INDUSTRY

SETTING INNOVATIVE STANDARDS
A magnetic drive pump uses a magnetic field to create the rotation of the impeller (or any other device utilized to displace fluid). The external magnet is mounted on the motor shaft. The liquid end consists of pump impeller (or any other device used to displace fluids) and an internal magnet mounted onto the driven shaft which is supported by bushing assembly and HERMETICALLY sealed by containment shell. Without the need of a mechanical seal. The external magnet begins to rotate when the motor is started. The rotating magnetic field effects the inner magnet which begins to rotate the impeller as the same speed of the external magnet to displace the fluid.

**MAGNETIC DRIVE PUMPS OFFER A SERIES OF SUPERIOR ADVANTAGES OVER MECHANICAL SEAL PUMPS:**

- Pump is sealless guaranteeing operational safety for operators and environment, most of all in case of critical, hazardous, corrosive or expensive chemicals pumping.
- Without mechanical seal, both initial costs of the same and cumbersome auxiliary API flushed plans are avoided.
- For the same reason, pump selection, operation and maintenance are much simpler and less expensive than mechanical seal.
- Ability to handle high gas content fluids in which most mechanical seals would fail due to poor lubrication and cooling.
- Are you concerned about energy costs, maintenance costs (spare parts and downtime), leakages of dangerous/expansive chemicals, frequent seal failure and complex sealing system? M Pumps has the solution to address your concerns with its advanced sealless pump technology.

With its superior technology applied on the HYBRID containment shell which generates negligible Eddy current loss, M Pumps is now able to directly replace double mechanical seal pumps and canned motor pumps using standard motors. It is now possible to upgrade your conventional pumps into M Pumps most advanced and environmental friendly sealless pumps.

**MAGNETIC DRIVE PUMPS**

**M PUMPS OFFERS THE MOST ADVANCED REAR CONTAINMENT SHELL ON THE MARKET.**

**M PUMPS HAS SOLVED ALL THESE ISSUES WITH THE HYBRID CONTAINMENT SHELL (SEE PAGE 9)**

The Hybrid Rear Shell offers several advantages:

- Vs other magnetic drive manufacturers, much lower power absorption.
- Consequently the power consumption is much lower, offering very competitive Total Cost of Ownership.
- Almost negligible heat generation, with easy handling of: low boiling chemicals/cooling agents.
- 50 bar g design pressure and -90°C/+200°C design temperature.
- On demand: Reliable, immediate temperature reading (temperature sensor is located at the source of the magnetic field, providing accurate reading and timely response, avoiding pump failure).

**CENTRIFUGAL PUMPS**

State of the art centrifugal pumps from the simplest to the most demanding industrial process application. Suitable for transfer, unloading, circulation and many other applications. High efficiency, long life and low cost maintenance. Meeting several international standards (ISO/ DIN/ANSI/API) and available in both magnetic drive (sealless) and traditional mechanical seal.

- Flow up to 4000 m³/h
- Head up to 2200 m
- System pressure from vacuum up to 1500 bar
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C

**REGENERATIVE TURBINE PUMPS**

Low to medium flows, pulsation free, suitable where high pressure is required. Perfect solution where traditional centrifugal pumps are not suitable (used instead of a multistage pumps).

- Flow up to 24 m³/h
- Head up to 800 m
- System pressure from vacuum up to 1500 bar
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C

**SIDE CHANNEL PUMPS**

316 stainless steel (or better) multi-stage barrel construction. Ideal to pump liquefied gasses and liquids under vapor pressure like condensate, refrigerant, boiler feed water or LPG (up to 50% gas content).

