



AMETEK[®] has made major capital investments in KERK[®] facilities, equipment and products—

to ensure robust quality and dependable on time deliveries of custom leadscrew assemblies and linear stages.

Investments at Haydon Kerk Motion Solutions include full migration to a unified and expanded KERK facility in Milford, New Hampshire; expansion of tool and molding capabilities; new capital equipment; and brand-new material requirements planning (MRP) software. So now, Kerk-brand motion products are available with the fast order fulfillment and precision engineering that Kerk customers expect.

As a leading motion-control solutions provider, Haydon Kerk Motion Solutions sells high-performance modified acme leadscrew and anti-backlash-nut assemblies, stepper-motor linear actuators, and linear-rail and guide setups for laboratory automation, medical instrumentation, military, aerospace, semiconductor fabrication, and other industrial applications. Kerk products provide myriad precision linear-motion solutions for such designs.

Capital investments from AMETEK Precision Motion Control (PMC) have created a world-class manufacturing center for Kerk brand products in Milford, New Hampshire.

Planned enhancements to facilities, equipment and processes began in mid-2014 and were successfully completed in the fourth quarter of 2015.

this period of transition. Better than ever before, Haydon Kerk is now positioned to provide its customers with the motion solutions for their application.

AMETEK PMC, Haydon Kerk Motion Solutions and the Kerk Team appreciate the support its customers gave through

To highlight the major enhancements implemented over the past year to get that done, consider the following ...

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FORM 20



Now complete: Migration to a new facility for faster service

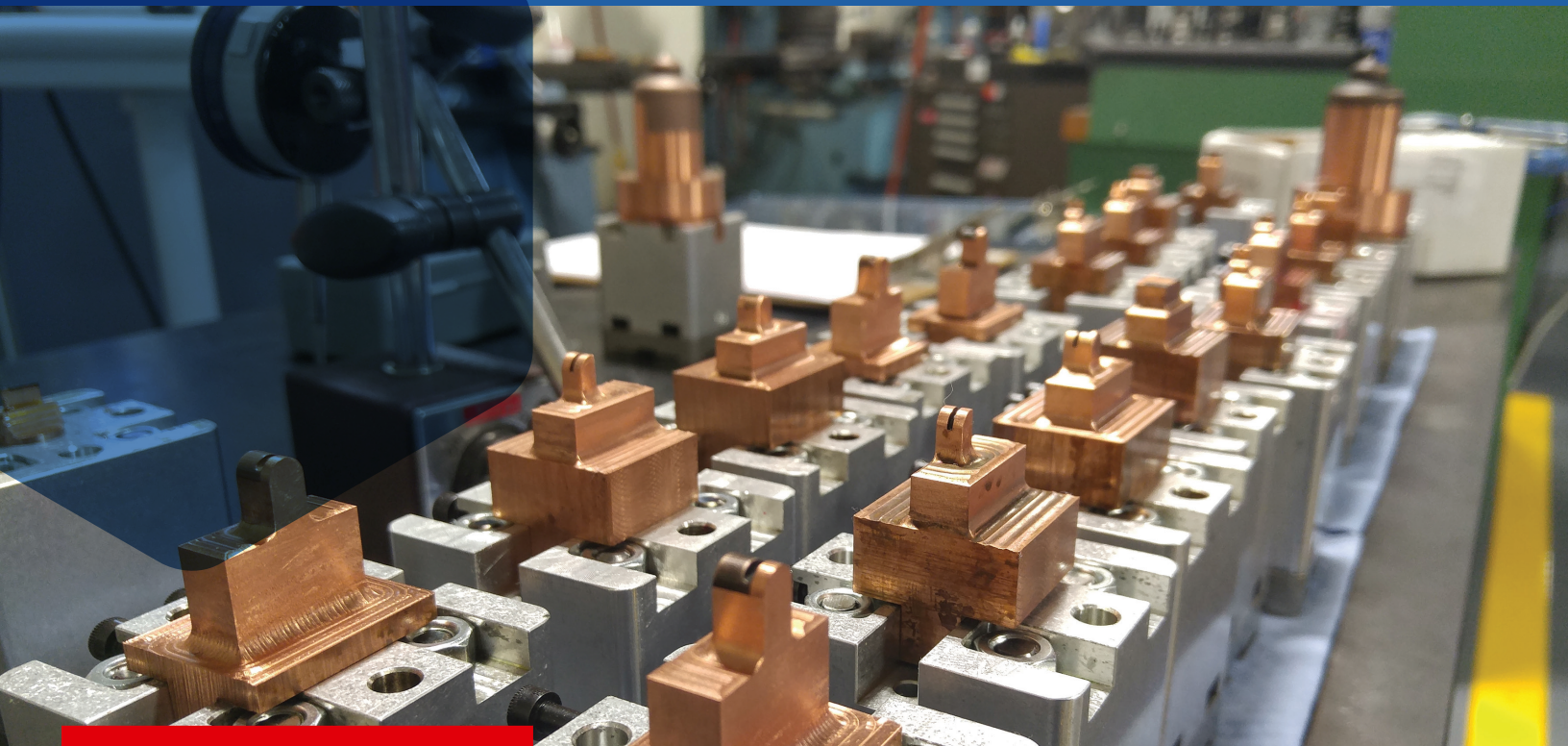
In December of 2014, Haydon Kerk began work to bring the two Kerk facilities together. Originally separated by 12 miles, now they are in two side-by-side facilities on a single campus in Milford, New Hampshire. The world-class manufacturing center has streamlined workflow — aided by a new MRP system shared by multiple plant locations. Fewer handoffs on projects let product flow through the facility faster (along one efficient circular path) even while maintaining order-fulfillment accuracy. To support this workflow, the manufacture of linear screws and nuts now happens in dedicated but linked spaces. For example:

