

GSPV Range

Vertical Inline Sealless
Magnetic Drive Pumps
API 685

HMD Kontro



Sundyne **HMD Kontro**

Standing Up for API 685

The HMD Kontro GSPV (V for Vertical)

All of HMD Kontro's API 685 expertise in a vertical pump, ideal for space optimisation.



The vertically mounted GSPV pump provides all of the benefits of a magnetic drive sealless pump in a compact package. Requiring minimum floor space, the GSPV meets all of the requirements of API 685, making it ideal for chemical and petrochemical, oil and gas applications, including those where space is at a premium, such as in offshore installations. Dimensionally the range conforms to BS4082, thus providing a sealless upgrade solution to existing installations.

Utilising HMD Kontro's significant expertise in meeting API 685 standards, the GSPV will mean that you do not have to accept any deviations. With nine hydraulics and a standard design pressure of 40 Bar / 580 psi, the GSPV is suitable for many applications.



HMD Kontro 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 to be built, including vertically orientated units such as the GSPV units, 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 first 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, updated with the second issued in 2011, HMD Kontro continue to be at the forefront of development with the GSP HPGSP and GSPV pump ranges.

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 a sealless solution for your pump requirements. Our range of pumps is being continuously developed and extended and currently stands at over forty models, including these vertical versions with their benefits of minimal space requirements, ideal in many applications including offshore, where space is at a premium.



KEY

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

Paragraph 6.9.4

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

Paragraph 9.1.3.5

Outer magnets are fully sheathed to prevent damage during assembly or disassembly.

Paragraph 6.6.3

Renewable front and rear wear rings – located by tack welding (locking pins on request).

Paragraph 6.2.7

Confined controlled compression gasket.

Paragraph 6.1.29

Inline pump casing complying with 6.1.29.1 and 6.1.29.2

Paragraph 6.2.9

Centerline mounted Casing and Coupling Housing – provided as standard.

Paragraph 6.5.1 / 2 / 3 / 4

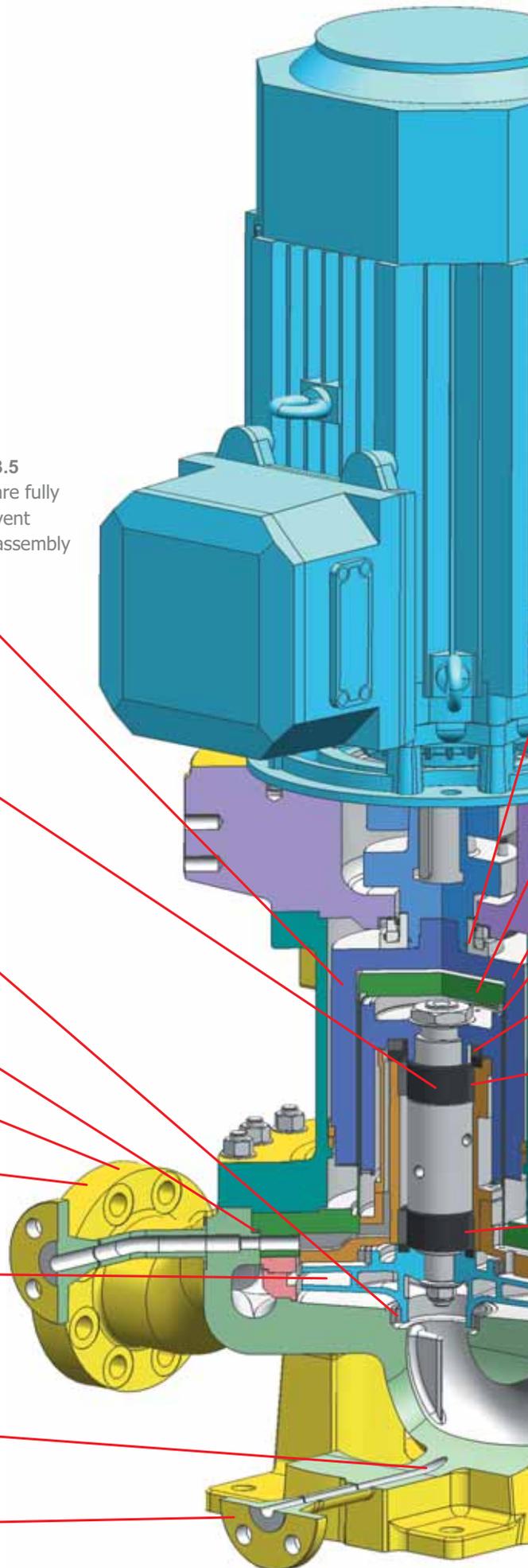
Impellers – fully enclosed, single-piece cast with solid hubs. Keyed to the shaft.