- From low to medium flows
- Best choice for truck unloading and natural gas handling.
- Low NPSHr 0,5 m.
- Self priming up to 5 m.
- Flow rates up to 80 m³/h, discharge pressure up to 48 bar g.
- Suitable for viscosities from 1 to 1000 cP
- Pulsation free dosing/sampling/transfer pumps
- Flow rates up to 300 l/h, discharge pressure up to 30 bar g
- Suitable for lubricating media up to 25000 cP
- Temperature up to +200°C
- Flow rates up to 38 m³/h, discharge pressure up to 5 bar g
- Viscosities up to 10000 cP
- System pressure up to 50 bar
- Delivery Head up to 450 m
- Temperature from -90°C up to +250°C
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C

**VOLUMETRIC PUMPS**

- Flow rates up to 3000 l/h, discharge pressure up to 48 bar g.
- Suitable for viscosities from 1 to 1000 cP
- Pulsation free dosing/sampling/transfer pumps
- Flow rates up to 80 m³/h, discharge pressure up to 30 bar g.
- Suitable for lubricating media up to 25000 cP
- Temperature up to +200°C
- Flow rates up to 38 m³/h, discharge pressure up to 5 bar g
- Viscosities up to 10000 cP
- Temperature from -150°C up to +400°C
- No heat exchanger required up to +350°C
- No heat exchanger required up to +350°C

**SPECIAL PUMPS**

M PUMPS is able to design and manufacture bespoke pumps for the most demanding applications:

- High system pressure (up to 1500 bar g)
- High design temperature (400°C)
- Low design temperature (liquid CO₂, cryogenic application)
- Solid content
- Jacketing
- Exotic materials such as: Hastelloy C® 276, Titanium, Monel®

**INTERNAL MAGNET**

**EXTERNAL MAGNETS**

**REAR CONTAINMENT SHELL**

There are NO MORE technical reasons to choose a mechanical seal pumps Vs a M PUMPS magnetic sealless pump.
CENTRIFUGAL PUMPS

Extremely wide centrifugal pump range, meeting and exceeding international standards (DIN EN 22858 – ISO 2858, ANSI B73.3, API 610 2nd Ed & API 610 11th Ed) and available in both magnetic drive and traditional mechanical seal design.

These pumps can be supplied both with close coupled and long coupled version (with or without baseplate). Metallic wetted parts from AISI 316 (STD), Duplex, Hastelloy C, Titanium etc.

Several non-metallic models for corrosive and ultra-pure application (PTFE lined cast iron pump heads, vertical pumps with solid plastic, injection molding both in PP and PVDF.

**M MAG-M SERIES**
- Centrifugal Vertical Sealless Pump
- ANSI B73.3
- Flow up to 500 m³/h
- Head up to 120 m
- Length up to 7 m

**CN MAG-M SERIES**
- Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 4000 m³/h
- Head up to 220 m

**CL MAG-M SERIES**
- Horizontal Lined Centrifugal Magnetic Sealless Pump
- ANSI B73.3
- Flow up to 90 m³/h
- Head up to 63 m

**CN SEAL-M SERIES**
- Centrifugal Pump-Mech. Seal
- ANSI B73.3
- Flow up to 4000 m³/h
- Head up to 270 m

**CL SEAL-M SERIES**
- Lined Centrifugal Pump-Mech. Seal
- ANSI B73.3
- Flow up to 550 m³/h
- Head up to 170 m

**CN MAG-PL SERIES**
- Lined Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 35 m³/h
- Head up to 23 m

**CM MAG-P SERIES**
- Reinforced Plastic Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 140 m³/h
- Head up to 44 m

**CM MAG-M SERIES**
- Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 3500 m³/h
- Head up to 170 m

**CL MAG-M SERIES**
- Centrifugal Magnetic Sealless Pump
- ANSI B73.3
- Flow up to 200 m³/h
- Head up to 75 m

**CN MAG-PL SERIES**
- Lined Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 100 m³/h
- Head up to 75 m

**CM MAG-PL SERIES**
- Lined Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 90 m³/h
- Head up to 63 m

- Closed impeller
- High efficiency
- SiC bearings
- Modular construction 4000 m³/h – 700 m
- -150°C to +400°C

PETROLEUM, PETROCHEMICAL & GAS PROCESS SERVICES

DIN EN 22858

- Centrifugal Vertical Sealless Pump
- Mag-Drive
- Flow up to 500 m³/h
- Head up to 120 m
- Length up to 7 m

- Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 4000 m³/h
- Head up to 220 m

- Horizontal Lined Centrifugal Magnetic Sealless Pump
- ANSI B73.3
- Flow up to 90 m³/h
- Head up to 63 m

