MAGNETIC COUPLING, M SERIE

TECHNOFLEX®

The Power to Perform

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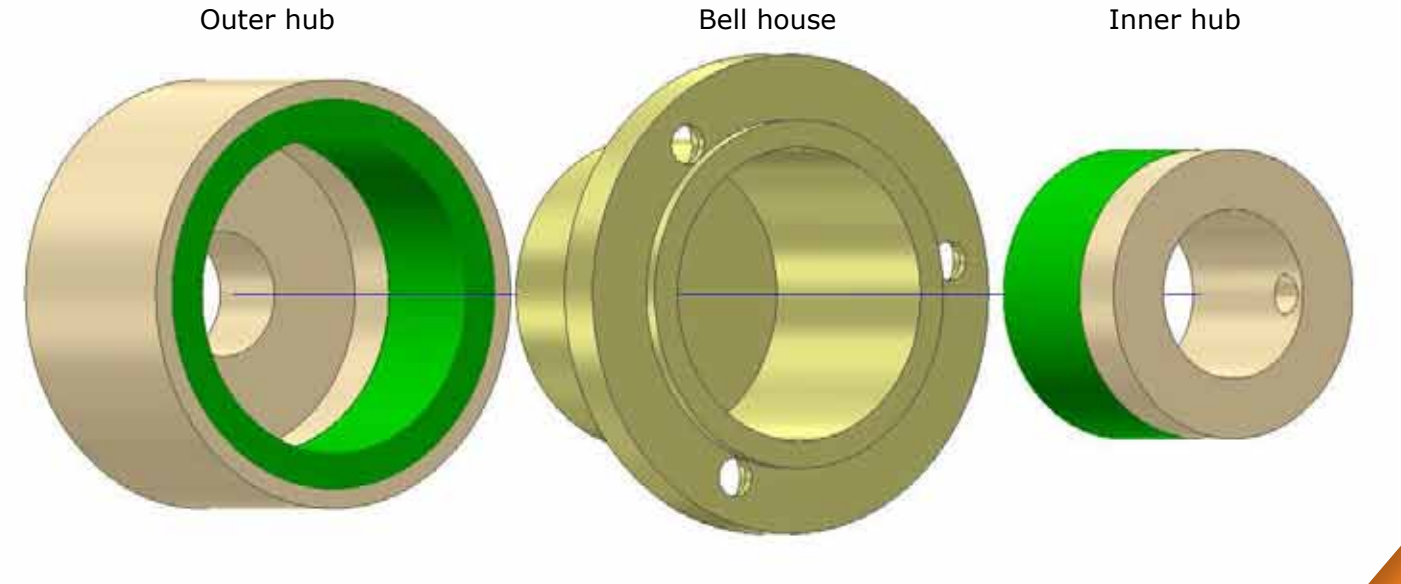
PERMANENT MAGNETIC SYSTEMS

THINK GREEN

MAGNETIC COUPLING, M SERIE



TECHNOFLEX

POWER TO PERFORM

Magnetic Couplings - Design and Function

Magnetic couplings consist of an outer and an inner hub. The two hub do not touch each other – the coupling works via the non-contact transfer of power, which means that the magnetic solution – in contrast to traditional solutions – does not experience any wear. The magnetic coupling is thus maintenance-free.

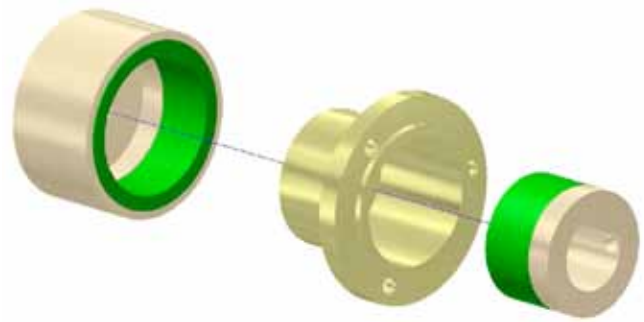
Between the two rotating units it is possible to place a can such that two different media can be kept separate. With the hermetic enclosure of the coupling in a stainless steel housing, corrosion is avoided and the coupling can operate directly as a wet runner in different liquids and aggressive environments.

The outer drive is normally connected to the drive unit and the inner hub is, for example, connected to a pump. If a can is placed between the two contact-free rotating units, a standard air-cooled norm motor can for example be connected to a pump without the use of gaskets and seals.
Magnetic couplings are also called torque couplings because they can transfer a certain maximum mechanical torque through the air. If the torque exceeds this maximum value, the coupling will "slip", which means that the rotational speed between the two coupled units is no longer the same. This prevents wear and tear and the magnetic coupling provides a built-in safety feature that protects against damage.

