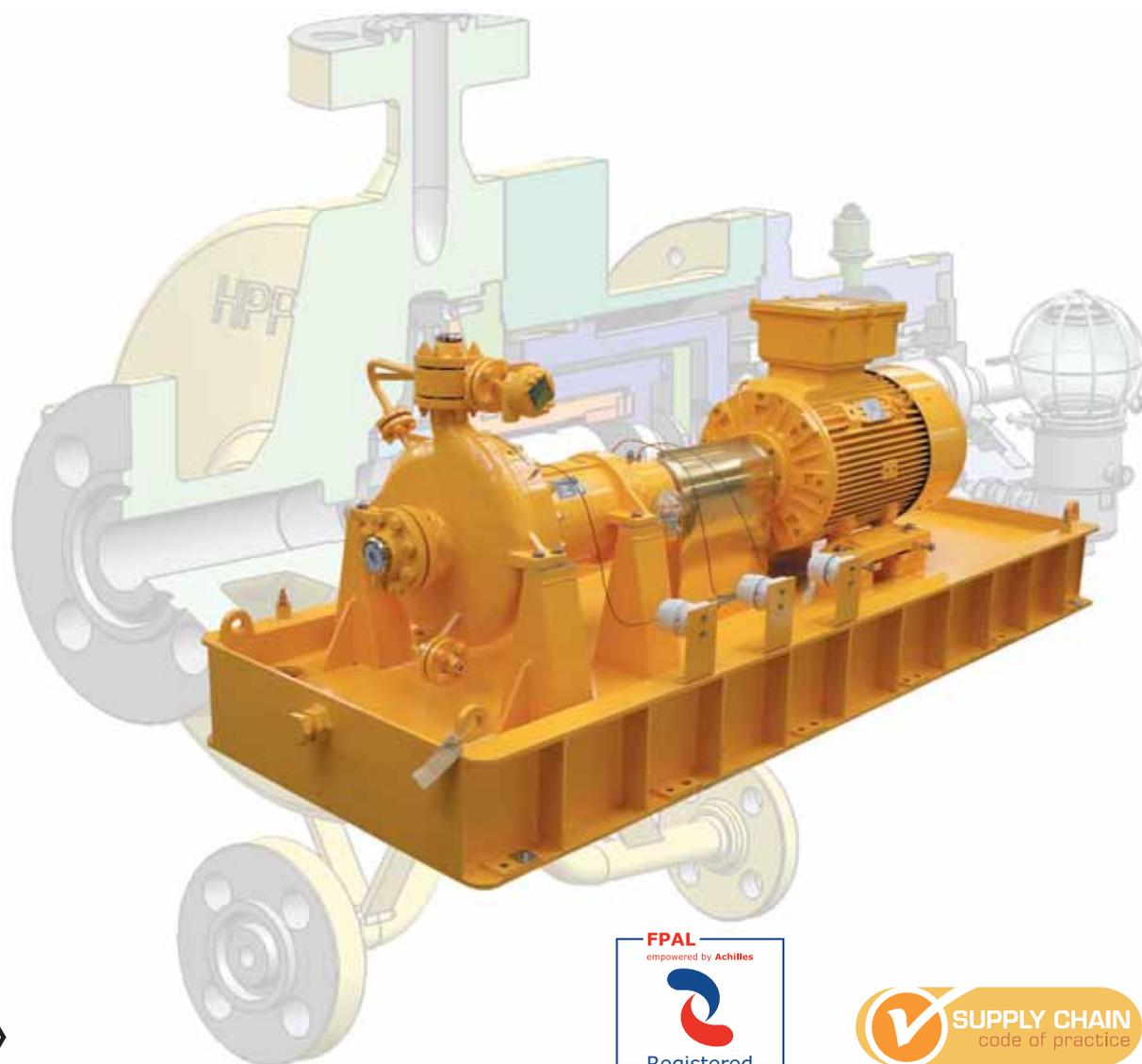


HPGSP Range
High Pressure Sealless
Magnetic Drive Pumps
API 685

HMD Kontro



Sundyne HMD Kontro

High System Pressure Sealless Pumps

When your product is under pressure, the need for environmental, health and safety measures are amplified. HMD Kontro HPGSP pumps can provide peace of mind in a variety of high pressure applications.



