



New Hampshire Ball Bearings, Inc.
— A Minebea Company —

inside track

nhbb.com

NHBB Participates in New Hampshire Manufacturing Week 2015, Hosts Reading of Proclamation

The annual celebration of New Hampshire's manufacturing industry officially began on Friday, October 2, 2015, with the reading of the Manufacturing Week Proclamation. Jeffrey Rose, the Commissioner of the Department of Resources and Economic Development (DRED), read the Proclamation at NHBB's facility in Peterborough in front of company employees, industry leaders, area residents, and local and state government officials.



Manufacturing Week is a celebration of the manufacturing industry and a reminder of its importance to NH's economy. The event introduces students and the general public to manufacturing and highlights the various educational pathways that lead to a career in manufacturing. Organizers expected more than 1,100 New Hampshire students to participate in tours at over 50 companies. Hundreds more were scheduled to visit local community colleges. Following the reading of the Proclamation, NHBB hosted student tours and participated in the annual industry summit.

NHBB Partnering with Education to Develop Tech Ed Programs

A shortage of workers with technical skills is a well publicized phenomenon affecting US manufacturing. The latest on the subject, a report published recently by the Manufacturing Institute and Deloitte, concluded that the skills gap in US manufacturing will continue to widen during the next ten years if enrollment in technical education programs fails to keep pace with the rising demand for skilled labor.

Over the years, NHBB has had to adapt to the shortage of technical skills among new hires by developing comprehensive, in-house training programs. As a means of getting those standard skills up front, NHBB also began participating in workforce development initiatives focused on the redevelopment of technical education programs in high schools and community colleges throughout New Hampshire.

According to Gary Groleau, Corporate Manager of Labor Relations and Organizational Development, NHBB is working closely with various stakeholders to close the gap that exists between the needs of local employers and the curriculum offered by education institutions. "The infrastructure that we relied on to train skilled workers no longer existed so we had to build a new system from scratch," said Gary. "Thanks to the collaborative partnerships between business and education, the pathway to a career in manufacturing that did not exist ten years ago has been built."



Teacher Mike LaBrecque provides hands-on instruction in the LRCC machine center lab.

The programs NHBB has worked with include four education institutions in close proximity to NHBB's facilities in Laconia and Peterborough: the Lakes Region Community College and the Huot Center in Laconia, the Regional Center for Advanced Manufacturing (RCAM) in Keene, and Conval High School in Peterborough.

The Lakes Region Community College in Laconia offers certificate and associate degree programs in advanced

manufacturing. After just two years in existence, over 60 students have completed at least the certificate program, and ten have accepted positions at NHBB's Astro Division.

According to Nikki Parker, Astro's Manager of Human Resources, the quality of these candidates is very good. "Candidates who graduate from these programs come to us with solid technical skills," says Nikki. "Plus, they're already familiar with the manufacturing environment thanks to the hands-on training they receive."

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A Message From NHBB'S President



Dan Lemieux

Successful businesses embrace opportunities to offer assistance and provide leadership when complex issues threaten not only itself but a particular market or an entire industry. A current example of this is highlighted in the article on workforce development. The technical skills shortage is one of an increasing number of challenges facing US manufacturing.

A study published by the Brookings Institute in August 2014 concluded that high school graduates with backgrounds in science, technology, engineering, and math (STEM) are now in higher demand in the job market than college graduates who don't have STEM skills, and that manufacturing companies have greater difficulty filling STEM job vacancies than other types of businesses.

To address this issue within our own communities, NHBB has played an active role in shaping the technical educational landscape in New Hampshire. In fact, Gary Groleau, NHBB's Corporate Manager of Labor Relations and Organizational Development, has been recognized by various business associations and the State of NH for his efforts related to workforce development.

Our local Human Resources departments have established close working relationships with the education institutions in our communities in order to support the development of manufacturing education curriculum. Most of these programs are new within the past two years, so it's too early to declare victory. Nevertheless, we're encouraged to see that graduates from these programs are coming to us with improved technical skills and a basic understanding of the manufacturing environment.

Community-based training initiatives are a vital addition to the more immediate efforts we engage in to fill skills gaps among our new hires. For example, each division provides its own in-house training program that covers a wide range of manufacturing skills. We also subscribe to online training resources to bolster the divisional training curriculum.

Because a highly skilled workforce is integral to achieving our aggressive growth plans, both approaches—the development of in-house training initiatives and the growth of technical education within our communities—are critically important to our business. As a company dedicated to the pursuit of excellence and lasting success, we welcome opportunities to invest in the growth of our workforce, our communities, and our industry.

NHBB Partnering with Education *continued*

The Huot Center's curriculum in manufacturing and engineering gives high school students a chance to develop technical skills before they graduate. While some students join the workforce after graduation, many are applying to technical programs at community colleges or engineering programs at universities.

