

P R E S S R E L E A S E

ABTech completes first multi-function Cylindrical Optics Module Assembly machine for NASA's NuSTAR telescope

May 2009 – ABTech Inc, an ultra-precision air bearing motion system manufacturer in Swanzy, New Hampshire, has completed the first of two cylindrical optics module assembly machines for Columbia University's Nevis Astrophysics Laboratory. The culmination of eight months of design and manufacturing is a multi-axis air bearing machine platform optimized for the construction of high-energy x-ray telescopes. ABTech will provide installation and on-site operational training to Columbia University scientists at the Nevis Laboratory and ongoing technical support during the production of the optics modules.

Kenneth Abbott, president of ABTech states; "I'm proud of our team for once again proving that this quality of craftsmanship can be achieved by a small company right here in New Hampshire". Along with the target assembly station for the National Ignition Facility (NIF) at Lawrence Livermore National Labs and the more recent metrology platform for OptiPro Systems of Ontario, New York, Abbott said "ABTech is strengthening its position as a leader in unique custom engineered motion systems and is a growing presence in the OEM component production arena."

The NuSTAR assembly machine features a three-axis lathe for diamond turning and a secondary high speed air bearing spindle for precision grinding of graphite mounting surfaces for sensitive optical mirror sections. ABTech overcame the technical challenge of engineering this ultra-precision machine for the purpose of performing multiple functions including optics module assembly, machining and inspection without requiring the operator to remove the module between each process.



ABTech had to design and deliver a robust linear stacked stage to precisely position the diamond tool and grinding spindle in relation to the lathe axis. One of the customer's specifications was for the linear

slide to be straight and flat to less than 40 millionths of an inch over a distance of 600 mm. “We ultimately achieved less than 20 millionths over full travel through our machining and grinding processes” Abbott said, “and we accomplished this under the pressure of a critical expedited delivery schedule – it was a great overall effort”.



These machines will be used by Columbia University to produce the telescope optics for NASA’s NuSTAR (**N**uclear **S**pectroscopic **T**elescope **A**Rray) program. NuSTAR is a partnership of many of the most prominent research facilities in the world led by California Institute of Technology (Caltech) and NASA’s Jet Propulsion Laboratory (JPL) and is defined as “a pathfinder mission that will open the high energy X-ray sky for sensitive study”ⁱ per the official NuSTAR website (www.nustar.caltech.edu).

ABTech will be hosting a series of open house receptions for local, state and regional private and public sector leaders, schools and organizations beginning in June. If you are interested in getting information on these events please contact Matt Keenan, ABTech’s Sales and Marketing Manager at 603-358-6431 or email: info@abtechmfg.com.

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ABTech Inc is a privately held engineering and manufacturing company located in Swanzey, New Hampshire. Established in 1998 ABTech represents nearly 100 years of combined experience in engineering and manufacturing ultra-precision motion components and multi-axis systems. Specializing in accuracy levels measured in millionths of an inch (μ "), fractions of a micron and arc seconds (1/3600th of a degree), this technology is applied to manufacture of air and oil hydrostatic bearings and high precision mechanical bearings.

Air bearing motion systems are often the baseline to which other ultra-precision components are compared or manufactured. ABTech air-bearing technologies are used around the world in prominent research facilities, universities and advanced manufacturing operations for highly accurate complex geometry measurements; diamond machining; semi-conductor wafer scanning; optical lens alignment and precision grinding.

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For more information on ABTech’s standard products and custom motion capabilities, contact:

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ⁱFrom www.nustar.caltech.edu mission statement