- Mold-making and molding departments are colocated
- Tooling, design, and applications engineering share one office for seamless collaboration

With all Kerk operations on one campus, everything — including design, engineering, manufacturing quality assurance, and shipping — is now done with more efficiency and communication. The Kerk team completed full facility integration in Milford, New Hampshire in August 2015.

Now running: New molding capabilities to support applications requiring use of advanced polymers

Haydon Kerk Motion Solutions offers unrivaled design and manufacturing flexibility. It has the manufacturing expertise to process any moldable or machinable material with onsite machine tools, state-of-the-art injection-molding machines, and mold-making equipment. Haydon Kerk offers customized nut designs for high-end motion control applications. Precision molded and machined custom nuts create exceptional



Custom materials for specific requirements

These options include specially formulated Kerkite® composites for a molded solution, as well as polymers used and accepted in many industries. Custom solutions are designed by a team of applications and tooling engineers to meet specific customer needs.

- PEEK
- Torlon
- PET-P
- Vespel
- PPS

Kerk makes precision nuts of PEEK (polyetheretherketone), polyester, Torlon PAI (polyamide-imides), Vespel polyimide-based resin, PVDF (polyvinylidene fluoride), Ertalyte PET-P (polyethylene terephthalate), and customer-supplied specialty materials. Haydon Kerk also will machine precision nuts from bronze, brass, and stainless steel. Thread diameter for custom nuts is 2 to 24 mm with thread leads from 0.30 to 76.2 mm.

value for an OEM. Rather than trying to fit a standard lead screw assembly into an application, engineers from around the globe can work with the Kerk applications department to develop a custom solution that fits their designs.

Recent additions at the new Kerk facilities include new molding machines and mold-making software to support quick production order fulfillment as well as prototyping. Prototypes are available within as little as one day from the KerkExpress™ store ... and fully customized leadscrew assemblies in as little as one week.

In addition, Haydon Kerk Motion Solutions enhanced its molding processes. Staff tooling designers increased machine run time by reducing tool-change times to as little as 15 minutes. New automation tools at the Kerk facilities also allow greater throughput and file downloads straight from engineering. This decreases the threshold for minimum quantity runs and opens up the possibility of molding components for projects requiring special materials in lower volume orders.

As always, Kerk can mold or machine precision polymer nuts made in just about any shape — with extremely complex custom features. Standard Kerk material is self-lubricating polyacetal (for its dimensional stability, good tensile strength, and machine-ability). Kerk polyacetal nuts are impregnated with TFE (tetrafluoroethylene) for a permanent self-lubricating thread-contact surface.

Haydon Kerk Motion Solutions also offers a selection of other Kerkite® composite polymers. These high-performance materials have exceptional wear properties and are an excellent value thanks to manufacturing through injection molding. Kerkite polymers provide other mechanical, thermal, and electrical benefits as well.



Case in point: Consider the details of some specialty Kerk products. Kerkite Nut Material KN30 is a nylon base with carbon-fiber reinforcement and self-lubricating capabilities. It has high 43,000-fpm-psi pressure velocity and holds geometrical tolerances as a molded feature better than standard acetal. The material withstands large temperature swings, and its coefficient of thermal expansion is close to the 303SS used for the leadscrews.