In the Monadnock Region, where NHBB's HiTech Division is located, manufacturing education and training is available through the Regional Center for Advanced Manufacturing. RCAM was established in 2010 as a consortium of Keene State College, River Valley Community College, the Greater Keene Chamber of Commerce, and the Keene School District. The participating education institutions hold classes in the machine laboratory, which is located in the Technology, Design and Safety Center at Keene State College.

"RCAM and other similar programs are driving a renewed interest in our industry by highlighting the latest trends in advanced manufacturing," says Brooke Charron, HiTech's recruiter. "That's great news for us, because the job applicants who come from these programs have more of the basic technical skills we're looking for in a new manufacturing employee."

Conval High School in Peterborough has just approved a course in manufacturing, which begins in January of 2016. The class will enable students to earn high school credits while learning about manufacturing through classroom lessons and practical experience at NHBB. Nine students have enrolled in the class, which is also available to students from Conant High School in Jaffrey, NH and Mascenic High School in Ipswich, NH.

"The redevelopment of manufacturing education and technical training programs among the State's high schools and community technical colleges is an encouraging sign of progress," says Gary Groleau. "The next phase of NH's workforce development initiative will be to ensure that these programs are sustainable for decades to come."



LRCC students in the manufacturing lab.

NHBB Awarded Patent for Design of Longer Lasting High Speed Bearing



The United States Patent and Trademark Office (USPTO) awarded NHBB a patent for a high speed angular contact bearing containing a unique retainer design that reduces retainer wear and increases bearing life by up to 50% in high-speed and ultra-high-speed applications.

Retainer wear is the leading cause of high speed bearing failure, but preexisting retainer designs had yet to fully resolve a conundrum with high speed applications, namely retainer wear resulting from the necessity of retainer piloting. NHBB's patent answers affirmatively the question of whether it's possible to reduce retainer wear even further in land-piloted designs, which is a key element in high speed bearing performance.

In high speed applications, such as a dental handpiece rotating at 500,000 rpm, retainer piloting on the outer land is beneficial to the overall performance of the bearing because it causes the retainer to rotate smoothly, with virtually no wobbling. This smooth operation minimizes vibration and undesirable noise and prevents accelerated deterioration of the retainer caused by uneven wear. But the piloting action causes a predictable amount of wear due to the rubbing action between the land and retainer.

Selecting the right retainer material is a critical factor in minimizing wear induced by piloting. The optimal choice of materials for high speed applications includes numerous light weight polymers, like polyimide (PI), polyamide-imide (PAI) and polyetheretherketone (PEEK). These materials are inherently lubricious and durable but they experience varying degrees of wear when piloted against hardened steel rings.

NHBB's patented design capitalizes on the performance advantages of land-piloted retainers made of advanced polymers. The unique design adjusts retainer geometry in a way that reduces contact area between the polymer retainer and the piloting land, which significantly lessens sliding friction and wear. It opens up space to accommodate additional lubrication and minimizes the interference of wear debris and external contaminants with the retainer. Plus, the retainer's shape allows for smooth air flow through the bearing, which is beneficial for air driven turbine applications.

This innovation will lead to dramatic improvements in bearing performance and life for a diverse range of applications like dental handpieces, electric motors, pumps and compressors. Testing has demonstrated that NHBB's innovative angular contact bearing design could potentially increase bearing life by up to 50% in these and many other ultra-high-speed applications.

Benefits of patented retainer:

- Less wear at piloting area while maintaining piloting stability
- Added space for lubricant accommodation
- Reduced chance for the retainer to interfere with internal wear debris or external contaminants
- Improved retainer shape for smooth air flow through the bearing (for air-driven turbine applications)

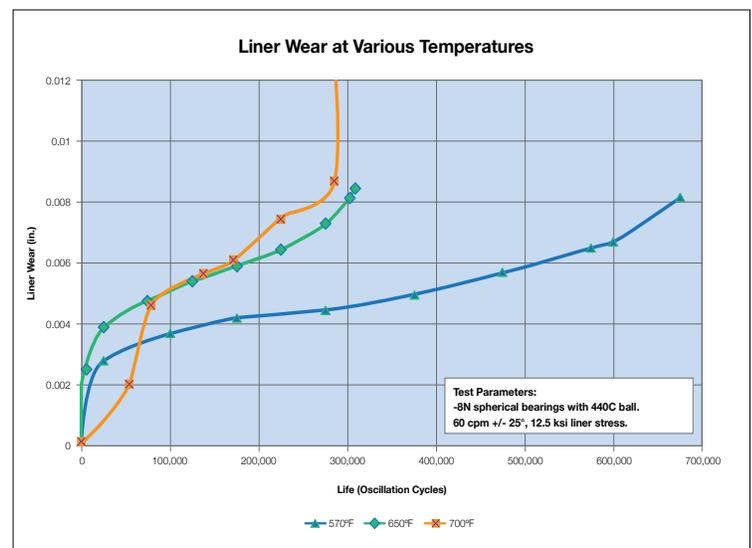
NHBB's Vulkyn™ Liner Extends High Temp Limits

NHBB's Vulkyn™ brand of high temperature fabric liner performs better than NHBB first reported. Last year, NHBB announced that Vulkyn™ raised the maximum operating temperature of NHBB's high temperature self-lubricating liners by 25°F.

