ABTech inc.
Pride In Precision

Custom Design Solutions

18,000 RPM Air Bearing Spindles for Image Scanning in Harsh Conditions

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"Pride in People … Pride in Precision"

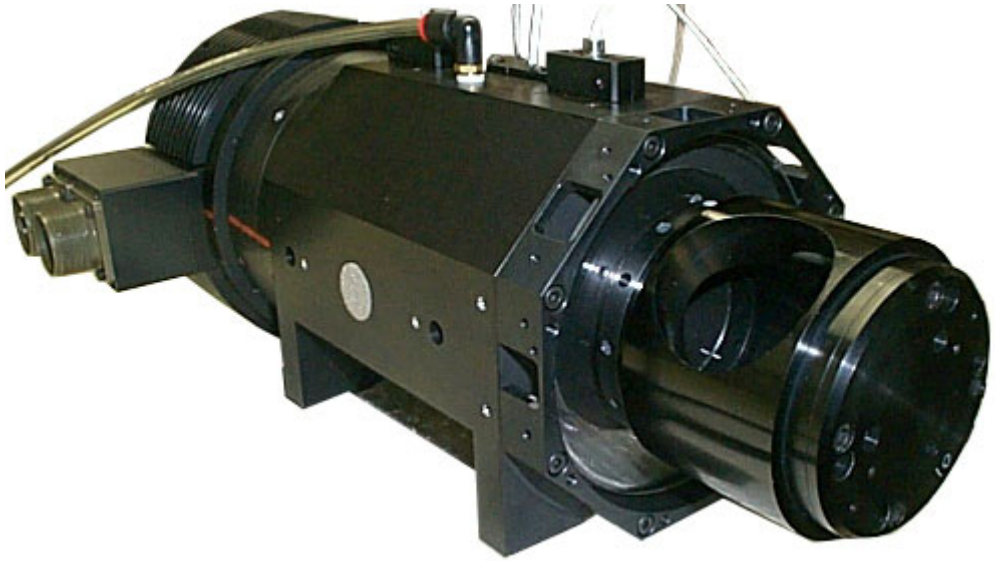
Our mission is to apply our specialized skills, experience and technical capabilities to any application requiring the highest precision motion.

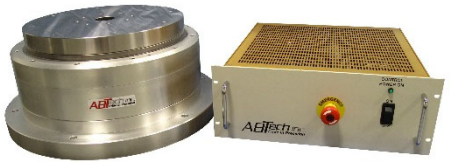
ABTech Custom Design Solutions

Lawrence Livermore
National Lab NIF Target
Assembly Station

2-Axis Air Bearing Lathe
and Metrology Precision
Machining Work Cell

NASA NuSTAR Telescope
Optics Assembly Stations





AT400 direct Drive Rotary Air
Bearing Installed at the South Pole

Non-Contact 3-D
Optical Metrology
Platform

18,000 RPM Air Bearing Spindles for Image Scanning in Harsh Conditions

Custom 150”
Setting Master
for Large Diameter
Beam Gages

“Design Built for Custom Applications”

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18,000 RPM Air Bearing Spindles for Image Scanning in Harsh Conditions

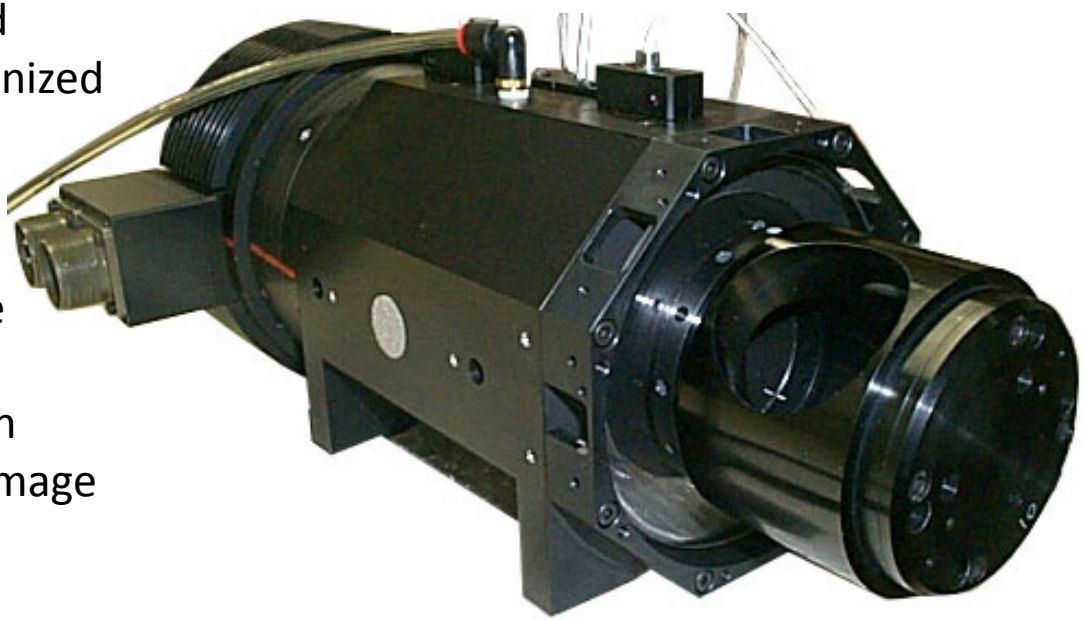
The Challenge

Design an inspection system for a European high-speed rail system – that must function accurately in harsh conditions while moving 75 mph.

The Design Solution

We designed a set of three high-speed air bearing spindles that were synchronized for the 3-dimensional image scanning and inline inspection.

To inspect the track, switches, tunnels and bridges for potential maintenance issues, the system was mounted on a dedicated rail car traveling at 75 mph allowing the spindles to create a 3-D image of the rail every 10 cm (less than 4”).



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18,000 RPM Air Bearing Spindles for Image Scanning in Harsh Conditions

To achieve the necessary rotational speeds of 18,000 rpm, the design incorporated individual direct drive brushless DC servo motors and encoders on each of the ultra-precision air bearing spindles. To simulate the most extreme conditions, each spindle was tested, including vibration testing to 10 G's, after being stored in a freezer overnight and then run at 180°F continuously for over 8 hours.

System Feature Summary

Synchronized ultra-precision air bearing spindles
- Aluminum construction for low inertia
- Individual direct drive brushless DC servo motors
- High resolution rotary encoders
- 50 mm clear apertures through the spindles
- 45° fold mirrors

Vibration isolation platform

Multi-axis controller

Capacitance probe monitoring system

ABTech inc.
Pride In Precision

ABTech Ultra-Precision Metrology, Motion, and Custom Engineered Solutions.

We have one for you….

ABTech's full in-house engineering, manufacturing, assembly and testing capabilities are the answer for just what you need.

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