M-Serie® - Magnetic Couplings

Technoflex is a specialist in the production of permanent magnetic couplings in corrosion-resistant materials. We focus on being able to provide maintenance-free solutions.

Technoflex® Magnetic couplings are high-quality products with an extremely long service time, no maintenance and high torque transfer. They are primarily used in three different ways: Firstly, to transfer mechanical work to a sealed container; secondly, to reduce the load on connected bearing systems; and thirdly, as a torque limiter coupling.



Agressive Liquid

- Maintenance-free
- Long service time
- Corrosion-free materials
- High torque transfer at limited volume
- Option of 100% sealed system
- Option of separating media
- Cost-effective
- High-temperature solutions

Unlike traditional solutions, magnetic couplings can accommodate considerable differences in eccentricity between the shafts. This results in greater flexibility in the alignment of the system – both radially and axially – and the load on the bearing system is reduced.

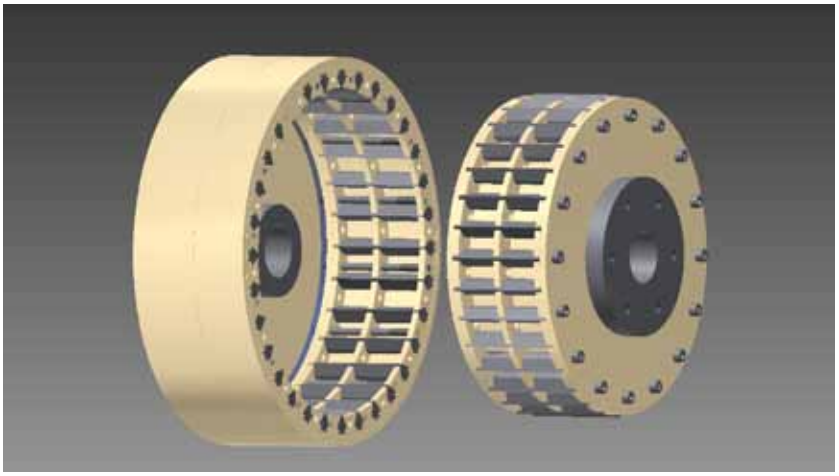
MAGNETIC TORQUE LIMITER AND INSULATING COUPLING
Product qualities

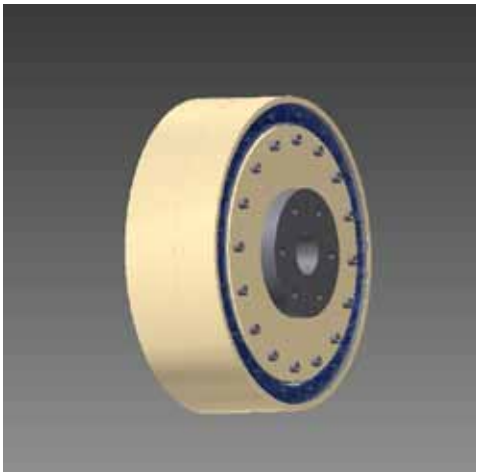
Permanent magnetic coupling.
No-contact torque transfer.

- The magnetic coupling can be adapted and designed according to your needs.
- Connection shaft to shaft, coupling flange to shaft, coupling flange to coupling flange or as per requirements.
- Bore according to ISO (H7), conical or spline. Can be adjusted as per requirements.
- Keyway acc. DIN 6885 can be adjusted according to your needs.
- Material: steel or stainless, bell house is always stainless or synthetic material and peek.
- Torque interval from 0,15 Nm to 95 Nm, and interlock system from 100 Nm to 4500 Nm made as per customer specifications.

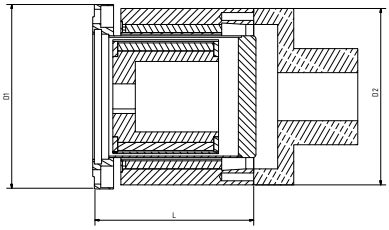
PRODUCT DESIGN

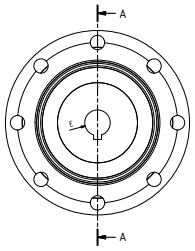
Below is shown how the design looks on the larger magnet couplings. In co-operation with Technoflex the customer may have the required connection custom made. It is also possible to have a complete coupling dimensioned in close co-operation with Technoflex.

