

Ultra-High Speed Hybrid Magnetic Bearings

Technology Overview

- Hybrid magnetic thrust and radial bearings which enable the rotation of the ultra-high speed, securing both thrust and radial load capacity

Core Technologies

- Combined permanent magnets, electromagnets and auxiliary bearing which can minimize the rotor length and maximize the rotational speed
- Axially-magnetized ring magnet in the thrust bearing which enable the cost down and the easy assembly

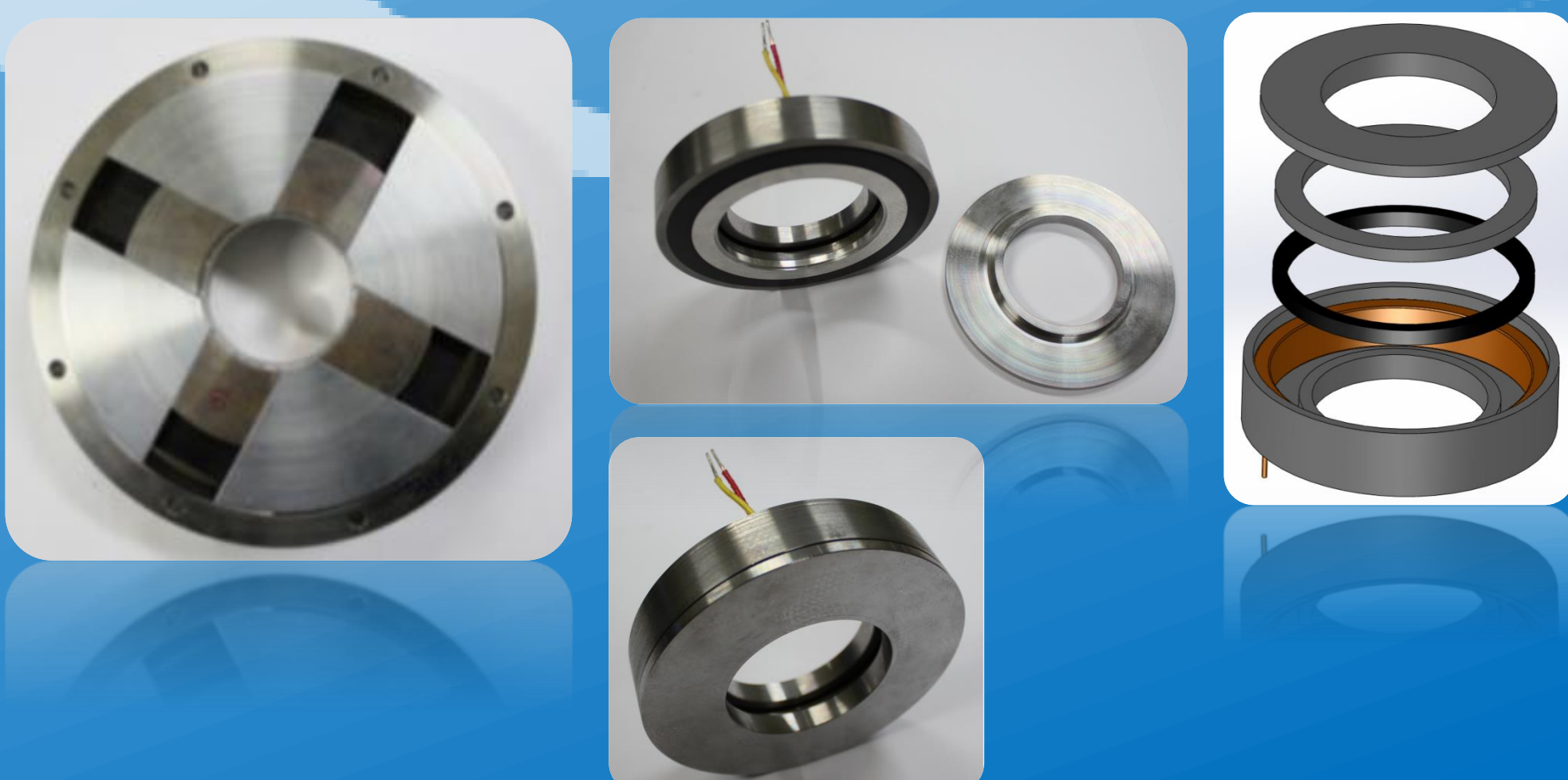
Application Area and Advantages

- Can achieve ultra-high speed 2~3 times higher than conventional ball bearings
- Can realize 100~400 kRPM ultra-high speed machinery
- Can be applied to the high added-value ultra-high speed machinery such as high speed spindle, high power turbo machinery, flywheel energy storage system, ultracentrifuge and so on

Accomplishments

- 3 IPR including 'Magnetic bearing structure ...', SE 536 808 C2
- 3 SCI(E) papers including 'Vacuum chamber-free centrifuge with magnetic bearings', Rev. Sci. Instrum. 84, 095106 (2013)
- \$150,000 of technology transfer for the application into the high speed spindle

Radial and Thrust Magnetic Bearings



Turbo blower (26,000 rpm)



Flywheel (100,000 rpm)