Capable of easily handling high system pressures up to 185 bar and higher, dependent upon temperature extremes, HMD Kontro HPGSP pumps are exceptionally versatile yet safe and secure.

No seals means no leaks, less maintenance, reduced downtime and substantial cost savings. There really is no substitute to sealless.



HMD Kontro High Pressure Sealless Pumps are the Solution

HMD Kontro sealless pumps are designed to comply with the requirements of API 685 specifications for magnetic drive, sealless end suction, centrifugal pumps required by the oil, gas, petroleum and heavy chemical industries.

HMD Kontro have been building sealless magnetic drive pump units for the oil and gas industry since 1983. With increasing demands for the safety and welfare of personnel plus the environment these sealless pumps are playing an ever greater part in maintaining these goals. Improved magnet drive technology has enabled more efficient and powerful pumps, capable of handling high system pressures to be built, thus increasing the application scope for this technology.



Starting first with API 610 6th edition and then modifying designs to incorporate 7th and 8th edition requirements, we ensured that our sealless pumps met and exceeded the original requirements for sealed units. However, October 2000 saw the official release of API 685, a code dedicated to sealless pumps and once again HMD Kontro were at the forefront of development with the GSP pump range. This has since been superseded by API685 2nd edition, released in February 2011.

With over twenty-five years API experience and our sixty year heritage in magnetic drive technology HMD Kontro are in an ideal position to provide your pump requirements for high pressure duties. Our range of pumps is being continuously developed and extended and currently stands at over thirty models.



In densitometer applications, the sampling pumps have to be able to take the full pressure from the main pipeline (up to 2 metres / 80 inches diameter) sample the liquid and then return it to the pipeline. System pressures of up to 185 bar have to be contained, the cost of a mechanical seal that would have be able to handle these pressures would be considerable.

Paragraph 9.1.2.1.3
 Confined controlled
 compression gasket.

Paragraph 9.1.3.5
 Magnet rings are fully sheathed
 to prevent damage during
 assembly or disassembly.

Paragraph 6.6.3
 Renewable front and rear wear
 rings – Located with locking
 pins (tack welded on request).