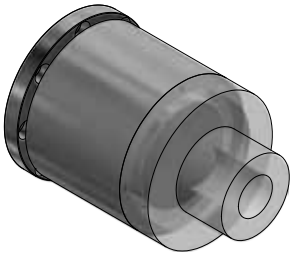




Last but not least Technoflex also develop magnetic couplings as per customer applications in our own test lab – this of course requires that the customer sends the application to Technoflex**.**







* D1, D2 and L can be adjusted

Size	Static work Moment Nm @ 20°C	Outer Rotor				Our all over dimensions			Inner Rotor				Sealing house		
		Material		Max working temperature tmax (°C)	Bore Min./Max.	D1mm	D2mm	Lmm	Material		Max working temperature tmax (°C)	Bore Min./Max.	Max. pressureBar.	Max RPM (1/min.)	Material
TFM1-001	1	Outer hub material. S355J2G3/ST52/STANLESS STEEL	Magnet material. NdFe (neodymium) work temperature 150°C to 250°C (on request) and Sm2Co17, Samarium cobalt to 350°C	Minus 45°C to 350°C	5/14mm	62	54	46	Outer hub material. S355J2G3/ST52/STANLESS STEEL	Magnet material. NdFe (neodymium) work temperature 150°C to 250°C (on request) and Sm2Co17, Samarium cobalt to 350°C	Minus 45°C to 350°C	5/12mm	Normally 16Bar; the max. pressure has to be calculated in each single case.	36001/min., depending on the used sealing house material and magnet material; on request, we can go higher; all rotating parts can be balanced on request.	From size TFM1 to TFM3 stainless steel 304 /316 ore PEEK and from TFM3 and up stainless steel 316 ore PEEK, PEEK is especially used in case of high RPM and low pressure, in order to avoid extensive power loss.
TFM1-002	2				5/19mm	62	54	46				5/16mm			
TFM2-004	4				5/22mm	69.5	75	55				12/22mm			
TFM2-006	6				9/28mm	69.5	75	65				12/22mm			
TFM2-008	8				9/28mm	69.5	75	75				12/22mm			
TFM3-007	7				9/38mm	89.5	94	71				12/25mm			
TFM3-010	10				9/38mm	89.5	94	71				12/25mm			
TFM3-022	22				9/38mm	89.5	94	91				12/25mm			
TFM4-040	40				9/38mm	118	110	102				12/25mm			
TFM4-010	10				10/45mm	118	110	102				12/28mm			
TFM4-020	20				10/45mm	118	110	102				12/28mm			
TFM4-030	30				14/45mm	118	110	102				12/28mm			
TFM4-060	60				14/45mm	118	110	101				12/28mm			
TFM5-022	22				14/65mm	153	145	113				14/55mm			
TFM5-050	50				14/65mm	153	145	113				14/55mm			
TFM5-080	80				14/65mm	153	145	113				14/55mm			
TFM5-100	100				14/65mm	153	145	113				14/55mm			
TFM6-085	85				14/75mm	178	170	136				20/70mm			
TFM6-100	100				14/75mm	178	170	136				20/70mm			
Torque over 100Nm on request															

Magnets are made from NdFeB. Hubs are in St52. Bell housing in Stainless 1.4571 and peek. This may also be made in another alloy or in synthetic material. Coating in NiCuNi, Nickel coating, with a work temperature of Max 150 °C. Technoflex can per request produce up to 240 °C and with SmCo17 up to 350 °C.

Coating

The magnet has passed the 1000 hours corrosion salt spray test ISO9227 under neutral conditions and the cross hatch adhesion test ISO2409.