Additional testing at higher temperatures has confirmed that it's in fact an increase of 75°F. Vulkyn™ exhibits 0.006 in. of wear after approximately 150,000 cycles when tested to 700°F. As reported earlier, the cycle count increases to 500,000 before wear reaches 0.006 in. when the new liner is tested at 570°F.

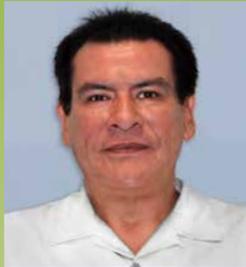
NHBB's innovative high temperature fabric liner technology is ideal for both military and commercial aero engine applications where bearings are exposed to sustained operating temperatures above 350°F. Vulkyn™ is also eco-friendly. The compounds that make up the fabric and bonding agents currently comply with REACH, which is an important benefit to many of NHBB's customers who supply product to European OEM's.

Contact the Astro Division or your NHBB field sales engineer for more information.



Precision's Martinez Now Division's New Product Specialist

Rodrigo Martinez has completed the transition to his new role as Product Specialist following the retirement of Carroll Purvis on August 3, 2015. He was promoted to the position in June and during the summer he worked closely with Carroll to execute a seamless transition.



Rodrigo Martinez

As Product Specialist, Rodrigo is responsible for managing activities related to fulfilling customer orders for new products. This includes managing prototype activity, coordinating the new product engineering transmittal forms (ETFs) and supporting the new component review process. It also involves collaborating with field sales to track customer qualifications and subsequent production orders for new products, and supporting the new product development activities of the sales and applications engineering groups.

Rodrigo has been with the Precision Division for 23 years, the last 18 as an Inside Sales Representative. He is a past recipient of the Inside Sales Representative of the Year award.

His lengthy career with NHBB is seen as a major asset to the business. "Rodrigo's knowledge and experience will enable him to respond effectively to the demand for new products," said Mary Beth MacKenzie, Sales Manager of the Precision Division and myonic USA. "Throughout his career at NHBB, Rodrigo has been recognized by many of his customers for his exceptional service and support. I am confident he will continue to do a superb job on behalf of our customers."

Rodrigo is not stepping away entirely from inside sales, as he will continue to support two of Precision's strategic accounts in the medical and dental industries.

Incoming Inside Sales Representatives a Talented Group

This summer five new inside sales professionals joined NHBB's sales teams, filling openings created by several promotions and retirements.

Astro's new Inside Sales Representative, Andrea Neves, joined the Inside Sales department on June 24. She supports various commercial and military OEM customers as well as NHBB's Authorized Distributor, Wesco Aircraft. Prior to NHBB, Andrea worked in sales and customer service for companies in the telecommunications and automotive industries. Andrea earned her BA in Business Administration from Hesser College and her Associate degree in Business Administration from Salem State College.



Britton Doerbecker



Jaime Pawlowicz

HiTech added Ryan Nay and Jaime Pawlowicz to fill positions opened when Diane Mazejka retired as a full-time employee and Mike Johnson accepted a corporate sales analyst role. Ryan Nay was hired by NHBB after earning his Bachelor's degree in Business Management from Keene State College. As a student, Ryan worked full-time at

Shaw's, a regional grocer, where he gained valuable experience in customer service and employee supervision. His first day at HiTech was May 26.

Jaime Pawlowicz, who transferred to the sales department on June 8, has worked at HiTech for over five years. Prior to joining the Inside Sales department, Jaime gained valuable manufacturing experience working in the departments of shipping, quality, and human resources. Jaime earned her Bachelor's degree in Business Administration with a focus in Accounting from the University of Massachusetts and her Associate degree in Business Administration from Mount Wachusett Community College.

Precision's new Inside Sales Representatives include Diego Rincon and Britton Doerbecker. Diego Rincon has been an inside sales professional for over ten years. His career path includes positions at Hydra Electric, Semco Instruments, Regent Aerospace and WS Wilson, one of NHBB's Authorized Distributors. Diego earned his BA in International Business from Hofstra University in New York. His first day was May 26.

Britton Doerbecker joined the company on June 1, filling the sales position previously held by Rodrigo Martinez, who was promoted to product specialist. A recent college graduate, Britton earned his BA in Business and Finance from Master's College in Santa Clarita, California. Previously, Britton worked at the Precision Division as a summer intern in the Materials Department.

Tradeshows Calendar

MD&M West 2016

February 9–11, 2016
Anaheim, California
NHBB/myonic
Booth #3163

AHS International Forum 72

May 17–19, 2016
West Palm Beach, Florida
NHBB – Booth #810
CEROBEAR – Booth #809

MD&M East 2016

June 14–16, 2016
New York City
NHBB/myonic
Booth #1349