

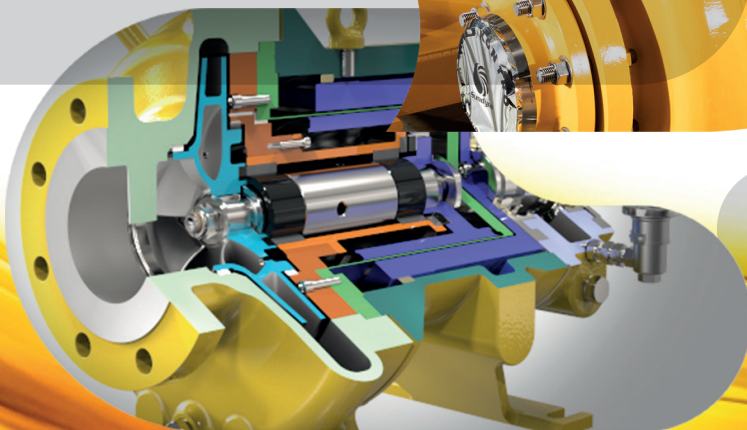


 **HMD KONTRO**
Sealless Pumps



Sealless Pumps

Know How



"We find HMD Kontro pumps last over 20 years but sealed pumps need to be replaced in 10 or 12 years."

Pharmaceutical manufacturer



Sealless Pump Know How

At HMD Kontro we like to say Yes. However, our customers seem to like it when we say no:



No Seals

No Seal Support Systems

No Risk of Seal Failure

No Leaks (At All!)

No Emissions

No Environmental Hazards

No Health Issues

No Safety Concerns

No Maintenance (Almost!)

No Buffer or Flush Fluid Costs

No Need to Decontaminate

No Loss of Product

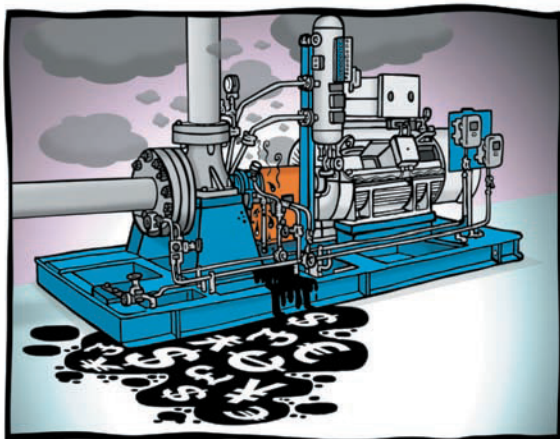
No Loss of Production Output

No Unexpected Expenses

No Problems!

In addition our magnetic drive pumps save time and cost on design and installation. By specifying an HMD Kontro sealless pump you can be absolutely positive that you have made the right decision. Combining cutting edge technology with over seventy years of expertise and experience, since we were the first in the world to develop the concept, our pumps provide complete peace of mind.

Why Do Other Pumps Fail?



A typical sealed pump!

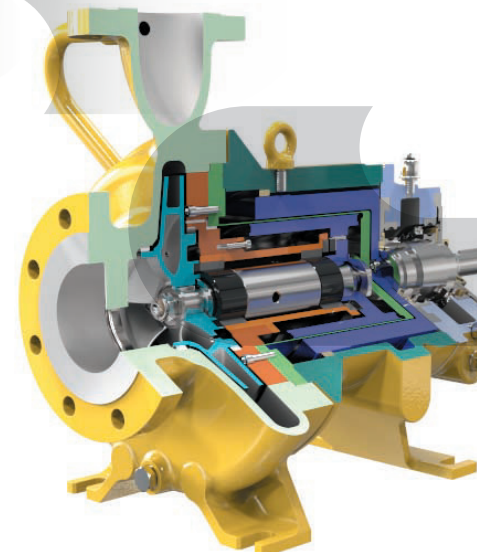
According to a report by the United Kingdom Health and Safety Executive, mechanical seals are widely regarded as the weakest point in any pumping system using them. They account for 80% of all pump failures, the remainder being leakage through static seals such as gaskets / O rings and bearing failure. It follows that if you eliminate the problem, you eliminate the failures and save costs. HMD Kontro sealless pumps are magnetically driven, they have no mechanical seals or seal support systems, and only a single, fully trapped gasket that ensures systems integrity, even at high temperatures and pressures.

What are the Advantages of Magnetic Pumps over Mechanically Sealed Pumps?

The mean time between failure (MTBF) for magnetic sealless drive pumps is typically three times that of mechanically sealed pumps.

