Case Study

IBS Precision Engineering

Magtrol's use of air bearings for **torque measurement** to improve product quality

IBS Precision Engineering partners with New Way Air Bearings for engineering solutions with non-contact porous media air bearings. The synergy of New Way's air bearings and the vast engineering capabilities of IBS have led to a range of ultra precision measuring, positioning and alignment solutions.

MAGTROL
MOTOR TESTING & SENSORS

Magtrol is a leader in the manufacturing of motor testing equipment and has begun utilizing porous media air bearings as part of their test and calibration suite to fine tune their own products. Magtrol has successfully implemented both radial bearings and air bushings into their test and calibration suite.

> *"The combination of great (online) support, zero friction performance and a wide product portfolio makes this product range our go-to assortment for air bearings for upcoming projects."*
>
> **Maxwell Keeling**
> *- Product Development, Mechanical Engineer*

- **Industry:** Automotive, Home Appliances, Medical
- **Technology:** Tribology
- **Application:** Frictionless motion
- **Product:** Radial Air Bearings and Air Bushings

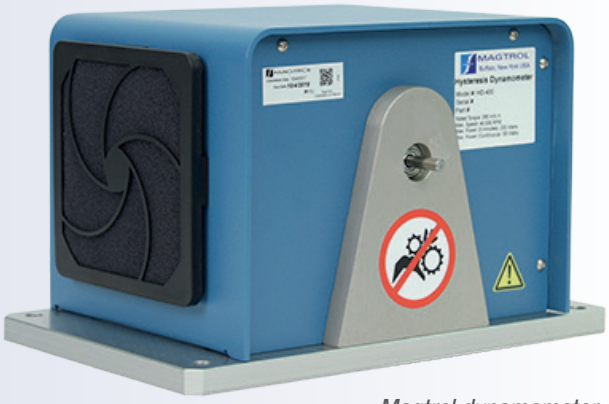
Target

Magtrol employs very specialized, delicate lab equipment. Measuring torque and its effect on motor power is a primary function. Their products are used to test small engines utilized in items such as home appliances, car window controls, and medical equipment.

The tests involve an extremely high level of precision and that's where air bearings come in. All of Magtrol's products go through extensive testing to improve the quality of, and build customer confidence in their end product.

Challenge

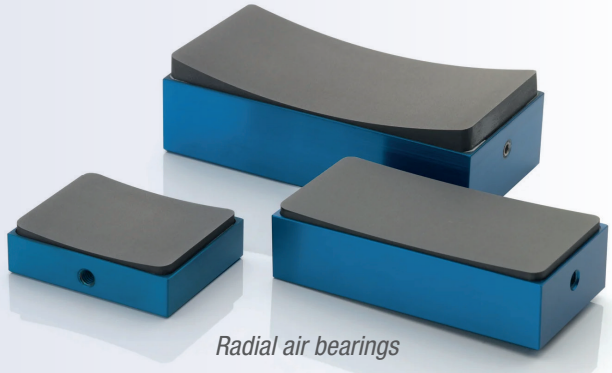
- Part of Magtrol's test suite is the Torque Calibration Beam, which is used for measuring static torque. The Torque Calibration Beam serves as a special golden reference to prove out and improve their dynamometers, measuring speed and torque to compute an engine's rotary power output.
- The Torque Calibration Beam is designed to apply torque in an automated fashion. Its setup required the use of a shaft which had the potential to interfere with dynamometer measurements. With a requirement to work better than 0.04% of its full-scale, they knew they needed to eliminate as much friction as possible.



Magtrol dynamometer

Solution

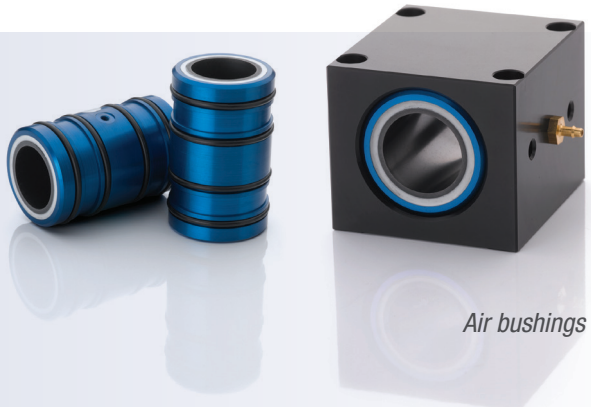
- To reach this range, Magtrol needed a solution that would get rid of as much friction as possible. Porous Media air bearings are entirely non-contact, so there is no friction. The result is almost infinite resolution and perfect repeatability.
- Furthermore, the company was impressed with the eleborate product portfolio of air bearing types (off the shelf), the specific advise and the online support in the form of videos and downloadable product models and drawings.



Radial air bearings

Results

- Magtrol was very pleased with the (online) support they received. Initially there were concerns about the fitting of the air bearing integration in the total design. But the right advice took all concerns away. An issue with the installation turned out to be a surface finish problem on other parts after close inspection and problem tracing. Magtrol was also pleased with the very valuable advice on how to optimise the performance of the air bearings.



Air bushings

*Contact **IBS Precision Engineering** today to find out how non-contact air bearings can improve your application and join companies like Magtrol experiencing the benefits of frictionless motion.*

IBS Precision Engineering

For over 25 years IBS has been helping customers address unique problems. With our expert foundation in metrology, we understand the true meaning of ultra precision engineering and how to help you achieve it. Please visit our website for more information: **www.ibspe.com**