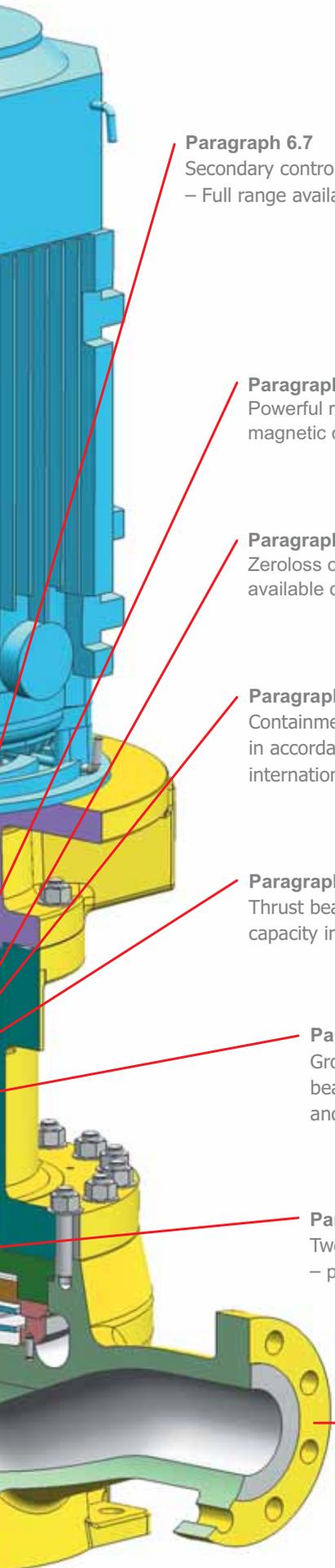
Paragraph 6.1.10

All internal cavities are fully drainable – optional flush out or steam out connections available.

Paragraph 6.3.3.5

Casing features flanged drain supported in two planes.





Paragraph 6.7
Secondary control / containment systems
– Full range available on request.

Paragraph 9.1.3.7
Powerful range of synchronous
magnetic couplings.

Paragraph 9.1.2.1.4
Zero-loss composite shell
available on larger sizes.

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.

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

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

Notes

6.1.20 No Cooling required for operating temperatures up to 205 DegC (4000 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 (580 psig) – higher pressure rating available on request.

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

6.10 Materials – GSPV 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 GSPV 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.

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

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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 API 610 standard.

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 GSPV 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 second edition published in 2011.



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Vertical Inline

Magnetic Drive Pumps to API 685

GSPV 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
- Small foot print
- Dimensionally compliant to BS4082

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. Additional 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 GSPV 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

The additional benefit of the vertically mounted GSPV range is the small footprint required, ideal for use in applications, including offshore, where space is at a premium.



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The GSPV

Pump Range

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

- Vertically mounted design available in nine 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
- Vertical inline mounted design
- Compliant to BS4082 dimensions
- 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
- 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
- Option of high efficiency Zeroloss composite shell on large hydraulic sizes