Mechanical seals leak across their faces (that is how they work). Magnetic drive pumps are a true zero leakage design. This eliminates potentially harmless emissions and odours associated with sealed pumps together with all the EH&S issues that entails.

Sealless pumps are easier to maintain, have fewer working parts, no potential leak paths and no support systems to design, install and maintain. There is less cost involved in system design and procurement, no concerns regarding material compatibility or appropriate buffer liquids. No need to be concerned about their ongoing cost or the potential for failure either!



"The HMD Kontro pump has been in continuous operation since its installation in 1979 and has not required any maintenance."
Report from major oil refining company densitometer pump.

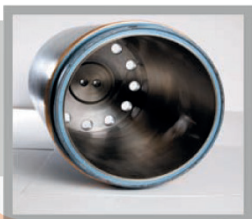
What Makes HMD Kontro Pumps So Special?

HMD Kontro have manufactured only sealless pumps since 1947 and so the design is not based upon a modified mechanically sealed pump. They are made to a very robust design and engineered to last and to perform.

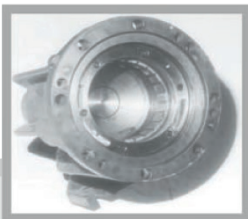
The containment shell is a welded construction to ASME VIII pressure vessel standards and typically of 1.2mm thickness. Competitors usually have hydro formed shells, much thinner and weaker than the HMD Kontro design. Rotating parts are dynamically balanced ensuring smooth, quiet operation and longevity.

HMD Kontro pumps are a modular cartridge design. This can reduce maintenance time considerably. This method of construction means that there are many common components for each of the three frame sizes throughout the range, reducing the need for a large stock of spare parts in a multiple pump installation.

The outer magnet ring is fully encapsulated, which means that the magnets are protected from being chipped on assembly and against corrosion from the pumped liquid in the event of containment shell breach. It also means that the component can be easily cleaned in usual workshop conditions. Each and every HMD Kontro pump is hydrostatically and performance tested before being delivered to guarantee optimum reliability.



HMD
Magnetic Drive



Other
Magnetic Drive

Who Uses Sealless Pumps?



Magnetic drive pumps are suitable for many applications and are widely used in industries such as chemical, pharmaceutical, fine chemical, agrichemical, oil & gas, both upstream and downstream, offshore and onshore, food & beverage production and across many industrial operations.

Example customers that have purchased HMD Kontro sealless pumps include: BP, Novartis, Ineos, Petronas, Syngenta and many more who would prefer to keep the use of our pumps confidential thanks to the IP benefits they bring.

Thanks to the complete containment of the liquid, sealless pumps are suitable for pumping the vast majority of liquids. Typical applications are for fluids presenting difficult and/or costly sealing challenges such as

ACIDS	HYDROCARBONS
ALCOHOL & GLYCOLS	HEAT TRANSFER FLUIDS
COMMON CHEMICALS	NITROGEN & SULPHUR COMPOUNDS
HALOGENIDES	COMMON CHEMICALS
ALKALIS	SALTS

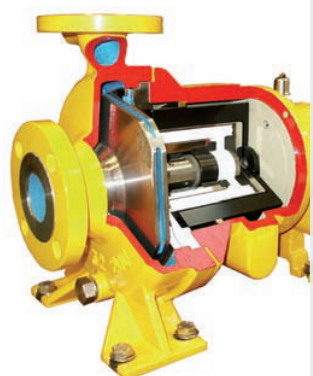
So How Long Do HMD Kontro Pumps Last?

"A large UK oil refinery has had 14 HMD Kontro pumps running for 12 years. There have been no failures whatsoever."

We have many examples of extended pump life in our seventy year history. Being the inventors of the magnet drive pump we have more experience than any other manufacturer. In many installations HMD Kontro pumps have run without maintenance for ten years and often more.

In most HMD Kontro pumps we use silicon carbide bearings, a material so hard that under normal process and conditions it will not wear for many years. When you add permanent samarium cobalt magnets and the unique way we engineer our pumps, this results in a very long service life with minimal maintenance and cost. Although it is difficult to give a MTBF (mean time between failure) because of the wide variety of applications they have, on clean liquid it can be in the region of 10 years or more.

So What Operating Parameters Can Sealless Pumps Now Handle? (50 Hz)



Temperature	Down to -80°C / -112°F Up to (Torque Ring Design) 450°C / 840°F Up to (Synchronous Design) 315°C / 600°F
Flow Rates	Up to 686m ³ /hour / 3022 USGPM
Heads	Up to 240m / 767ft
Viscosity	Maximum 200cSt
Pressure	Up to 185 bar / 2683 psi
Solids	Up to 5%, w/w a particle size of less than 150 microns Up to 8% and less than 250 microns with filtration
Power	220kw / 300hp (Maximum Motor Size)
Speed Range	1450 – 3500 RPM
Full Compliance with	ANSI / ISO / API685 (API610)

The Big Advantage of Sealless Pumps: No Seal Support System

Whilst a sealless magnetic drive pump completely contains the liquid, a sealed pump, by its very nature, is designed to leak. This is how the friction between the seal and the shaft is lubricated.

In many instances a sealed pump needs to incorporate a complex and complicated seal support system, to prevent the liquid being pumped leaking to atmosphere. These are often complex and need as much, if not more, time and attention for installation and operation as the pump itself.

In addition to higher specification and installation costs, the support system then requires time and cost to monitor and maintain.

What costs do you save?

Additional Capital Costs

- Seal support system
- Associated utility installation
- Water or air cooling system
- Larger baseplate and foundation required

Additional Project Costs

- Additional documentation for system and instrumentation
- PED may be applicable for pressure vessel
- Extended SIL and HAZOP meetings
- Long lead times for seal support systems

Additional Installation Costs

- Cooling water piping or heat exchangers
- Electrical cabling and connection
- Barrier fluid (first fill)
- Instrument wiring and connection
- Instrument configuration (DCS)

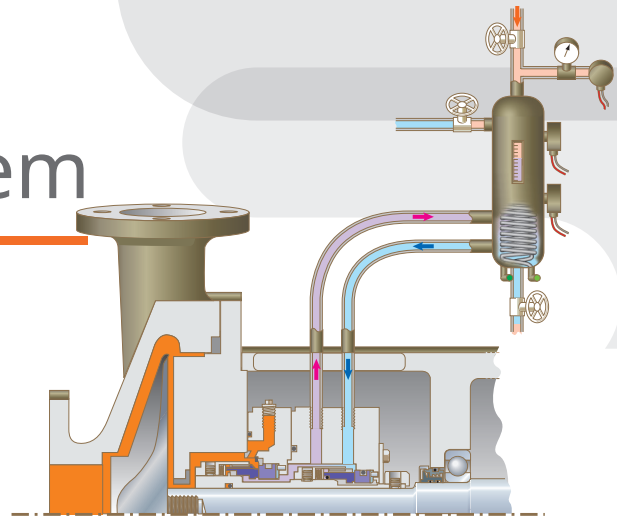
Additional Operating Costs

- Repair or replacement of mechanical seals and bearings
- Replenishment of barrier fluid
- Additional man-hours to operate and maintain seal systems
- Lost production during downtime
- Removal of barrier fluid from product
- Maintaining of seals on stand-by pumps

Don't Magnets and Metal Attract? Introducing ZeroLoss

Although metal containment shells have been used to provide the barrier between the two sets of magnets driving the pump for many years, HMD Kontro have recently introduced the ZeroLoss shell made of a PEEK composite material.

This has significant benefits in both providing greater robustness for the pump and in reducing power consumption and so operating costs. It also often means that a smaller motor can be used, reducing initial capital cost and a smaller footprint is required, so saving space.



"Research has shown the typical seal life for ANSI pumps to be under 2 years. Further independent studies have shown the total life cost of sealless pumps to be only 60% of their equivalent sealed pump."

As the name suggests, because a magnetic drive pump is sealless, there is no need for a seal support system and all the costs and complexities that involves. As a result, maintenance is significantly reduced and there is less risk to operatives during ongoing operations.



How Do I Protect My Pump?

To protect and extend the life of a sealless pump, various instrumentation is available that will monitor power, temperature and liquid conditions. Those available from HMD Kontro, as examples, include VapourView, a revolutionary gas in liquid detector, and power control monitors.

These simple devices monitor the amount of vapour present in the pumped liquid and the actual power absorbed respectively and cut out the pump if it falls below a predetermined value or goes above its upper set limit.

In addition to this we can provide temperature sensors. These measure the temperature at the containment shell and can therefore give an indication of process or mechanical problems. Fit these and this will eliminate 90% or more of any potential for magnetic drive pump failures.

The main cause of magnetic drive pump failure is process related. This is true of both sealed and sealless pumps.

Most process related failures are caused by vapour because of:

- Dry running or low flow
- Closing valve on suction or discharge
- Cavitation or vapour in pump
- High flow overload



Can I Service Sealless Pumps on Site?

