

MINIATURISED MAGNETIC COUPLING

The patent pending miniature magnetic coupling is capable of transmitting torque over a hermetically separated distance like a radial acting magnetic coupling and at smaller dimensions like an axial acting magnetic coupling. Such as application in a heart catheter pump where the propulsion system and the blood-wetted parts are hermetically separated, the maximum size is an important and also a strong limiting factor.

BACKGROUND

For a pneumatically driven heart catheter pump torque transmission in a miniaturized environment over hermetically separated functional units cannot be done by using conventional magnetic couplings. Therefore a novel design with sufficient torque transmission needs to be implemented. By combining the advantages of an axial and a radial magnetic coupling, a new prototype was developed.

The improvement of this magnetic coupling leads to a significant increase of power transmission which could be validated using an available pneumatically driven heart catheter pump.

TECHNOLOGY

In the presented technology we combine:

- The simplicity and the frame size of an axial acting magnetic coupling with
- the efficiency and functionality of a radial acting magnetic coupling without any compromise

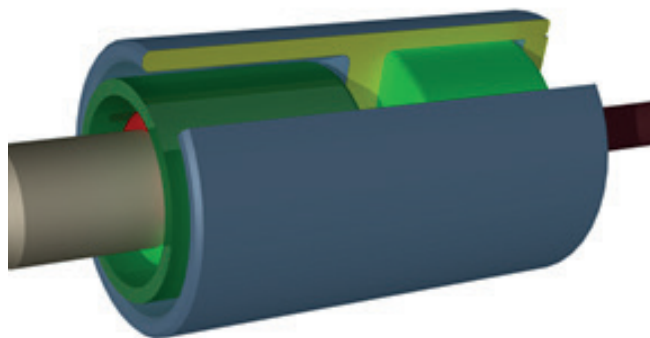


Fig 1: cross-sectional-view of the miniature magnetic coupling

ADVANTAGES

- Enables high torque transmission for miniaturized applications
- Only standard permanent magnets are required
- Up to 40% higher torque transmission compared to an axial acting magnetic coupling
- Smaller moments of inertia than radial acting magnetic coupling
- Easier design of parts than a radial acting magnetic coupling
- Reduced axial loading of bearings compared to an axial acting magnetic coupling
- axial and radial acting forces are continuously variable

REFERENCE:

M002/2014

APPLICATION:

The invention is applicable where torque transmission over hermetically separated distances at minimized dimensions is required. For example, in a blood pump.

DEVELOPMENT STATUS:

Prototype available

KEYWORDS:

magnetic coupling,
miniaturised,
highly efficient,
easy construction

IPR:

AT patent granted (AT515555); EP, US and JP patents filed; WO 2015/172173 A2 published

OPTIONS:

- R&D - Cooperation
- License Agreement

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