Essential HMD Kontro Benefits

- High efficiency magnet drive
- Almost zero unplanned maintenance
- Absolutely no leakages
- Environmentally safe
- System pressures up to 40 Bar / 580 psi (higher pressures available upon request)
- Fully encapsulated magnets
- ASME VIII containment shell
- Standard electric motors utilised
- No cooling required up to 205°C / 400°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
- Heavy Duty Chemical Applications
- 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	MDI
Acrylonitrile	Methanol
Alkylate	MEG
Amyl Acetate	Methylene Dichloride
Anhydrous HF	Methyl Mercaptan
Amines	Methyl Naphthalene
Aromatics	MMA
Benzene	Naphtha
Butadiene	Naphthalene
Butane	Pentane
Caustic Soda	Phenol
Chloroform	Produced Water
Condensate	Pyridine
Crude Oil	Sour Water
Cyclohexane	Styrene
Dichlorobenzene	Sulphuric Acid
Ethylene	TDA
Hexane	TDI
Hydrocarbons	Thermal Oil
Hydrofluonic Acid	Toluene
Kerosene	Trichloroethylene
Isobutane	Vinyl Acetate
Iso-Propyl Alcohol	Various Chlorinated
LPG	Xylene

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



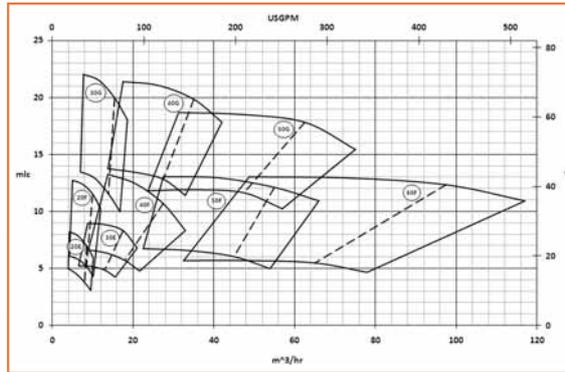
GSPV Hydraulic Coverage

Head	Flow	Temperature	Design Pressure*
120 m	230 m ³ /hr	-40 to 205 °C	40 Bar
400 ft	1000 usgpm	-40 to 400 °F	580 Psi

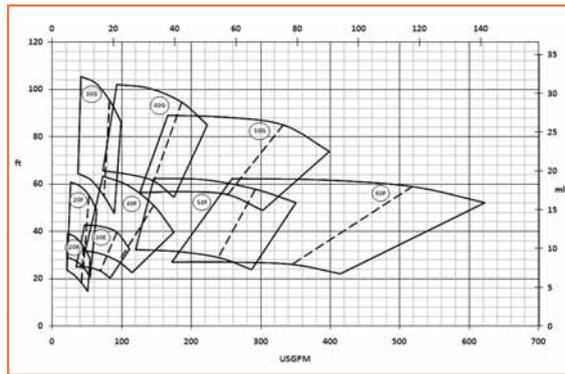
* Design pressures up to 100 bar are available on request.

Internal Pressure / Temperature Profiles Available. Optional Instrumentation Packages available.

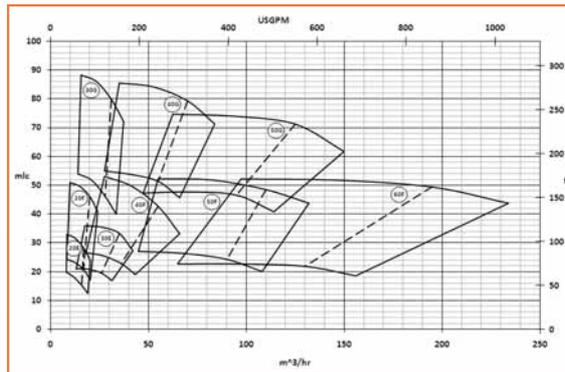
1450 rpm



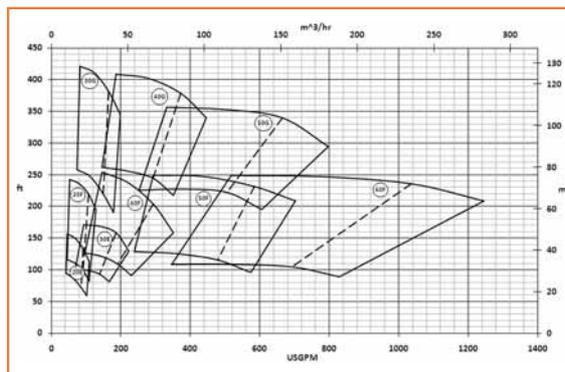
1750 rpm



2900 rpm



3500 rpm



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.

