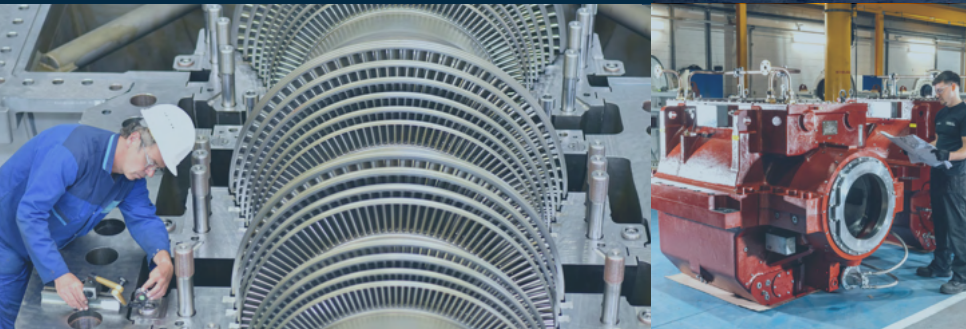




PEEK Lined Thrust & Radial Pads



**Michell
Bearings**

Background

Michell Bearings began to develop polymer bearings in the 1990's, starting with polytetrafluoroethylene (PTFE) lined thrust pads, following a demand for the material from large hydropower OEM's and operators looking for improved performance. This was a natural extension to the existing product range as Michell Bearings was already supplying bearings into the hydropower industry.

A manufacturing process was developed to deliver a superior quality product on a repeatable basis. Michell Bearings now has over 100 references for PTFE thrust pads in large industrial machines.

Michell Bearings' development of polyether ether ketone (PEEK) lined tilting pads also

started in the mid 1990s, but market demand from the hydro industry drew us to focus our resources to PTFE.

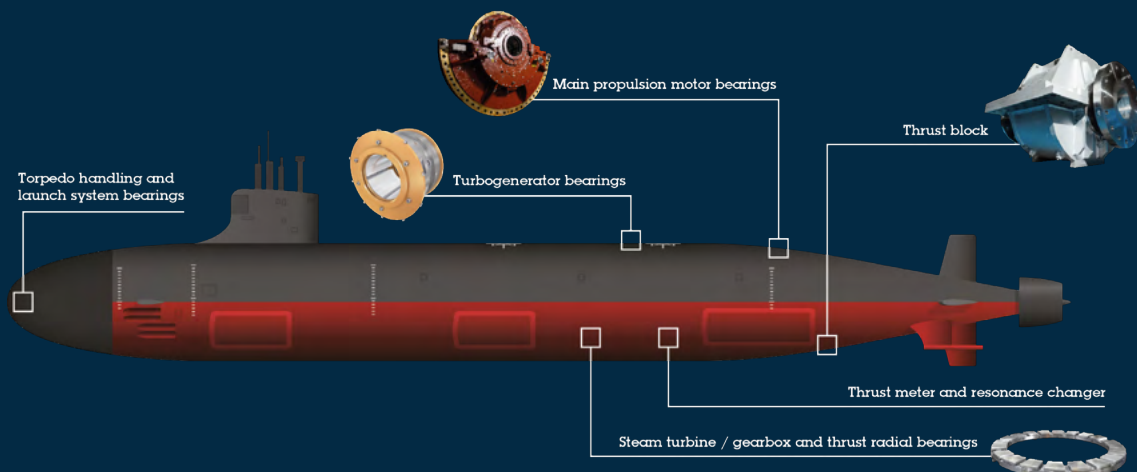
Michell Bearings research into PEEK restarted in 2015. A manufacturing process was developed based on the experience gained from PTFE and performance testing was undertaken on our standard vertical products and range of thrust bearing internals, across a vast range of speeds and loads.

The addition of PEEK into our portfolio reinforces our commitment to supplying high quality products that deliver significant performance improvements for the most demanding applications.

Submarine Applications

Quieter, Deeper, Faster

PEEK has specific advantages for submarine propulsion and is used on a variety of our bearings for submarine applications.



Technology

Advantages of PEEK

- Low coefficient of friction
- Excellent wear resistance
- High temperature performance
- Mechanical strength and dimensional stability
- Unlimited slow speed operation without noisy external support systems

Performance Improvements of PEEK

- Smaller bearings (i.e. reduced footprint and weight) operating at higher specific loads
- Continuous operation above the widely accepted 120°C temperature limit for white metal (Babbitt)
- Continuous operation at film thicknesses below the minimums considered acceptable for white metal
- Reduced power losses
- The elimination of high pressure oil injection for starting/stopping under high specific loads
- The potential to eliminate the need for hydrostatic jacking for continuous slow speed operation
- Reduction of noise signature
 - Removal of ancillary systems
 - Reduce and eliminate “slip-stick phenomenon” when running to full stop

Development

White metal, PTFE and PEEK are all complimentary to one another. Whilst white metal can be considered as the cost effective everyday material, PTFE and PEEK have distinct advantages for more challenging environments.