- Centrifugal Pump-Mech. Seal
- ANSI B73.3
- Flow up to 4000 m³/h
- Head up to 270 m

- Lined Centrifugal Pump-Mech. Seal
- ANSI B73.3
- Flow up to 550 m³/h
- Head up to 170 m

- Centrifugal Sealless Pump
- ANSI B73.3
- Flow up to 4000 m³/h
- Head up to 270 m
REGENERATIVE TURBINE PUMPS

Superior performances (high head, very high overall efficiency, pulsation free and very low NPSH r) thanks to both M PUMPS design and choice of materials (AISI 316, PEEK etc.)

These pumps, thanks to the small footprints, and custom design, can be used in any industrial application, from demanding 24/7 Oil&Gas application to service duties for OEMs

TURBINE

Hydraulically-balanced floating impeller design that builds pressure equally on both sides.

The four available models cover several type of applications and budget where low to medium flows and high head are required.

The CT MAG-M sealless regenerative turbine pumps are designed with first centrifugal stage and one or two turbine stages. Ideal for low flow-high head (up to 800 meters) applications and low NPSH (as low as 0.5 meters).

T MAG-M SERIES
Peripherical Pump
Flow up to 9 m³/h
Head up to 90 m

T ECO MAG-M SERIES
Peripherical Pump
Flow up to 1.5 m³/h
Head up to 85 m

T MAG-P SERIES
Solid Plastic Peripheral Pump
Flow up to 13 m³/h
Head up to 53 m

VOLUMETRIC PUMPS

M PUMPS, over the years, was required to develop several volumetric pumps to meet its customers’ demands.

These volumetric pumps, benefit from M PUMPS hydraulic knowledge and most of state-of-the-art magnetic drive design experience.

These type of pumps are commonly available in the market with traditional mechanical seal technology. M PUMPS care for centrifugal pumps was transferred to volumetric technology and coupled with the most advanced magnetic drive solution currently available.

M PUMPS VOLUMETRIC PUMPS ARE

- Robust, industrial process pumps
- Pulseless
- Leak-free
- Flow rate virtually unaffected by pressure, temperature and viscosity variation

V IN LINE SERIES
Sliding Vane Pump
Flow up to 3 m³/h
Head up to 12 bar

V MODULAR SERIES
Multistage Sliding Vane Pump
Flow up to 2 m³/h
Head up to 48 bar

VP SERIES
Solid Plastic Sliding Vane Pump
Flow up to 3 m³/h
Head up to 5 bar

EXTERNAL GEAR

- Suitable for lubricating media with viscosities up to 2000 cSt
- Temp up to +200°C

GS MAG-M SERIES
External Gear Pump
Flow up to 80 m³/h
Head up to 30 bar

HOLLOW DISC

- Self priming, reversible flow heavy duty mag drive pumps
- Suitable for oily media, paints, glues, resins, molasses, coal, tar.
- Viscosities up to 10000 cSt.

MHV MAG-M SERIES
Hollow Disc Pump
Flow up to 38 m³/h
Head up to 8 bar

SLIDING VANE

- Pulsation free, dosing/sampling/small transfer pump.
- Viscosities 1 to 1000 cP.
- Flow rates to 3000 l/h Disch. press up to 48 bar.

V IN LINE SERIES
Sliding Vane Pump
Flow up to 3 m³/h
Head up to 12 bar

V MODULAR SERIES
Multistage Sliding Vane Pump
Flow up to 2 m³/h
Head up to 48 bar

VP SERIES
Solid Plastic Sliding Vane Pump
Flow up to 3 m³/h
Head up to 5 bar

EXTERNAL GEAR

- Suitable for lubricating media with viscosities up to 25000 cSt
- Temp up to +200°C

GS MAG-M SERIES
External Gear Pump
Flow up to 80 m³/h
Head up to 30 bar

HOLLOW DISC

- Self priming, reversible flow heavy duty mag drive pumps
- Suitable for oily media, paints, glues, resins, molasses, coal, tar.
- Viscosities up to 10000 cSt.