Thanks to a modular construction and the ability to dismantle HMD Kontro sealless pumps without special tools, when required, servicing and maintenance of the pumps on site is simple and straightforward. The modular construction and common componentry, for example cartridges, means less spare parts stock and inventory for reduced operational costs



Isn't Magnetic Drive Relatively New Technology?

HMD Kontro invented the concept of the sealless pump over 70 years ago. Since then the company has perfected the design so that they are applicable to a wide variety of applications and operations. The Company has also built up huge expertise and experience and so you can be sure of receiving quality advice and be confident in your pump purchase.



What about Regulations & Accreditations?

Pumps using sealless technology can be supplied to the relevant international standards including API, ASME, ANSI and ISO. You can be sure of compliance as they are built to the standards without deviations. Manufacturing and design of HMD Kontro pumps is fully in accordance with ISO 9001.



What About Total Life Cycle Costing?

HMD Kontro have considered this very carefully. Whereas in some cases a magnetic drive pump is a little more expensive to purchase than a mechanically sealed pump due to the extra costs of manufacture, in most cases the long service life and minimal maintenance costs provide a highly competitive life cycle cost.

Remember with sealless pumps you have no sealing support systems to design, procure, install and maintain. You have an extended mean time between failure and comparatively economical spares costs.

There is no shaft or impeller damage caused by shaft deflection and no shaft sleeve wear caused by the seal. Generally only a low cost service kit is required for HMD Kontro pumps.

There is no product leakage and no leakage of barrier fluid into the product as happens with double mechanical seals. The costs of lost production is greatly reduced, there is less environmental impact and less disposal and decontamination costs.

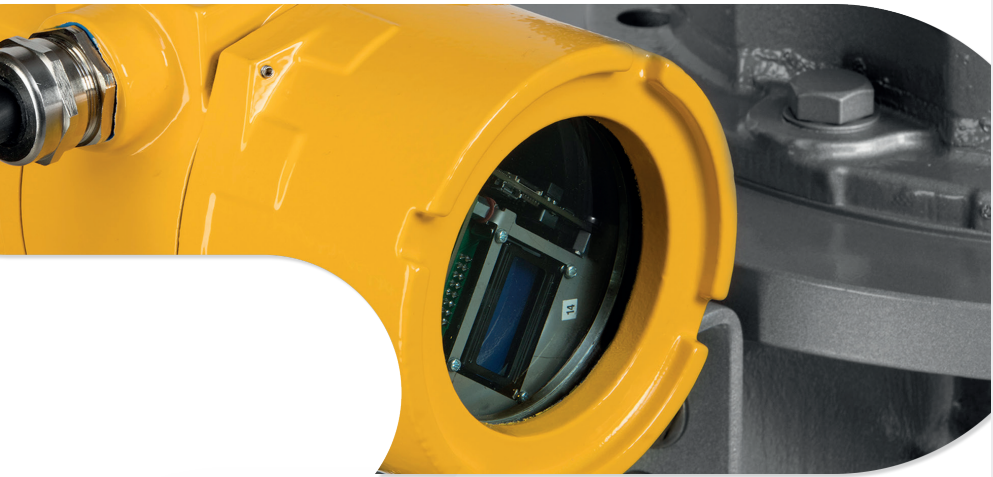
In addition the HMD Kontro ZeroLoss™ composite PEEK containment shell reduces power consumption, whilst also further increasing robustness, and can mean the use of a smaller motor.

Taking all this into account you can build a good picture of the whole life costing of HMD pumps against sealed pumps. The MTBF shown for sealed pumps is typical according to independent data and is a conservative estimate for an HMD Kontro sealless pump.

Other Costs to Consider:

Add to the above figures the cost of lost production, cost of disposal and decontamination of parts and barrier fluid / gas supply, plus the potential environmental costs (remember magnetic drive pumps do not leak to atmosphere) of a sealed pump and you have a very convincing case to specify sealless.





THINK[™]
SEALLESS

That's HMD Kontro Know How

In summary, HMD Kontro sealless pumps can give a much-reduced lifetime cost for the majority of applications. They can also help to meet your EH&S commitments. Please enquire today for further information on **+44 (0) 1323 452000** or visit www.hmdkontro.com.

 **HMD KONTRO**
Sealless Pumps

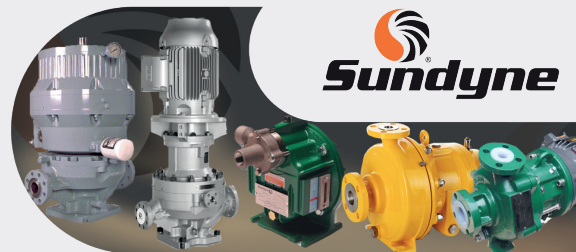
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