



# MAGNETOHYDRODYNAMIC INERTIAL ACTUATOR

*Innovative inertia wheel concept based on a liquid driven by a magnetohydrodynamic (MHD) actuator*

## Technological benefits

### Very high accuracy

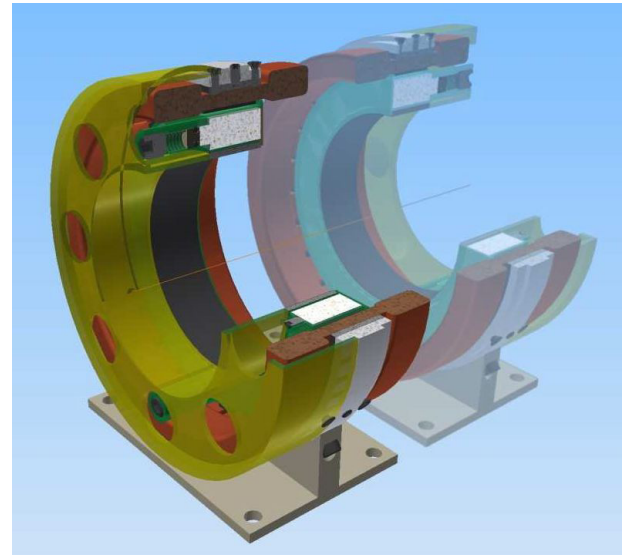
No torque jumps near zero speed  
End of speed control  
Rejected microvibrations limited by the fluid

### Virtually zero wear

No moving mechanical parts; no bearings

### Compact

Non-material wheel axis: potential weight and volume savings



Exploded view of feasibility model

## Invention overview

System based on use of a fluid conductor placed in a core and driven by an MHD actuator.

The inertia wheel thus created is emptied along its rotational axis and does not have moving mechanical parts.

## Potential applications

### Space:

Inertia wheel, reaction wheel for attitude control, control moment gyro

### Non-space applications:

Attitude control, gyro stabiliser for aircraft, gondola and onboard camera

## Commercial benefits

### Virtually infinite lifetime

Reduced maintenance requirements and risk of breakage

### Optimised payload

Lighter and smaller  
Simplified pointing device

**TRL : 4**

*Patented invention, available under license  
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