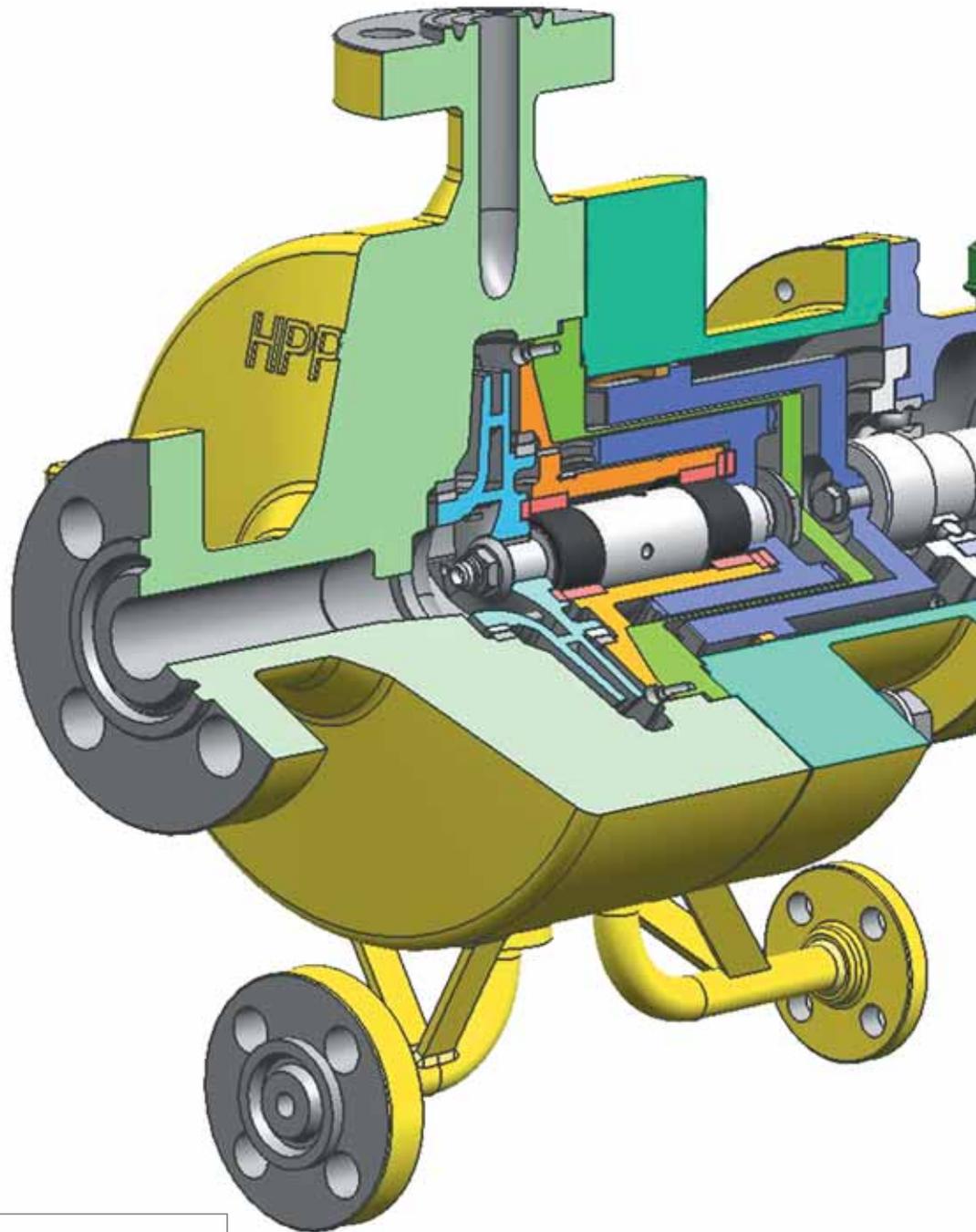
Paragraph 6.2.9
 Centerline mounted
 Casing and Coupling
 Housing – Provided
 as standard.

Paragraph 6.3 / 6.4
 Flanges and Casings
 – Full compliance to Nozzle
 loading requirements.

Paragraph 6.5.1 / 2 / 3 / 4
 Impellers – Fully enclosed,
 single-piece cast with solid
 hubs. Keyed to the shaft.

Paragraph 6.3.3.5
 Casing features flanged drain
 supported in two planes.

Paragraph 6.1.10
 All internal cavities are fully
 drainable – Optional flush out or
 steam out connections available.



KEY

 Pump Casing	 Containment Shell
 Impeller	 Magnetic Drive
 Bush Holder	 Bump Ring
 Silicon Carbide Bushes	 Coupling Housing
 Silicon Carbide Shaft Sleeves and Thrust Washers	 Power Frame

Paragraph 6.9.4
 Sleeves – Concentrically located
 bearing sleeves. Design
 compensates for relative thermal
 expansion. Concentrically located
 with O-rings.

Paragraph 9.1.1.6
 Internal Bearings –
 Not supported by the
 containment shell.

Note: Paragraph references refer to API 685 2nd edition.

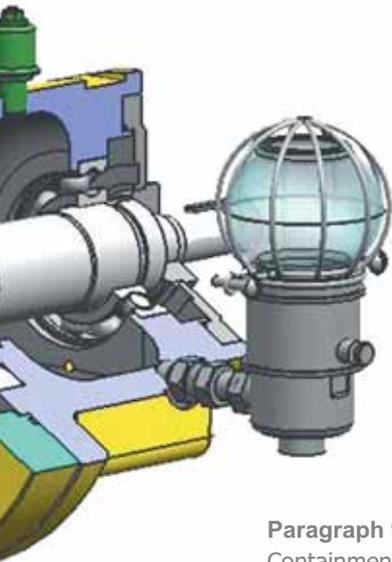
The HPGSP range meets and in many cases exceeds the requirements of API 685.

