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.

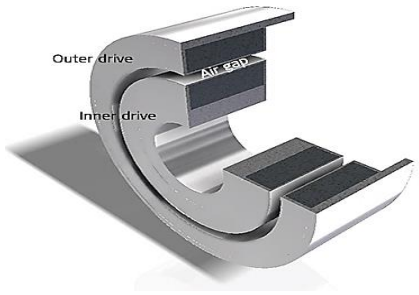

Figure 1: 3D model of magnetic coupling

The magnets can be 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 separation can between the two rotating drives to isolate two different medias such as keeping liquid on one side and air on the other side. Sintex provides a unique can with a thickness equal to just four sheets of paper, this allowing for a high energy efficiency while still maintaining a high strength.

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.

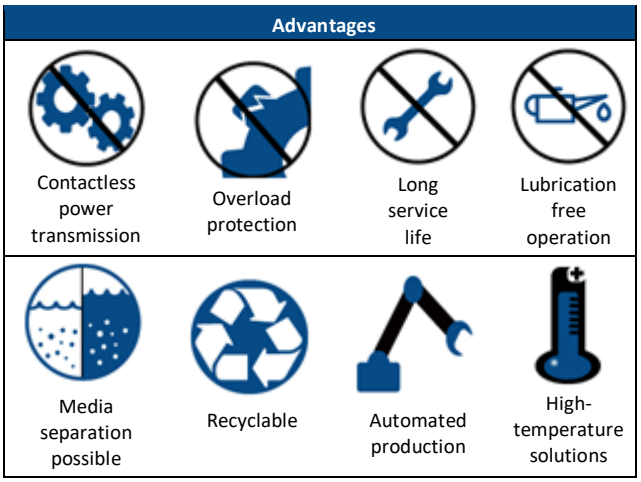

Figure 2: Advantages of magnetic couplings

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 solution with encapsulated magnetic powder.

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 also have some standardized solutions available (see back page).

We have two versions, standard and premium, available in different sizes. The only difference between the two versions is that the standard has the magnets exposed to the surrounding environment while the premium has the magnets fully enclosed in stainless steel and ready to function in any environment.

Rethinking Components of Tomorrow

Jan Graff
Sales Manager
Telephone: +45 4020 4199
Email: jagr-sintex@grundfos.com
www.sintex.com

Sizes of standardized magnetic couplings:

Name	Torque [Nm] | Max temp. [°C]						Dimensioning [mm]																	
							A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q*
Sintex Small 1 Row	16,5	150	14,4	180	12,5	250	ø16 H7	18,2	5 JS9	ø9	ø90,45	4XM6x14	2x6 H7x10	81,5	57	16	40,5	ø24	ø75 H7	ø100	ø118 f8	ø78	ø68,6
Sintex Small 2 Row	33		28,7		25		ø16 H7	18,2	5 JS9	ø9	ø90,45	4XM6x14	2x6 H7x10	106,5	82	16	65,5	ø24	ø75 H7	ø100	ø118 f8	ø78	ø68,6
Sintex Small 3 Row	49,4		43,1		37,6		ø16 H7	18,2	5 JS9	ø9	ø90,45	4XM6x14	2x6 H7x10	131,5	107	16	90,5	ø24	ø75 H7	ø100	ø118 f8	ø78	ø68,6
Sintex Small 4 Row	65,9		57,5		50,1		ø16 H7	18,2	5 JS9	ø9	ø90,45	4XM6x14	2x6 H7x10	156,5	132	20	111,5	ø24	ø75 H7	ø100	ø118 f8	ø78	ø68,6
Sintex Large 3 Row	79,2		69,1		60,2		ø16 H7	18,2	5 JS9	ø9	ø115,85	4XM6x14	2x6 H7x12	138,5	114	25	83,5	ø24	ø110 H7	ø133	ø153 f8	ø100	ø85
Sintex Large 4 Row	105,6		92,1		80,2		ø16 H7	18,2	5 JS9	ø9	ø115,85	4XM6x14	2x6 H7x12	163,5	139	28	105,5	ø24	ø110 H7	ø133	ø153 f8	ø100	ø85

Figure 4: Parameters for the standardized magnetic couplings (*only available for standard variant and not in premium)

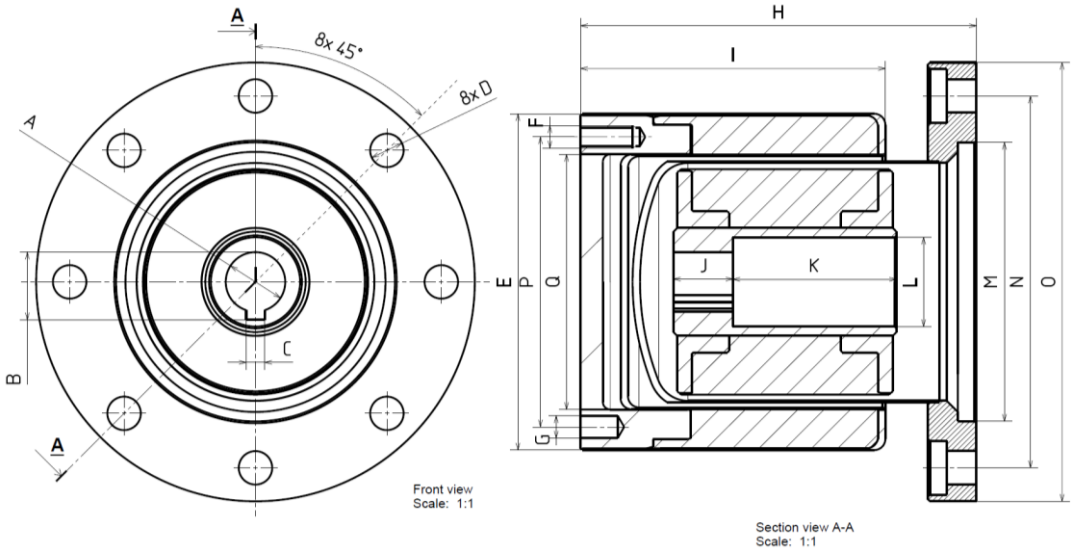

Fig. 5: Reference drawing for above standardized couplings

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. We also have a measurement lab with both standard and unique custom built machines ready to ensure that our couplings fit your exact requirements.

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.

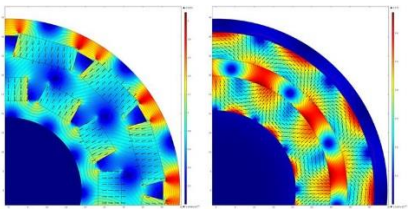

Figure 6: Flux path and magnetic flux density for a classical magnetic coupling and a powder-based magnetic coupling

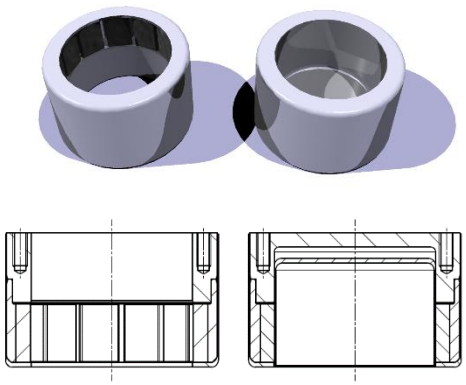

Figure 3: Standard(left) vs premium(right) versions of the Sintex standard coupling program

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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