

HIGH SENSITIVITY ENVIRONMENTALLY ISOLATED BEARING TESTER

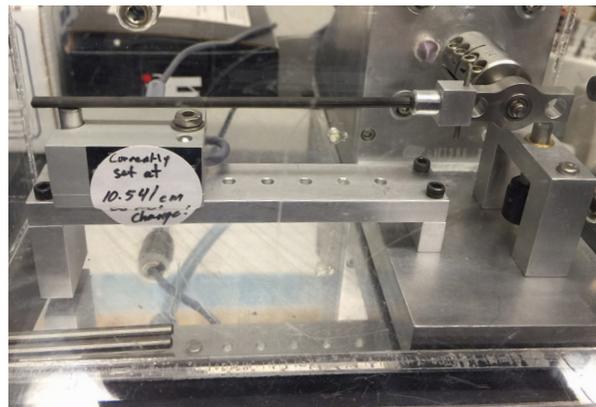
Patent Pending

Technology Readiness Level: 7/8

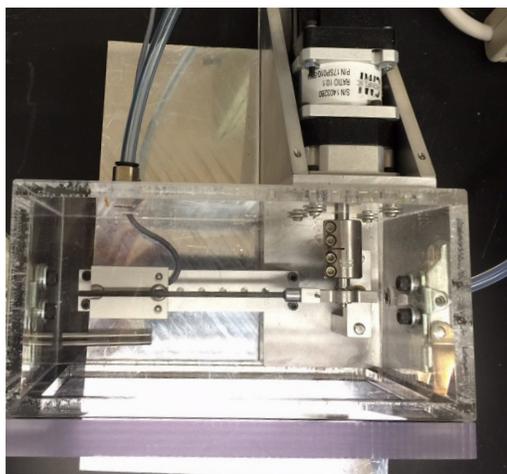
Actual technology completed and qualified through test and demonstration

Sandia National Laboratories has developed a novel tool that allows users to qualify small diameter bearings before incorporating them into components. Sandia's High Sensitivity, Environmentally Isolated Bearing Tester was developed to measure the coupled torsional loss resulting from rotation of the inner race of a small diameter bearing. It is up to 20x more sensitive than commercially available bearing testers and comes with a suite of software that allows users to conduct testing based on what the bearing will experience in different applications.

Sandia's bearing tester combines a high quality, low capacity load cell with an aligned carbon fiber "torque multiplier" arm. The bearing is inserted into a cartridge where a servo motor rotates the inner bearing race



Side view: Aligned carbon fiber "torque multiplier" arm and adjustable table load cell mount



Top view: High torque servo motor, gas exhaust port, gas inlet port, & airtight environmental

smoothly and repeatedly. This device is encased in an airtight environmental chamber to provide the ability to shield the tester with a cover gas during testing. This allows for use with bearings lubricated with oxygen or moisture sensitive lubricants. The custom designed software suite that accompanies this bearing tester increases the range of tests by allowing users to configure a multi-part bearing test including modular sequences like oscillating between small angles, a low speed torque test, and a high speed wear-in sequence. These additional tests allow users to simulate how the bearing will perform in certain applications. Data is output in common ASCII format showing the measured torque and angular location of the data point.

Our low noise, high resolution bearing tester is more sensitive than other commercially available systems, and allows for a wider range of testing capabilities.

TECHNICAL BENEFITS

- Low noise, high resolution
- Extremely fine accuracy
- Environmentally isolated chamber for special cases
- Ease of use

INDUSTRIES & APPLICATIONS

- Small bearing manufacturers