Paragraph 6.7

Secondary control / containment systems
– Full range available on request.

Paragraph 6.9.9.1

Bearing housings supplied with dimples for vibration monitoring.



Paragraph 9.1.2.1.1

Containment shell – Constructed in accordance with ASME VIII international standards.

Paragraph 6.9.7

Thrust bearings – Designed for capacity in both directions.

Paragraph 6.9.5

Grooved axial and radial bearings – For heat removal and particle flushing.

Paragraph 6.9.6

Two radial bearings
– Provided as standard.

Notes

6.1.20 No Cooling required for operating temperatures up to 350 DegC (660 DegF).

6.1.26 Rapid & Economical maintenance – Shoulders and dowels to facilitate assembly and disassembly.

6.1.3.4 / 6.1.3.7 Temperature and pressure profiles – Heat balance calculations provided.

6.2.2 Pressure Casings, Flanges and Coupling housings rated for 40 Bar (600 psig) – For the HPGSP the pressure casing is up to 185 Bar.

6.2.12 No tapped holes in the pressure boundary. Flanged connections supplied as standard.

6.10 Materials – HPGSP pumps are available as standard with S-5, S-8I, D-1j and D-2j materials. Other variations are available on request.

6.10.3 Welding in compliance with ASME Section VIII, Div 1, and section IX.

7.6 Special Tools – Not required for maintenance of HMD Kontro GSP pumps.

9.1.3.2 All Magnetic Couplings feature mechanically retained and bonded magnets.

9.1.3.5 Outer magnet rings have non-magnetic metallic sheathing to protect exposed magnets.

9.1.3.3 All units feature a non-sparking bump ring to prevent outer magnet ring contacting containment shell in the event of an external bearing assembly failure.

9.1.4 Antifriction Bearing Assemblies – Fully compliant rolling element bearings, sized in accordance with requirements.

9.1.5.3 Baseplate – Heavy duty design incorporates continuous welds, leveling screws, lifting lugs, grout locking cross-members and drain connection.

NORSOK compliance available on request.

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A history of Complying with API requirements

HMD Kontro pioneered the first sealless, magnetic drive pump over sixty years ago. Therefore, it has been natural that the Company should be at the forefront of development for API 685 applications.



HMD Kontro installed the first API magnetic drive centrifugal pump in 1983 at a major blue-chip oil company in Australia. These were followed shortly by further installations with BP in Norway. At that time the American Petroleum Institute did not have a specific standard that applied to Sealless pumps. Therefore the first HMD Kontro API pumps were designed to follow the then current

It started with API 610 – Centrifugal Pumps for petroleum, petrochemical and natural gas industries. As much of the API 610 standard concerns seal and seal support systems a considerable portion of the specification was not applicable to HMD Kontro sealless API pumps.

In 2000 the American Petroleum Institute launched the API 685 standard for Sealless Centrifugal Pumps for Petroleum, Heavy Duty Chemical, and Gas Industry Services. At this time, Sealless technology had become well accepted in the chemical processing industry, but had not been as widely accepted in the Refinery and Petroleum Industries. This was partly due to the lack of an API specification specifically addressing Sealless designs.

Since 1983 many successful API 610 and 685 HMD Kontro magnetic drive pump installations have been implemented with clients worldwide on a huge variety of different applications. As a result, a substantial reference list is available.

The HPGSP range of pumps is designed to comply with all of the requirements of API 685 – Sealless Centrifugal Pumps for Petroleum, Heavy Duty Chemical, and Gas Industry Services including the latest edition of the standard published in February 2011.



