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## AEROSPACE, AVIATION, TRANSPORT

### Magnetic differential for vehicles

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<b>Protection</b>	IT 102018000010648 US 17/297861 EP 19832193

#### What we are looking for

We are looking for a suitable partner to enter into license deal/co-development partnership

#### What it is needed for?

Conventional mechanic differentials used in transportation and industrial systems function mechanically. As result, they suffer wear and tear and require regular lubrication and maintenance. This can make their use challenging, particularly in applications in remote or hostile environments such as wind turbines, mines, deserts and space.

A novel magnetic differential system, made of two interconnected magnetic gears, has been shown to be applicable to most road and railway vehicles. It operates by transmitting torque from one input shaft to two output shafts rotating at different speeds. It can connect to any source, such as an electric or heat engine and it utilises smart electronic control, eliminating the need for lubrication or maintenance. In addition, since there is no contact with the shaft it reduces vibration; it can function at temperatures limited only by the magnet's temperature range and has elevated conversion efficiency. It can also be integrated with an existing active control vehicle safety system.

#### Advantages

- Low friction and no vibration
- No lubrication or maintenance required
- Greater temperature range
- Intrinsic overload protection
- Integrates with Electronic Stability Control (ESC, ESP), Traction control systems (TCS, ASR), Anti-lock braking systems (ABS), Torque Vectoring

#### Applications

- Most road vehicles that require a differential
- Vehicles that operate in hostile environments (mines, space, desert, wind turbines)
- Low maintenance alternative to current differential gears in rail vehicles

#### TRL scale

