NEWWAY® air bearings

FULL RELEASE

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The New Way® Air Bearings Pass-Through Vacuum Chamber Prototype Has Been Lab Tested and Is Ready for Alpha Integration into a Novacentrix® PulseForge® 3100 Photonic Curing™ Tool to Prove Viability for Printed Electronics Applications.

Prototype Development Has Been Made Possible by a Contract Award from the FlexTech Alliance.

Aston, Pennsylvania, USA, October 6, 2010 – New Way® Air Bearings announced that it has completed testing on its first pass-through vacuum chamber prototype, and is ready to implement this potentially chasm-crossing technology in a NovaCentrix sintering tool for printed electronics.

"The testing went extremely well," said New Way Chairman and Chief Technology Officer Drew Devitt. "Even with rudimentary pump-down capabilities we were able to achieve a vacuum level of 10^{-3} Torr inside the chamber, and successfully pass a film through it. That's very encouraging. As we learn more, I believe we can achieve even deeper levels of vacuum."

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The implications of this successful test are significant for practical vacuum processing of flexible webs in continuous roll-to-roll processing applications. Alpha-testing at NovaCentrix is designed to prove the technology's commercial viability in existing production equipment, and to set the stage for further development.

"We are very pleased to have been chosen as a partner for commercial trials with New Way's Pass-Through Vacuum Chamber," said Stan Farnsworth, Vice President of Marketing for NovaCentrix. "Successful integration would make our PulseForge 3100 curing system even more efficient and effective for innovative printed electronics manufacturers looking for alternatives to traditional processing techniques."

Current vacuum coating equipment is large and expensive, with long pump-down times during processing. By eliminating the requirement to put a roll in a vacuum chamber, and pump it down for processing, continuous processing becomes possible, reducing expense and processing time. The web may then flow through one or many vacuum chambers, with other ambient pressure processes inserted in between, and may do so continuously.

Another organization interested in the successful development of in-line, pass-through vacuum chamber technology is FlexTech Alliance, a collaborative effort of private industry and the U.S. Army Research Laboratory, located in Adelphi, MD. Late last year (December 15, 2009), FlexTech awarded a contract to New Way Air Bearings for the development of 'a non-contact vacuum seal allowing for small, but potentially wide vacuum chambers appropriate for chemical vapor deposition (CVD), physical vapor deposition (PVD) or other processes requiring deep vacuum.'

Vacuum-assisted deposition achieves the highest quality films and the best barrier performance, a critical component in manufacturing flexible printed-electronics.

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The New Way pass-through vacuum chamber design offers greater flexibility for the use of vacuum processing. Evaporation sources may be easily switched out, and the consumption of reactive or inert process gases will be significantly reduced due to the small volume of the chamber, and with no need to purge.

"The success of this project will enable small, low-cost vacuum or gas process modules for speeding the development and manufacturing of flexible displays, photovoltaics, LED lighting, printed batteries, and more," noted Devitt. "Once commercialized, FlexTech members like NovaCentrix and the industry as a whole will realize a huge benefit from this technology."

Opposing forces working together

New Way's pass-through vacuum chamber features the company's Porous Media® Technology, which distributes air pressure uniformly across the entire bearing surface, through millions of sub-micron sized holes. This continuous air pressure forces the two halves of the chamber housing apart, creating the 20-micron gap (10 µm on each side) through which the roll-to-roll flexible film flows.

A series of differentially-pumped grooves isolate a vacuum region – though which the flexible web may be passed – from the air bearing sections. The forces from the atmosphere and the air bearings are balanced, so the film always sees the same pressure on both sides.

Smaller, Better, Faster, Cheaper

The pass-through vacuum chamber would make truly continuous vacuum processing possible, eliminating the expense of large drum vacuum chambers with integral pay-out and take-up rolls. Instead, the web would flow continuously though one or more very small vacuum chambers. Such a system would also dramatically reduce the cost and processing time necessary for vacuum deposition.

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About the FlexTech Alliance

The FlexTech Alliance is the only organization headquartered in North America exclusively devoted to fostering the growth, profitability and success of the electronic display and the flexible, printed electronics supply chain. Leveraging its rich history in promoting the display industry as the U.S. Display Consortium, the FlexTech Alliance offers expanded collaboration between and among industry, academia, government, and research organizations for advancing displays and flexible, printed electronics from R&D to commercialization. To this end, the FlexTech Alliance, based in San Jose, Calif., will help foster development of the supply chain required to support a world-class, manufacturing capability for displays and flexible, printed electronics. More information about the FlexTech Alliance can be found at the industry portal: www.flextech.org.

About NovaCentrix®

NovaCentrix, based in Austin, Texas, is a leader in emerging printed electronics manufacturing technologies. The PulseForge tools sinter functional inks in milliseconds on low temperature, flexible substrates such as paper and plastics. The tools process a wide array of metal-based conductive inks, as well as non-metallic and semiconductor inks. NovaCentrix also offers Metalon® metallic inks, developed for high-performance and offered at economical costs. For more information, visit www.novacentrix.com.

About New Way Air Bearings

New Way® Air Bearings, Inc. is the world's leading independent manufacturer of modular air bearing products and the recognized provider of porous media air bearing solutions. The company manufactures a standard line of modular, off-the-shelf components including: Flat round and rectangular air bearings; vacuum preloaded air bearings; radial air bearings; air bushings; air slides; conveyor air bearings and precision chucks. The company achieved ISO 9001:2000 Certification for its quality management system in November, 2008; and achieved ISO 9001:2008 Certification in January, 2010.

New Way has now been included on Inc. Magazine's list of the 5,000 fastest-growing, private companies in America for 2007, 2008, and 2009. In November of 2007, The Greater Philadelphia Chamber of Commerce named New Way recipient of its Technological Excellence of the Year Award for 2008. In both 2008 and 2009, New Way was named a Deloitte Fast 50 Technology company for the Philadelphia, PA, USA Region.

Founded in 1994, New Way is located in Aston, Pennsylvania, USA, just fifteen minutes from Philadelphia International Airport. Visit New Way Air Bearings online at www.newwayairbearings.com. This web site includes specifications for the company's full product range, design and installation guides, mounting hardware, air specifications, technical support, and a full range of accessories.

High-Resolution Photography

High-resolution photography is available for use by the press at http://www.newwayairbearings.com/Photography-Products or by contacting Michael Wright directly using the information below.

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