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High Pressure

Magnetic Drive Pumps to API 685

Magnetic drive Sealless pumps offer significant advantages and benefits over conventional sealed designs:

- No seals
- No seal support systems
- Complete fluid containment
- Zero emissions
- Zero contamination of pumped liquid
- Cost effective installation
- No ancillary seal support systems to specify and install
- Longer MTBF
- No EPA monitoring required
- Improved operator safety and protection of the environment

Mechanical seals are widely regarded as the weakest point in any pumping system using them. Over 85% of pump failures involve mechanical seal failure and/or leakage through static seals such as gaskets and/or O-rings and bearing failure.

When planning a new pump installation or an upgrade to an existing site, often the financial impact of the mechanical seal support system is considerable. Addition design time, utility provision, installation and commissioning is required. Once such a system is installed, further cost implications are caused by the need for new seals, replacement of barrier fluids and ongoing maintenance. Also the need to comply with local, regional or national environmental requirements, which often involve monitoring the effectiveness of such a system.

By completely eliminating the seal and associated seal support system, the HMD Kontro HPGSP range of pumps are ideal for handling liquids with the following characteristics:

- Toxic
- Lethal
- Carcinogenic
- Flammable
- Expensive Fluids
- Fluids containing dissolved solids (i.e. Caustic)
- Fluids containing H₂S (Sour Water)
- Heat Transfer Fluids (Cold and Hot)
- High Vapour Pressure Liquids

If your staff, local environment and your reputation are at risk from the above then ensure you install HMD Kontro Sealless Pumps.



Sundyne HMD Kontro

The HPGSP

Pump Range

The HPGSP range comprises of pumps based on the HMD Kontro GS drive, built to API 685 specification, suitable for heavy-duty applications.

- Separate mounted design available in eleven hydraulic sizes
- Two basic frame sizes to suit power requirements
- Large degree of interchangeability within frame sizes
- Commonality minimises spare parts inventory and associated costs
- Centre line mounted design with support brackets on the casing to minimise vibration and allow for thermal expansion
- Mounted on a heavy-duty fabricated steel drip pan baseplate
- Self-venting and completely self-draining
- Conforms to API 685 for sealless pumps and relevant API 610 requirements
- Design ensures safe, leak free operation
- Increased efficiency via low operating costs
- Minimal spares holding and maintenance
- No costly seal support systems to specify, install or maintain
- Reduced specification time and installation costs
- Standard materials of construction per S-81 and S5, D-1J and D-2J. Other variations are available on request
- Silicon carbide internal bearings
- Various flange options are available as standard
- Full range of secondary control / containment systems available on request
- Wide range of Instrumentation systems available



Essential HMD Kontro Benefits

- High efficiency magnet drive
- Almost zero unplanned maintenance
- Absolutely no leakages
- Environmentally safe
- System pressures up to 2700 psi / 185Bar (higher pressures available upon request)
- Fully encapsulated magnets
- Heavy-duty power frame
- ASME VIII containment shell
- High system pressure capability without 'backup' systems
- Standard electric motors utilised
- No cooling required up to 350°C / 600°F
- Material options available
- Alpha SiC Internal Bearings
- Non Sparking Bump Ring for safety
- HMD Kontro worldwide service support

Typical Applications Include:

- Booster Packages
- Pipeline Injection
- Monitoring and Sampling
- Densitometers
- Remote Locations
- Tanker Offloading (Road and Rail)
- Heavy Duty Chemical Applications
- Hot Oil Circulation
- Petrochemical processing plants

Liquids Handled by GSP Pumps Include:

The following is a sample of some of the typical liquids that the HMD Kontro GSP API 685 pumps have been used for:

Acrylic Monomers	Methanol
Acrylonitrile	MEG
Alkylate	Methylene Dichloride
Amyl Acetate	Methyl Mercaptan
Anhydrous HF	Methyl Naphthalene
Amines	MMA
Aromatics	Naphtha
Benzene	Naphthalene
Butadiene	Pentane
Butane	Phenol
Caustic Soda	Produced Water
Chloroform	Pyridine
Condensate	Sour Water
Crude Oil	Styrene
Cyclohexane	Sulphuric Acid
Dichlorobenzene	TDA
Ethylene	TDI
Hexane	Thermal Oil
Hydrocarbons	Toluene
Hydrofluonic Acid	Trichloroethylene
Kerosene	Vinyl Acetate
Isobutane	Various Chlorinated
Iso-Propyl Alcohol	Hydrocarbons
LPG	Xylene
MDI	

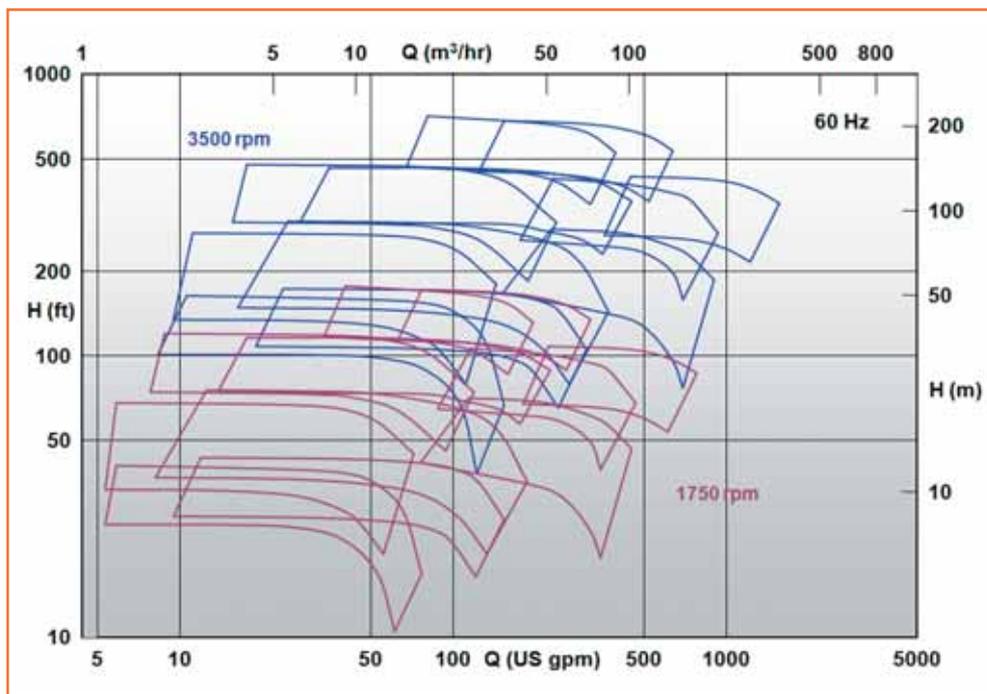
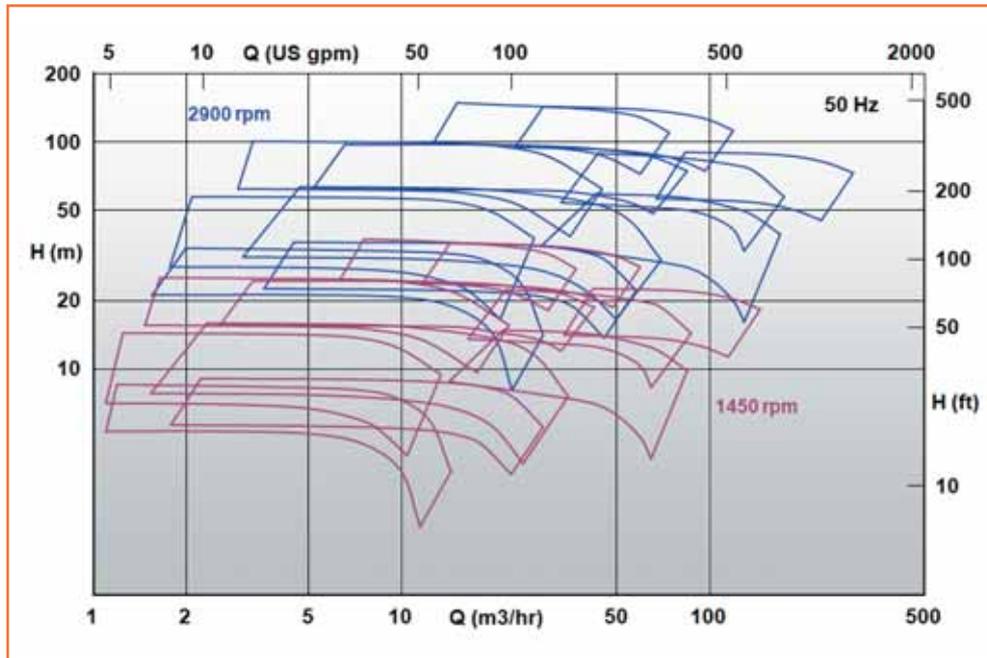
The above list is not exhaustive. Please contact us for reference and information for many other liquids successfully handled.