MHV MAG-M SERIES
Hollow Disc Pump
Flow up to 38 m³/h
Head up to 8 bar
SIDE CHANNEL PUMPS
316 stainless steel Multi-Stage Barrel construction. Ideal to pump liquefied gasses and liquids under vapor pressure like condensate, refrigerant, boiler feed water or LPG (up to 50% gas content).
Applications: Chemical and Petrochemical Industries, Refineries, Liquid gas plants, Power plants truck loading and unloading.

- Aggressive, explosive and toxic liquids
- Isobutylene, butadiene, propylene
- Hydrocarbons
- Liquid gases
- Boiler water
- LPG
- Ammonia
- Methyl chloride, vinyl chloride

SC MAG-M SERIES
Centrifugal Side Channel Combination Pump
Flow up to 40 m³/h
Head up to 450 m
NPSH up to 0,5 m

SIDE CHANNEL
• Low NPSHr (as low as 0,5 metres)
• Able to deliver up to 50% gas content
• Self priming
• Flows up to 40 m³/h
• Head up to 450 m (multi stage)
• System pressure 50 bar
• Operating temperature -90 to +250°C
• Heavy Duty Centerline
• Barrel construction (No intermediate gaskets)

HYBRYD REAR CONTAINMENT SHELL

Thanks to our 40 years of experience in magnetic drive technology, M Pumps is able to supply innovative and unique rear containment shell on magnetic drive pumps to enhance the competitiveness and operational efficiency in today’s process industry. As technology advances, the need for high pressure, high temperature and energy efficient become the top priorities among pump users.

Staying ahead of these priorities required M Pumps to adopt a forward thinking and proactive approach to pump design.

AVAILABLE ON ALL M PUMPS PROCESS PUMPS
Based on this Philosophy, M Pumps has created an advanced High pressure, High Temperature and Energy efficient Rear Containment Shell to eliminate the various concerns on the use of magnetic driven pumps in the process industry.

M PUMPS Hybrid Technology is the most advanced and attractive ENERGY SAVING solution available now in the market. Innovative and unique M Pumps solution offering:

MAIN ADVANTAGES
• Impressive reduction in Magnetic losses
• High Pressure design: vacuum to 50 bar g
• High Temperature design: -90°C to 200°C
• Motor power installation up to 1000 kW

The PATENT US 9841025 B2 hybrid technology containment shell combines the reliability of a standard inner metallic shell (High Pressure and High Temperature) with the strength of Carbon Fibre outer shell to achieve an energy efficient (Reduction in magnetic losses and cost of ownership) and environmental friendly (Hermetically sealed) solution.

MAG LOSSES AND HEAT REDUCTION

MINIMIZED TEMPERATURE RISING ON REAR CASING REGION

Comparison between M PUMPS and other rear shell solutions available now on the market.

(*) Comparison with installed motor 18,5 kW, 2 poles, 50 Hz. Hybrid technology reduces greatly heat generation in the rear casing region. This benefit is particularly important when pumping low boiling liquids.
### REFERENCE LIST

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### CERTIFICATIONS

- Member of CIBA Correspondent
- ISO 9001:2015
- Sintesi Quali Certifico
- UKAS
- RINA

M Pumps advanced magnetic sealless pumps and pump systems.

M Pumps with its wide portfolio of products incorporates over 26 designs and 350 basic models allow our engineering department to select the right pump for your exact process requirement. Pre-engineered pumps, highly engineered and special purpose pumps and systems can be tailor-made to meet any demanding operating parameters as required by today's complex processes.

ALL PUMPS MANUFACTURED BY M PUMPS ARE DESIGNED IN FULL ACCORDANCE WITH EXISTING INTERNATIONAL STANDARDS.


**THE DRIVING FORCE IN MAGNETIC SEALLESS PUMPS TECHNOLOGY**

Since its foundation in 1978, M Pumps has been the driving force in the design and development in magnetic driven sealless pumps technology. Our unparalleled expertise and unrelenting passion have created a new paradigm in the application of magnetic sealless pumps in the process industry.

Energy Saving, Environmental Friendly, Safety, Performance, Operation reliability, Total Cost of Ownership and pumps system simplification are now available with one supplier only: