

A Salute to Our Military and Milltronics' Responsiveness in Helping Us Protect Them Better From New Lenox Machine Co., Inc.

"Manufacturing specialty projectiles and launch systems for armor testing means machines must adapt to pre-hardened materials, extreme precision and tight tolerances. Milltronics modified software and controls to help us save time, money — and lives."

Saving Lives is All in a Day's Work for New Lenox Machine

Most lathe operators don't arrive at work thinking about saving American lives, but Al Seniw and his team at New Lenox Machine Co./New Lenox Ordnance, wake up every day intending to do just that. Having specialized in screw machine products for 30 years, the company was awarded its first government contract to develop and produce the 14.5 mm BS-41 Soviet round projectiles in 1985 and has supported national efforts for armor and related testing ever since.

Today, New Lenox is renowned for the manufacture and testing of specialty projectiles made from steel, tungsten and tungsten carbide that are used solely for scientific testing which results in the development of improved armor to protect the human body and vehicles in combat. In fact, New Lenox supplies about 80 percent of the projectiles to ballistics labs worldwide.

Along with projectiles, New Lenox offers the design and manufacture of long barrel 12-15 foot powder breech systems to fire the projectiles and these, too, are used by ballistics labs all over the world for testing. These systems offer a more economical way of launching projectiles without the need for a conventional cartridge case as well as a wider range and better control of velocities than a universal receiver.

The company is also able to duplicate the secondary effects of fragments from improvised explosive devices, or bombs, by launching shrapnel fragments at over 5000 feet per second. Faster velocity is the demand and New Lenox meets the pace. In fact, the latest request is from a lab seeking 8300 feet per second. Systems ranging from 30 mm to 50 mm are used by various national laboratories to shoot odd shaped pieces to simulate shrapnel shot at very high velocities.

In addition to the machine shop, New Lenox's facilities include a 200-foot indoor ballistic test range for testing armor and projectiles ranging from 5.56 mm to 40 mm and testing angles of obliquity to 60°. The trained highly qualified personnel who test armor and projectiles are capable of setting up a test program, measuring velocity of the shot fired and reporting all the data and results on customers' armor.

Known all over the world for their projectiles and launch systems, Al and his team are truly problem solvers and consultants to the engineers at the test labs/proving grounds. The engineers often look to Al to recommend new designs and make improvements.



New Lenox Machine owner Al Seniw shows off the results of the work the ML35 and ML26 routinely produce: (Left to Right) universal barrel receivers, snap cap firing assemblies, 20 mm powder breech systems, 30 mm powder breech systems and barrel clamp assemblies.



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“We’re proud of the work we do to save the lives of our GIs,” Al says. “We put a lot of energy into research and development to stay ahead. It’s a niche where we can make a real difference.” In practice, engineers from renowned facilities including Aberdeen Proving Grounds and Los Alamos National Lab regularly design new armor and challenge the New Lenox team to develop a penetrator to test it.

New Lenox’s jobs are typically not high volume work, but they are high dollar value and require extreme precision and very tight tolerances. “There is no margin for error when we’re dealing with a two part canon barrel,” Al states. “It must line up when it is put together and there is no second chance with the workpiece.” The majority of the materials they machine are pre-hardened, high quality ordnance steel which presents very difficult machining challenges, but results in a better product.

As the company’s capabilities and reputation have grown among longstanding customers, so has the need for equipment and



In 2008, New Lenox invested in this ML26 turning center to handle 12.7 mm gun barrels. The versatile lathe, with its’ rigidity and accuracy has become a mainstay on New Lenox Machine’s floor.

supplier partners that can keep up with their demand. The long, very large barrels New Lenox manufactures present machining challenges. The shop is populated with an interesting combination of machines ranging from Pratt & Whitney twin spindle gun drills that date back to the World War II era, to a state-of-the-art CNC flat bed lathe with customized software. The company’s goal is to have the right equipment for the job whether it’s new or vintage.



One of the most challenging jobs New Lenox faces is machining a buttress style thread at the end of a gun barrel. Milltronics stepped up with the machine and control modifications for the ML35 as well as a standard roller steady rest (9.8” – 17.7”) to provide even more stability in holding the workpiece.

In 2008 New Lenox invested in its first Milltronics turning center to improve productivity on boring for both smooth and rifled gun barrel jobs up to 16 feet long. New Lenox purchased this machine, a very heavy and stable flat bed style lathe, to stand up to the test of long ordnance-grade steel workpieces. “I saw the best value in the ML26/160 turning center and the Milltronics engineers were willing to modify the bed size, software and controls to make the lathe perfect for our application,” says Al. I like the size of Milltronics and working with an American company means a lot in our operation,” he notes.

One of the most challenging jobs New Lenox faces is machining a buttress style thread at the end of a gun barrel. When the need arose for turning, chamfering and threading these long barrels, Al once again looked to Milltronics. “The machining we do, including rethreading, requires a special machine” he explains. Milltronics stepped up with the machine and control modifications for the ML35 as well as a standard roller steady rest (9.8” – 17.7”) to provide even more stability in holding the workpiece.

Because of the age and special nature of many of the machines on New Lenox’s shop floor, it is not surprising that Al and his team



The manual operation mode option on the lathes for long barrel boring jobs is also a benefit for what AI calls “onesie” jobs.

On both ML26 and ML35, a rear-mounted chuck deadens vibration and can grab longer pieces of material – up to 20 feet in the machine at times. Milltronics offered this option while competitors did not.

make all of their own tooling and also make parts for the vintage Pratt & Whitney riflers. This was a driver for the purchase of their Milltronics ML22 horizontal turning center. Its rugged box way design offers the swing, bed length, spindle HP and RPM to handle just about any job that comes its way, whether it’s an internal or external job.

New Lenox’s operators find it easy to use in manual mode, or when taking advantage of full conversational programming for a new job or to modify an existing program. This is making them money by saving time. Not only can all programs be edited and multiple tasks accomplished from one screen, the CNC’s menu-based question and answer format, prompts the operator for job information and automatically creates the program at the machine from the provided data. This use of Auto Routine enables operators to program without knowing G or M codes. The trig help feature eliminates the need for calculations. The interface is designed to minimize keystrokes to avoid typos or missing an operation.

“I look for controls that are easy because I’ve learned that if they are not, operators won’t use the machine,” explains AI. “Even though my operators are fluent in G code, the Milltronics controls save time every day. On all three of our Milltronics lathes the conversational feature, trig assist and help pages are important.”

Not only can AI and his operators cut and paste parts of programs and find it easy to download or store a file, they can share those files among the three Milltronics machines. AI says, “we can take a big barrel program, download it, and make changes to adapt it to a small barrel job. That represents hours in time savings.”

The manual operation mode option on the lathes for long barrel boring jobs is also a benefit for what AI calls “onesie” jobs. In manual mode, the operator machining deep grooves on barrels is able to use the remote handheld electronic hand wheel to tweak a radius, gauge as he goes and make changes on the fly without re-programming. This means even more time savings that result in faster turn-around and an improvement to armor that will help save a life sooner.

To New Lenox’s team, the ease of programming on the Milltronics machines saves time on every task, but the rigidity and innate accuracy of the machines enables them to routinely achieve tolerances as tight as +0.0002 inch.

Unscheduled downtime is almost unheard of. “These machines are built well to begin with and Milltronics and the folks at our dealer, Machinery Source take good care of us, so ‘out of service’ are words we don’t hear often around here,” concludes AI.



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