Another Kerk formulation—dark-grey Kerkite nut material KP20—has a PPS base with carbon-fiber reinforcement. Used for the follower nut in the RGS® carriage, it has the highest pressure-velocity of all Kerkite materials. PV values are up to 72,000 fpm psi. It holds geometrical tolerances as a molded feature better than standard acetal (and resists myriad chemicals).

Another new Kerkite nut material KPK-20 has a PEEK base and is autoclavable. Yet another nut material, called KAR, has an acetal base with aramid-fiber reinforcement for a low coefficient of friction on non-coated shafts.

Now complete: New tooling to deliver customized solutions

To support the quick design cycle required by OEM engineers, significant capital investment was made to improve custom prototype leadtimes. More specifically, Haydon Kerk Motion Solutions recently added three CNC lathes for prototypes and small orders; a large bed VMC for process improvements in screw-rail production; and a new generation screw machine.

All of these changes within Haydon Kerk Motion Solutions were completed to better provide solutions for linear and rotary motion-control needs with a vertical manufacturing model. The team offers myriad motion-control products and capabilities augmented by high-end engineering and application expertise. Haydon Kerk Motion Solutions can help provide customers with turn-key solutions that may include leadscrew, linear stage and motor components, all to suit custom needs.

Expanded capabilities at Kerk

1. Enhanced prototyping capabilities with three new CNC lathes
2. Large-bed VMC to enhance the Kerk Screw Rail production
3. New CNC swiss-screw machines to replace old machines

Staff behind Kerk products: Experienced personnel and new talent

Haydon Kerk Motion Solutions offers a combined 80 years of design and manufacturing experience in precision linear motion. This includes personnel with decades of experience along with new talent to lead cutting-edge efficiency initiatives. The team behind Kerk motion products is dedicated to one mission — to discover, develop, and deliver solutions that **make customers' products better.**

According to recent U.S. Department of Labor data, the average tenure for a manufacturing employee is 5.9 years. In contrast, the average tenure at the Kerk brand facilities is 12 years. Kerk's thread-rolling departments have more than 80 years of collective thread-rolling experience. Kerk's CNC machining department has more than 400 years of combined experience.

Kerk customers also benefit from the leadership of a new plant manager at Milford. **Stan Brown** has more than 25 years of manufacturing experience, and is focused on improving the overall customer experience.

What's more, Haydon Kerk Motion Solutions has added applications engineers to its team. These individuals bring experience from multiple industries, including those related to semiconductor equipment, factory automation, and precision-device manufacturing. These engineers are ready to leverage their experience to help with specific applications.

In fact, Kerk specializes in customization, innovative design, and engineering to meet challenging application needs. Haydon Kerk Motion Solutions has the experience, people, technology, and facilities to design solutions that put challenging ideas into motion. Here, the technical team is ready to assist.

Other recent improvements at the Kerk Milford facility include process upgrades, adoption of environmentally friendly practices, daily production meetings, significant reduction in rapid prototyping lead time, and the establishment of Haydon Kerk's **Kaizen Team** to continually improve workflow.

Contact the staff through www.HaydonKerk.com or talk to an engineer about specific applications by calling (603) 213-6290.





“I’ve always been a hands-on plant manager, and think that total engagement from the whole team here at Haydon Kerk — including the personnel in customer service, production, quality, and even accounting — is what helps us give Kerk customers not just okay support, but excellent support.”

Employee Profile:

Stan Brown Plant Manager at Haydon Kerk

Stan Brown recently joined Haydon Kerk as plant manager in Milford. He previously served as plant manager for General Cable in Lincoln, Rhode Island, and Vice President of manufacturing at Trelleborg.

Brown believes that everyone at Kerk’s Milford plant has a hand in the company’s customer-facing approach.

“Haydon Kerk took on two very difficult projects at the beginning of 2014. One was the conversion to NAV material requirements planning or MRP software. The second was the physical move to Milford. Either one of those projects singly would’ve been big. Taking on both of those at the same time was a challenge, so the spring and summer saw service and delivery suffer. The team here did an excellent job to improve that situation in the fall, and has continued that performance trend up to the present,” notes Brown.

In fact, Kerk is now running at zero past dues, and its team looks forward to maintaining that with tracking and a disciplined approach to work-order management.

Brown holds a B.S. degree in Mechanical Engineering and an MBA. He’s an avid cyclist, alpine skier, and rock climber.





I must say that in my 30 years in this industry, this was the biggest technological turnaround I've ever seen.