Magnetic Couplings - Applications

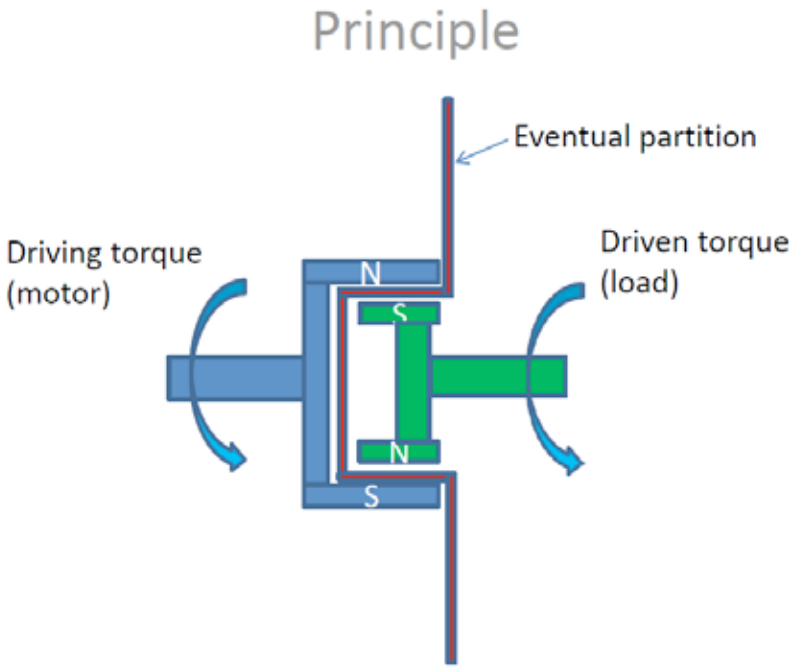
TECHNOFLEX® magnetic couplings are used within, for example, the pump industry, the pharmaceutical industry, the chemical industry, the biotech industry and the food industry.

Typical applications:

- Submersible pumps
- Circulation pumps
- Household pumps
- Wastewater pumps
- Industrial pumps
- Liquid systems
- Mixers & agitators
- Hydraulic & process technology

Sketch of M-Serie® outer and inner drive in a permanent magnetic coupling system:

Technoflex
Magnetic Couplings

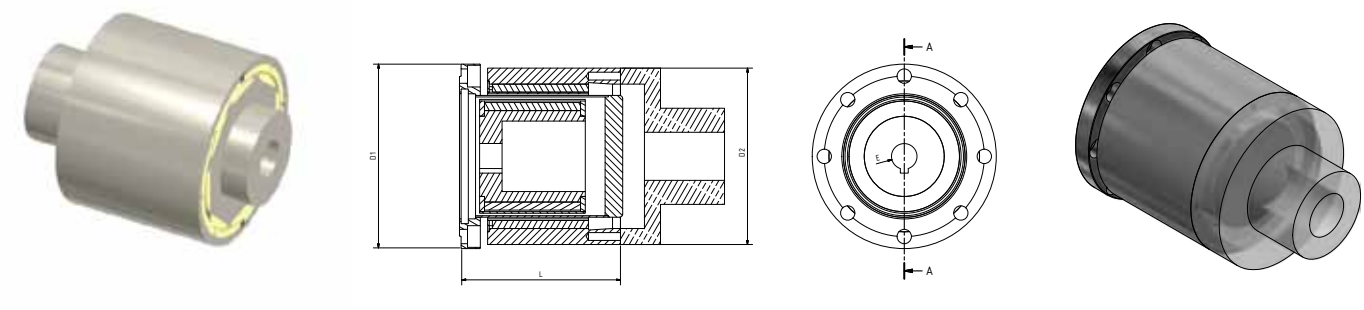


Magnetic couplings - Case Story
Hermetically sealed magnetic system...

The development of a hermetically sealed magnetic coupling has optimised the final system solution for one of Technoflex' customers in the pump industry. The magnetic coupling replaces a previous solution with a standard mechanical shaft seal.

The new magnetic coupling is completely impermeable such that liquid cannot escape. It is optimised in order to ensure minimal eddy current losses in the can yet at the same time maintain the corrosion resistance and stability of the can in thin stainless steel.

The final solution has this also benefitted the customer in terms of cost.

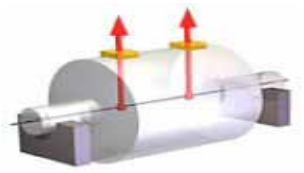


BALANCING CENTER

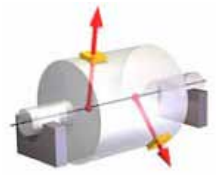
Technoflex do static and dynamic balancing of shafts, hubs and flanges including certificate.

We balance the threads in 1 level, up to ø120 mm with maximum weight of 40 kg. 2-plane balancing up to ø800 mm, maximum weight 40 kg and the maximum length of 1000 mm bearings.

TECHNOFLEX do static and dynamic testing of the slipping of the magnetic coupling incl. We measure also the temperature when the magnetic coupling slips. That we do measure the axial and redial forces with strain gauges. We test the couplings for 0,001 Nm up to 250 Nm.



Statisk afbalancering



Dynamisk afbalancering

M-SERIE DEMENSION AND TECHNICAL DATA

Test center

Strain gauges

Hub and magnets

Containment shrod

M-serie© couplinger