HPGSP Hydraulic Coverage

Head	Flow	Temperature	Design Pressure*
150 m	290 m ³ /hr	-100 to +260 DegC	185 Bar
700 ft	1500 gpm	-150 to + 500 DegF	2700 Psi

* Design pressures for larger pumps are 100 Bar (1450 Psi). Higher pressures are available upon request.
Internal Pressure / Temperature Profiles Available. Optional Instrumentation Packages available



Sealless Savings

Specifying sealless, magnetic drive pumps can save significant costs both in respect of time and money. Indeed, a major feature is that savings can be made before, during and after installation, with reduced running costs.

Having no seal system, and consequently no ancillaries, means that design and engineering time as well as the time taken for procurement is significantly reduced. At the time of installation, commissioning is quicker, allowing faster project completion and there are far less lengthy HazOps (Hazard and Operability) studies to undertake, endure and agree, thanks to the much simpler design of the sealless pump.

Once up and running, sealless pumps really come into their own. Reduced downtime, because of less maintenance and no need for seal changes, contributes to much improved plant utilisation and hence profitability.

The simple design of a sealless pump, together with a proven track record, provides a 'fit and forget' advantage. Not only is maintenance much reduced but also less need to keep spare parts, in particular, there are no seals to stock, and the need for skilled labour overhead is also reduced.

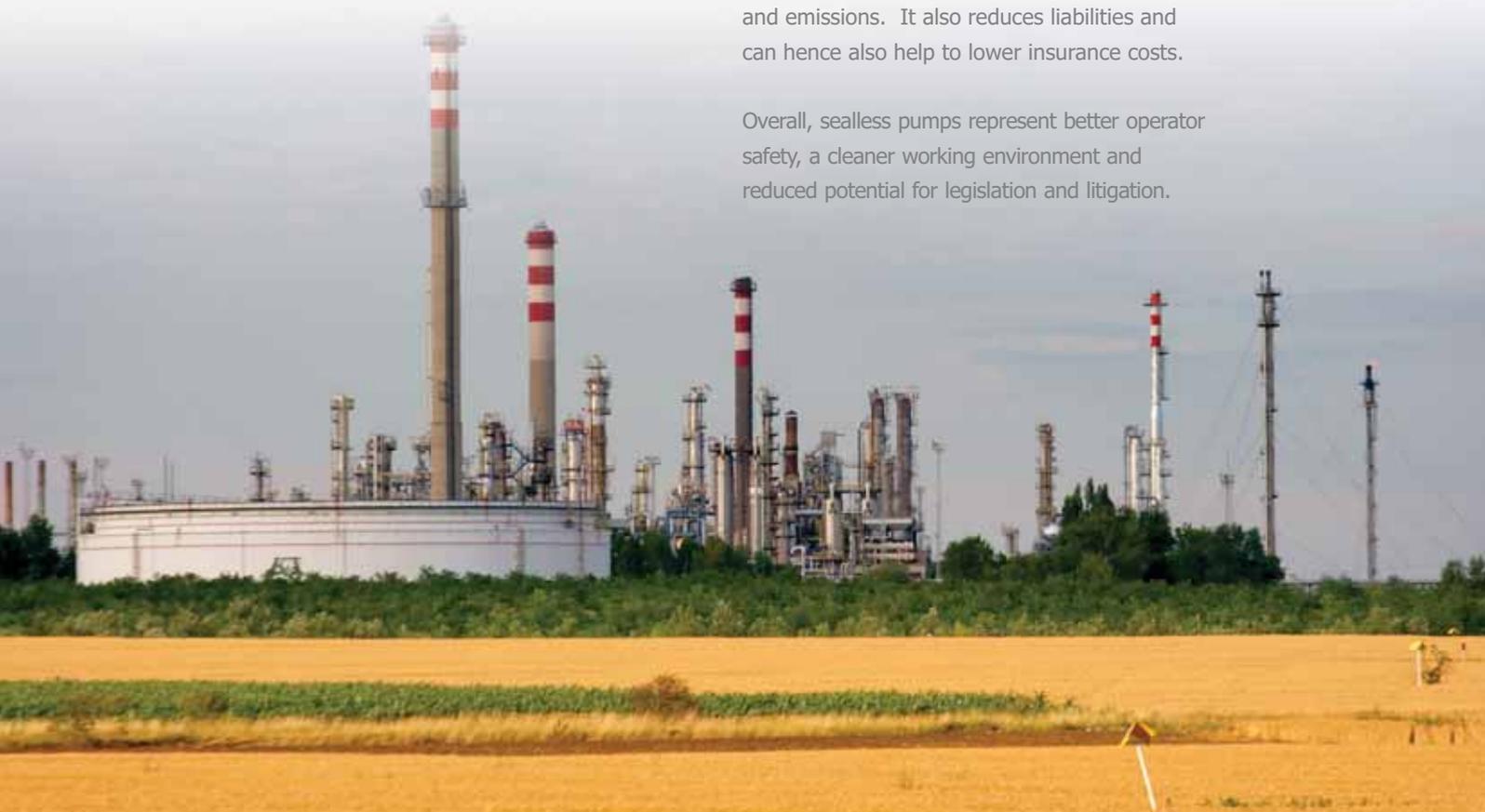
Sealless Safety

With a magnetic drive pump there is no opportunity for leaks or emissions. Therefore, your EH&S (Environmental Health & Safety) personnel will like the fact that you specified sealless.

Because there are no seals, and the resultant leak path, required to lubricate the seal, there is no need for EPA monitoring and much less risk to operational personnel on your job site.

No requirement for support systems and the fact that no barrier fluids need to be used means much reduced possibility of accidents and emissions. It also reduces liabilities and can hence also help to lower insurance costs.

Overall, sealless pumps represent better operator safety, a cleaner working environment and reduced potential for legislation and litigation.



Sealless Service

Although our pumps only require minimal maintenance, that does not mean there is no after sales service from HMD Kontro. Quite the opposite in fact.

Our own After Sales team, together with our partners around the world, can help to optimise the performance and through life experience of using HMD Kontro pumps. From assisting with installation and commissioning, including ensuring smooth contract execution and swift provision of all the appropriate documentation, through to optimising your spares inventory and operating efficiency using the benefit of our experience.

Extending MTBF (mean time between failure) and providing you with the appropriate parts to effect fast maintenance and quick replacement where necessary, will significantly assist in reducing downtime and minimising through life costs, which are already inherently low with an HMD Kontro pump.

To learn more about why sealless is so suitable for your high pressure application, please contact us, either directly or through your country partner, which can be found on www.sundyne.com. We look forward to helping sealless be of service to you.

Existing Users Include:

Apache
Aramco
BP
British Gas
Conoco Phillips
Chevron
Esso
Exxon Mobil
Jiskoot
Lukoil
Maersk
Marathon
OMV
Petrobras
Petronas
Pemex
Repsol
Sasol
Shell
Solartron
Statoil
Sunoco
Talisman
Texaco

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

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