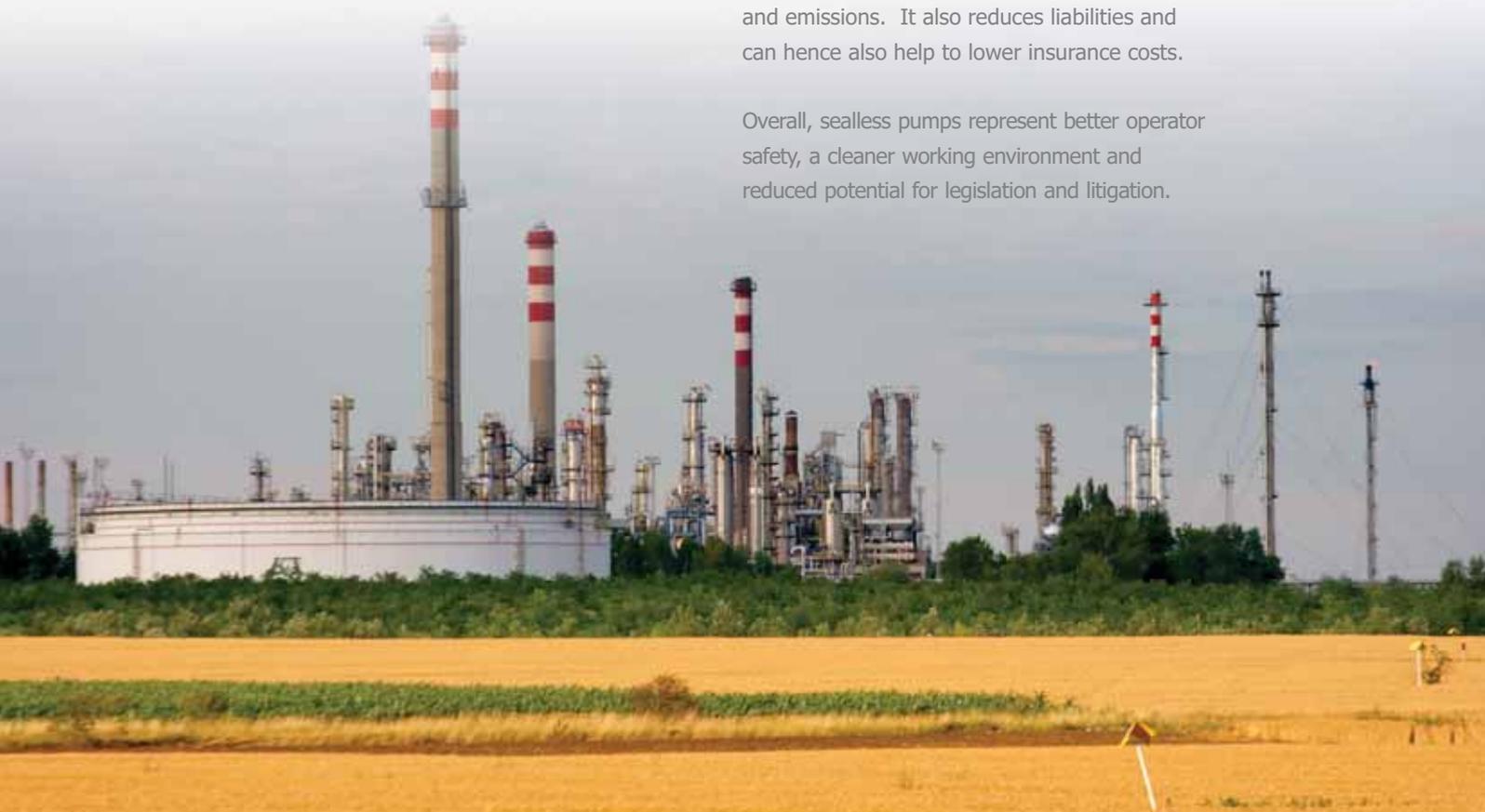
Sealless Safety

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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