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Self-compensating permanent magnet bearing

KEYWORDS

- Permanent Magnet Bearing
- Temperature compensation
- Ageing compensation
- Passive

Technology Market:

High axial load rotating systems: flywheel and turbine

Permanent magnet bearings provide a magnetic force between a rotor and a stator of rotating system. These bearings can be used to relieve the load of on mechanical bearings within an hybrid system to increase the lifetime of the mechanical bearings, and to decrease the losses inside the system. However, properties of permanent magnets are not constant and depend on operating temperature and demagnetization due aging. This change of properties result in a variation of the magnetic force taking place in permanent magnet bearings.

The UCL invention

The new device developed allows maintaining constant levitation force even when the operating temperature varies or due to ageing of magnet. The solution consists in a deformable cavity containing a fluid under constant pressure and able to move in response to a change of permanent magnets properties, thus maintaining levitation force constant.

Applications

- Inertial wheel
- Hydraulic turbine
- Magnetic coupling
- Compressor

Main features

- Constant axial force release
- Contactless
- Increased service life

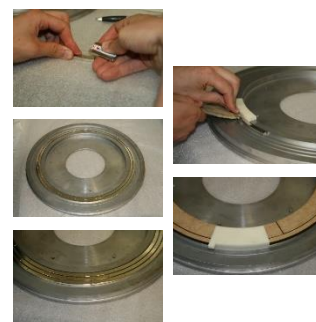
Technology status

TRL 4 Prototype has been tested and functionality have been demonstrated over a limited range of operating conditions.

IPR This work was the subject of an EP patent application filed on the 10th of August 2018 (EP18188404).

Preferred partnership

Joint developments, licensing opportunities



Prototype of the permanent magnet bearing

Interested to develop and / or commercialize this technology?

 **UCLouvain**



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