The advantages of PTFE are well documented (visit our website for published technical papers). PEEK has high strength and higher temperature resistant advantages and is well suited to high speed and/or high load applications.

Testing

Our PEEK lined thrust pads have been comprehensively tested across a wide range of duties representing a broad base of real life applications.

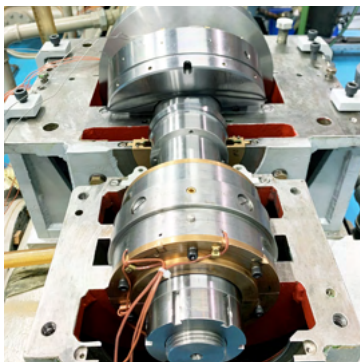
High load, low to medium speed applications

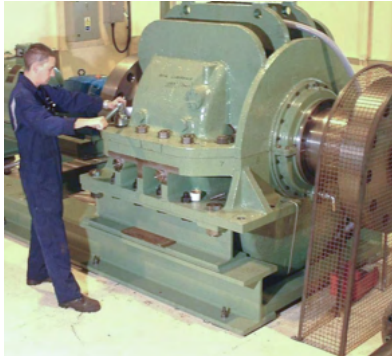
- 24MPa between 1.5m/s to 21 m/s, oil film less than 4 microns
- Broad base of real life industrial and naval applications

High load, high speed applications

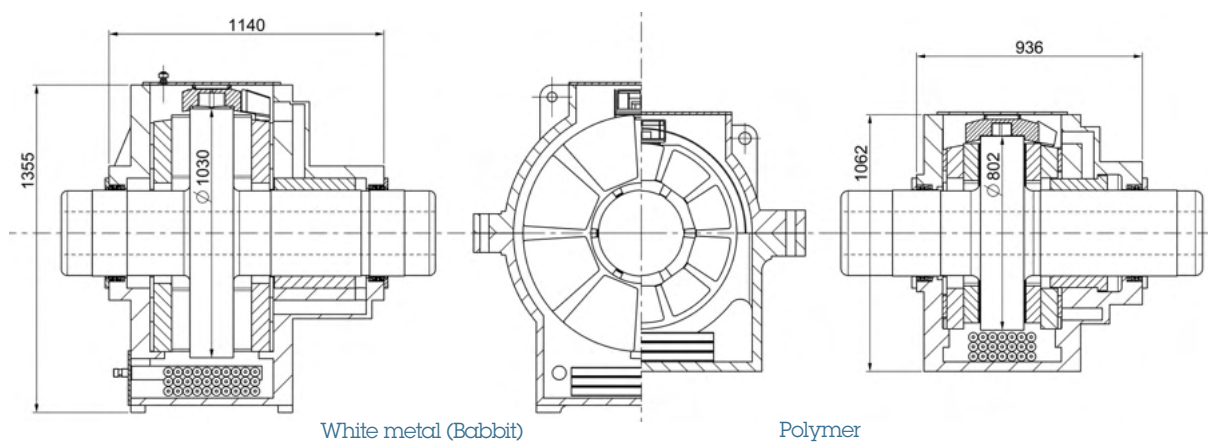
- 10 MPa at speeds up to 145m/s, temperatures in excess of 170°C

PEEK enables unlimited slow-speed operation for submarine applications without the need for hydrostatic oil injection, offering noise signature advantages for the submarine.





Polymeric/white metal and thrust block comparison



Extensive in-house test capability

Our in-house test facility includes several custom-made test rigs configurable in various ways to suit a given test program.

Thrust Block Test Rig

- Used for testing Babbitt and polymer lined tilting thrust and journal pads, and Babbitt lined journal bushes

Horizontal Bearing Test Rig

- Used for testing Babbitt and polymer lined tilting journal pads and Babbitt lined journal bushes

Breakout Torque Test Rig

- Used for testing Babbitt and polymer lined tilting thrust pads

Enquire now...

Contact us on +44 (0) 191 273 0291 or sales@michellbearings.com for a no obligation quote on your current white metal/Babbitt, PTFE or PEEK thrust or journal pad requirements.