

Magnetic Coupling

Sintex a/s is a specialist in the production of permanent magnetic couplings in corrosion-resistant materials. We have always focused on providing maintenance-free solutions with unique advantages - both compared to mechanical solutions and compared to other magnetic solutions.

How does it work?

Magnetic couplings consist of an outer and an inner drive. There is no contact between the outer and inner drive, the power being transmitted using magnetic forces. This means that the magnetic solution - in contrast to classical mechanical solutions - does not experience any wear.

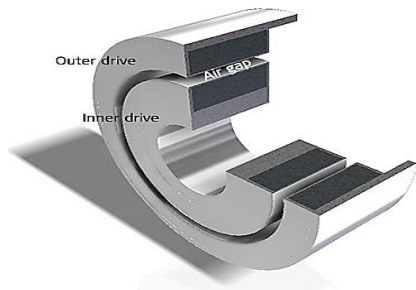


Figure 1: 3D model and 2D sketch of an inner and outer drive

The magnets are fully enclosed in stainless steel such that it is protected against all external factors and the coupling can operate directly as a wet runner in liquids, if wanted.

It is possible to place a can between the two rotating drives in order to separate two different medias or in order to keep liquid on one side and no liquid on the other side.

Uniqueness of magnetic couplings

Sintex magnetic couplings provides a range of advantages - both compared to mechanical solutions and other magnetic solutions. Figure 2 summarize the main advantages.

Permanent magnetic couplings have also been found to permit higher assembly tolerances and self-alignment of two systems compared to mechanical solutions.

Types and characteristics

Sintex magnetic couplings cover a range of different types - disk couplings, classical magnetic couplings (with or without separator cans) as well as our patented powder-based

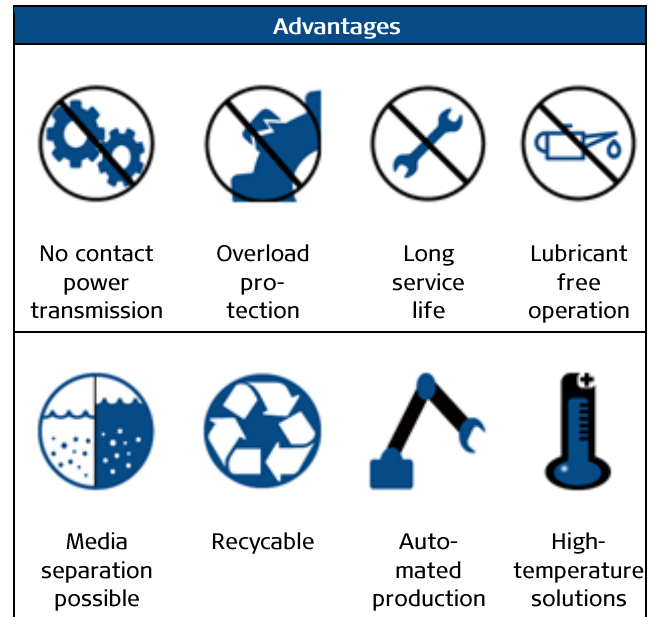


Figure 2: Advantages of magnetic couplings

solution with encapsulated magnetic powder. The magnetic function of the couplings can be either linear or rotating.

The couplings can be produced with various types of magnets or magnetic powder depending on the application needs.

Classical magnetic couplings are made with both neodymium magnets, samarium cobalt magnets or a combination of the two - but with no adhesive. These solutions as well as the patented powder-based solutions eliminates construction and recycle challenges. The processes are in various degrees suitable for automated production lines, which is valuable for high volume production.

Most couplings are customer specific, but we do have some standardized solutions available (see back page).



Figure 3: Various types of magnetic couplings



Examples of 2 sizes of standardized magnetic classical couplings:

Sintex Magnetic Coupling - Small

Magnet material	Max. Temp. [°C]	Torque [Nm]	Dimensioning [mm]									
			A	B	C	D	E*	F*	G*	H*	I	J
NdFeB	150	16.5	121	57	90.45	60	10	8	32	60.6	67.5	
		33.0	146									57
		49.4	171									82
		65.9	196									107
SmCo	250	12.5	121									57
		25.0	146									82
		37.6	171									107
		50.1	196									132
NdFeB/SmCo	180	14.4	121									57
		28.7	146									82
		43.1	171									107
		57.5	196									132

Sintex Magnetic Coupling - Large

Magnet material	Max. Temp. [°C]	Torque [Nm]	Dimensioning [mm]									
			A	B	C	D	E*	F*	G*	H*	I	J
NdFeB	150	79.2	192	73.5	115.85	75	10	8	32	77.8	83.9	
		105.6	214									113.5
SmCo	250	60.2	192									113.5
		80.2	214									138.5
NdFeB/SmCo	180	69.1	192									113.5
		92.1	214									138.5

Figure 4: Parameters for 2 sizes of standardized magnetic classical couplings (*Can be produced to any shaft standard)

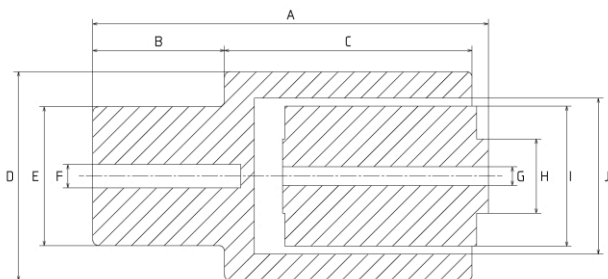


Fig. 5: Reference drawing for above standardized couplings

Application needs

Choice of coupling type, magnet materials, coating etc. depends on application needs such as temperature, environment, torque and so on.

Finite element simulations

Our specialists develop, calculate and optimize solutions using finite element programs, 3D simulations, force calculations, motor calculations, etc.

Below is an example of the flux path for the classical magnetic coupling (with one magnet per pole and iron back for return path) compared to the powder-based magnetic coupling.

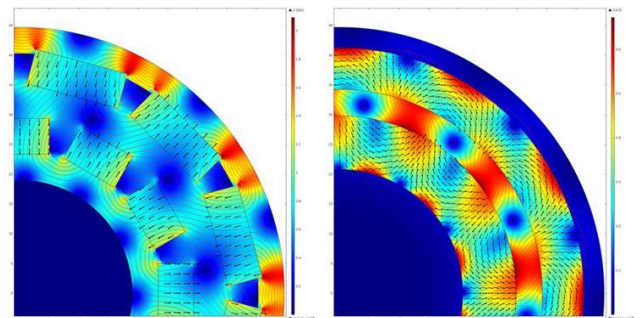


Figure 6: Flux path and magnetic flux density for a classical magnetic coupling and a powder-based magnetic coupling

More information

Contact us for more information about our magnetic couplings e.g. compared to other classical magnetic couplings or compared to mechanical solutions.

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