Employee Profile:

Steve Hann

Mold and Tool Designer at Haydon Kerk

Steve Hann directs the design of plastic-injection molds at Haydon Kerk. Production of Kerk molded-in threads is his main focus, along with designing molds that efficiently produce parts and reduce production times.

"I brought 25 years of experience as a toolmaker as well as familiarity with SOLIDWORKS tool CAMWorks® to Haydon Kerk. The company was primed to enter 21st-century manufacturing. Relatively soon after my joining, it bought a VMC milling machine, a CNC EDM machine, and more. It was strange how it worked out. I joined the company at a fortuitous time," notes Hann.

In short, the old shop could make smaller and simpler molds and repairs, but with leadership from Hann, Kerk procured AMETEK funding to upgrade the tool room with some sizeable purchases.

The other piece of the modernization puzzle was software. "Kerk already had new software when I joined, so on that front it was just a matter of training tool-room employees on SOLIDWORKS," says Hann. Then the tool room got rid of all remaining systems based on printed blueprints.

There was a 50-50 mix of personnel who had worked with

new technology and those who hadn't. "So essentially we had to upgrade the ways things were done and adopt a SOLIDWORKS-based approach all at once." However, with in-house training from a reseller, it only took about a month for the team to be fully up and running on the new system.

"I must say that in my 30 years of being in this industry, this was the biggest technological turnaround I've ever seen. I've seen it take other companies years to do what we did in 15 months," said Haan. "It was the perfect combination of the company willing to make a significant investment in our facilities and allowing us to choose the equipment to buy ... just a very positive transition." The shop is now capable of automated operation — even lights-out manufacturing — to build molds at night, even after most of the Kerk team has gone home.

On a personal level, Haan feels as though he's trained his whole life for the position he now has at Haydon Kerk, because it's made use of everything he's learned about moldmaking. When he's not working at the Kerk Milford facility, Hann plays the bass in a band.





How Kerk products are tracked and engineered today — Better and more efficiently than ever

Material requirements planning (MRP) software is a production planning, scheduling, and inventory control system used to manage manufacturing processes. Over the past two years, Haydon Kerk underwent a challenging but nevertheless exciting MRP migration to Dynamics NAV Navision.

More specifically, the MRP system was implemented at the Kerk New Hampshire plant in November 2014 and at the Haydon brand's Waterbury, Connecticut facility in February 2015, so now there's better coordination between the two brands.

Despite a year of preparation, there were implementation hurdles. However, Haydon Kerk Motion Solutions is now fully operational on its new MRP. That translates into efficient production and ontime delivery every day.

The software runs across the entire Haydon Kerk family of products. This lets all locations see the big picture, share data, and speak the same language. Customers benefit from the new MRP with thorough information and better service, as well as better coordination among the many different Haydon Kerk products and leveraging the MRP system to improve customer experiences.

On a related note, the KerkExpress™ Program now lets customers choose from a variety of standard off-the-shelf prototypes of various linear actuator, leadscrew, and linear-rail products for quick delivery while waiting for a customized application-specific part. This is most suitable for initial concept testing.





About AMETEK and Haydon Kerk Motion Solutions

AMETEK is a global leader in electronic instruments and electromechanical devices. The company consists of two operating groups. **Electronic Instruments** is a leader in advanced instruments for the process, aerospace, power, and industrial markets. **Electromechanical** is a differentiated supplier of electrical interconnects, specialty metals, and technical motors and associated systems, as well as a leader in floor care and specialty motors.

For nearly 50 years, **Haydon Switch and Instrument, Inc.** has built electric motors, stepper motor-based linear actuators, and hermetically sealed switches for the most demanding of applications. Located on 10 acres in Waterbury, Connecticut, the company's ISO 9001 / AS9100 certified manufacturing facility supports today's most efficient technology and manufacturing methods.

Kerk Motion Products has designed and manufactured motion components since 1976. Today, Kerk offers an array of precision leadscrews, patented anti-backlash nuts, and quality rail and guide systems. These products offer high accuracy, unsurpassed repeatability, and long life in a range of motion-control applications.

Haydon Kerk Motion Solutions was formed in 2008 by combining two world-class brands in the field of linear motion — Haydon Switch and Instruments and Kerk Motion Products. Today, Haydon Kerk Motion Solutions is recognized as a leading manufacturer of stepper-motor-based linear actuators, rotary motors, leadscrew assemblies, and linear-rail and guide systems used in niche market applications.

In short, Haydon Kerk Motion Solutions offers industry-renowned brands built upon its technical innovation, versatility, customization, product durability, and dedicated customer service.

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