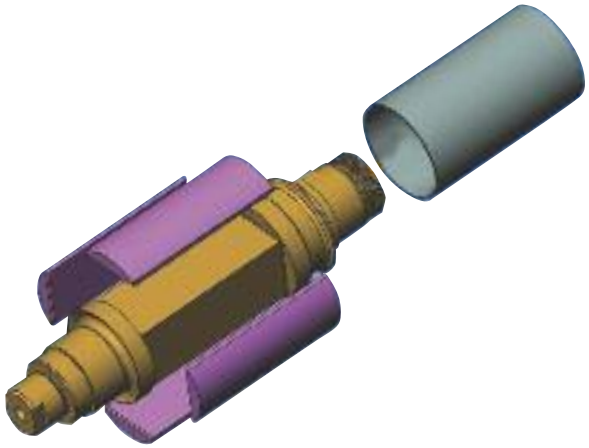

Permanent Magnet Alternator (generator/motor) Design Expertise

- High efficiency ~ 98%
- High speed (up to 400,000 rpm)
- Optimised design to match application
- Cooling fin design
- Thermal circuit analyses

We offer courses in oil free bearing technology covering:

- Air/gas bearings - spiral groove, tilting pad, foil
- Comparison with magnetic bearings (AMBs)
- Design methodologies
- Permanent magnet alternator design

We supply demonstrator spiral groove thrust gas bearings for academic/ promotional use

OFTTech LIMITED

Clean, efficient turbo-machinery design

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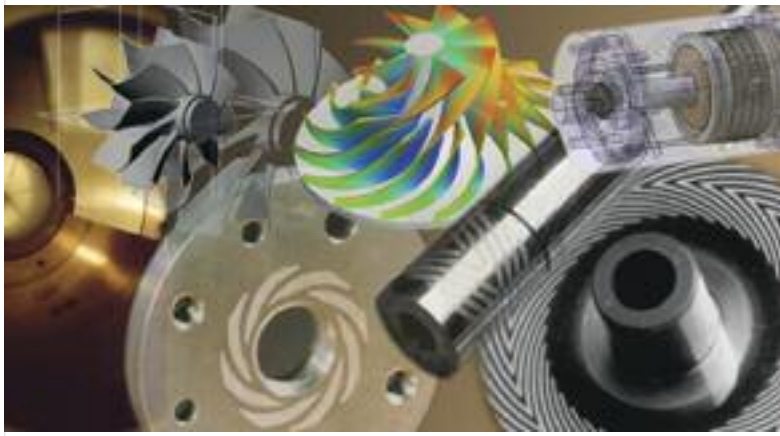
Clean, efficient turbo-machinery design

Air and Gas Lubricated Bearing Technology



Clean

Oil-free

Environmentally friendly

Long life

No wear

Low friction

High speed operation

Exceptional accuracy

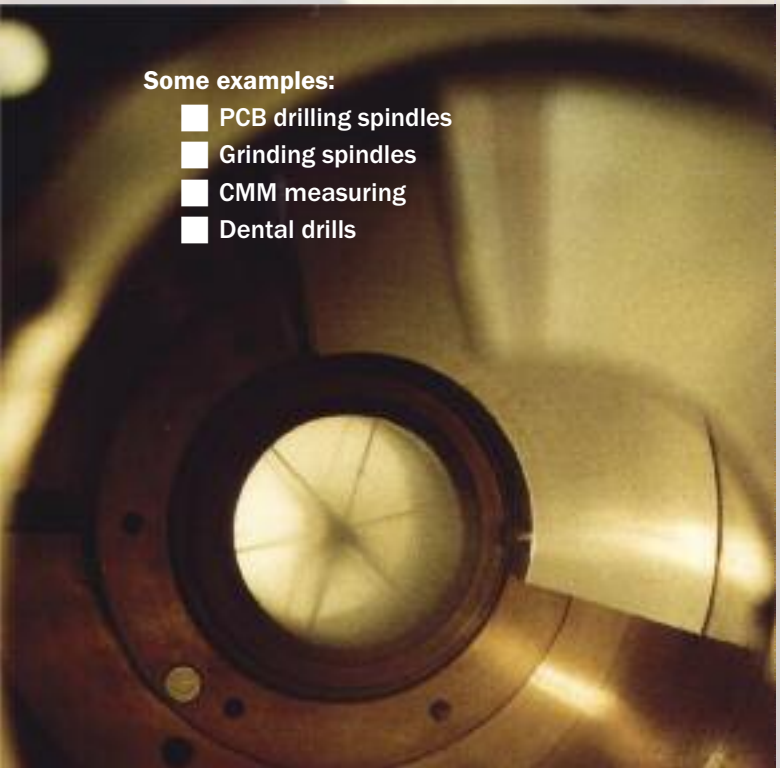
How do Air Bearings Work?

Air bearings can be of all the usual geometries – cylindrical journals, flat thrust plates, conical or hemispherical, and can use any gas (air, helium, refrigerant 134a are some recent examples).

Externally Pressurised (Hydrostatic)

These require a high pressure supply of gas from an external source that is forced into the bearing film and the resulting film pressures support the applied loads: resulting in load carrying capacity and stiffness without rotation or sliding.

Many industrial, aerospace and academic applications have been manufactured and have proven to be very robust where a reliable gas supply is available.



Some examples:

- PCB drilling spindles
- Grinding spindles
- CMM measuring
- Dental drills

Self Acting (Hydrodynamic)

These rely on the relative motion of two surfaces to drag gas into the clearance and thence creating the pressure that supports the applied loads: resulting in load carrying capacity only while the bearing is rotating or sliding.

There are very many industrial, aerospace and academic applications of hydrodynamic gas lubricated bearings, especially in mobile applications where no pressurised gas is available.

Some examples:

- Inertial gyroscopes
- Face seals
- Optical spinners
- Turbomachinery

OFTTech specialises in spiral groove gas bearing applications, due to their superior accuracy and life compared to foil bearings

Herringbone journals,
inward pumping thrust plates 400,000 rpm
cryogenic helium gas lubricant

ESA Bearings

Brayton Cycle Cooler Rotor in the International Space Station, 120,000 rpm, refrigerant lubricated

OFTTech provides a complete turnkey solution for high speed gas bearing applications

- Finite Element Analyses thermal structural
- Electromagnetic
- Rotordynamic, critical speeds, forced response
- Gas bearing, hydrodynamic, hydrostatic, hybrid