

TARGETING PRODUCTIVITY

Customer: Xtreme Machining (Grassflat, PA)
Date: July 1, 2013
Machines: Johnford SV-48 (two)
Industry: Firearm Manufacturing

What began as a hobby-level effort by a Pennsylvania sportsman to machine specialized firearm parts for a few fellow enthusiasts has grown into a full-time manufacturing operation for complete firearms and components, while also producing general industrial parts. The recent boom in demand for firearms of all kinds has driven the shop to carefully consider and expand its selection of machining equipment.

In the early 2000s master machinist Bob Zelenky was plant manager for a large north-central Pennsylvania tool and die shop. He also was a firearm enthusiast, competing in 1,000-yd benchrest and .50 caliber target shooting and enjoying long-range hunting. In April 2005, he founded Xtreme Machining (Grassflat, PA) as a sideline shop to machine custom rifle actions for shooting enthusiasts. When the market for those parts was not what he anticipated, he also began machining custom

fabricated components for glass molding, forging, electronics and other industries.

Zelenky's first shop was 60' behind his house in a 30' x 60' x 13' building. "It was just myself, and I worked that way for about a year and a half," said Zelenky. To establish the shop, Zelenky bought three pieces of equipment: a Chmer wire EDM, a Johnford SV48 VMC and a Johnford SL300 lathe.

His first commercial firearm product was a .50 caliber rifle action, produced in May 2005. Although his actions and rifles became well known to long-range target competitors, Xtreme Machining was largely unfamiliar to the greater firearms community. Zelenky changed that with the development of his own long-range rifle. "My long-range hunting friends and I would shoot from side hill to side hill at very long distances," he said. "The guns we were using were just running out of steam at the distances that we wanted

to go. So I decided to try and design one for myself. I started developing a long range rifle and designed everything from the ground up, which included the cartridge, projectile and the rifle system itself."

In 2007 Zelenky introduced the .338 Xtreme Tactical. The rifle utilized innovative technologies that resulted in a gun weight of only about 16 pounds. According to the company, careful bullet, cartridge and gun design enabled the rifle to deliver a projectile at 3,350 FPS with better down-range ballistics than most competitive cartridges, providing an ability to hit targets at ranges in excess of 2,300 yards.

The heart of the system is the .338 Xtreme cartridge designed by Zelenky. "The design was based on reading and analyzing cartridges," he said. "The .338 caliber projectiles have a patented 2-diameter design where they plug into the bore. We will guarantee 3/4 of a minute of accuracy to

two kilometers."

Success at an invitational shoot brought the .338 Xtreme Tactical to the attention of the long-range and tactical shooting communities. "We set out targets at various yardages, anywhere from 1,000 yards out to 2,000 yards. When you are getting into those extreme long ranges, there is really nothing out there that could perform as well," said Zelenky.

Customers for Xtreme .338 Tactical are basically military and law enforcement. "It is very specific, purpose-built for taking out bad guys at a very long distance," said Zelenky. We have several law departments, a port authority and some airport authorities who are using it." He said U.S. Special Forces are testing the guns and are impressed. "They are looking to replace the 87-lb .50 caliber BMG system that is currently in use. Our system has the same capabilities as the .50 in a package that is about the same weight as the smaller



caliber, approximately 800 yard range, 17.5 lb M24 system they are currently using,” Zelenky said.

Growing recognition of Xtreme’s precision manufacturing capabilities helped convince Zelenky to make the shop his full-time job. “Success with the long-range rifle started to open doors in the firearms industry,” he said. “People noticed that we could build very high quality products and do it at a reasonable price. “Things started happening because there was a need for good parts. Everyone was trying to get something done overseas and when it came back it was very low quality. We were able to machine parts very fast, and we had very good machining techniques. Because the shop produces parts efficiently and economically, we started into the OEM part of the business where we built the products for somebody else, put their name on it and then they distributed the rifles and other parts.” Today, a number of OEM gun companies rely upon Xtreme Machining’s manufacturing capabilities, including Novak Sights, Nightforce, U.S. Optics, LWRC International and Saber Defense, according to the company. “We have built probably 4,000 AR-15 lower receivers under the American Tactical logo, and progressed into building new receivers, barrels and other components for AK-47 kits that the company brings in from overseas,” said Zelenky. “We assisted O.F. Mossberg and Sons in entering the AR market by helping them design a rifle based off the AR 15, and we are cutting a variety of components for it.”

For OEM customers the shop builds barrels, stocks, receivers, bolts, magazines and rails for rifle sight systems, and also makes a variety of pistol components including front and rear sights.

On the engineering for manufacturing side, Xtreme Machining offers full design capabilities for the rapid development of working prototypes from basic drawings. In-house programmers work with 2D and 3D design software such as Unigraphics, Auto Cad and Solid Works, and the programs are fully integrated with the shop’s CNC equipment. The shop can produce a single part, a complex assembly or an entire firearm from prints or from a sample, holding tolerances as tight as 0.0001” even in manufacturing quantities of several thousand units per month. Gunsmithing services include threading, fluting, contouring and chambering.

Currently, in addition to the .338 Xtreme Tactical, Xtreme Machining offers its own extensive product line including various types of actions and rifles, semi-automatic AR-10, AR-15 and AK47-style guns, barrels, scope bases, bullets and rests. The shop machines a wide range of workpiece materials, each chosen for top performance in its specific application. Rifle-cut barrels are made from 416 stainless steel and 4340 chrome-moly steel hardened to 35-37 Rc. According to the company, tolerances are among the best in the industry, with twist rates and bore diameters held consistent to within 0.0002” over the length of the barrel. AR-style upper and lower receivers are



Photo on the Top: Xtreme Machining founder Bob Zelenky with a pair of Johnford SV48 machining centers.



Photo on the Right: George Pratt, Sales Engineer at Absolute Machine Tools with the AR rigles.



Upper and lower receivers for AR-style rifles are CNC machined from 7075 T6 aluminum forgings on a Johnford SV48 machining center.



These aluminum firearm components were machined at Xtreme Machining.

CNC machined from 7075 T6 aluminum in both forgings and billet material; stocks are machined from 6061 T6 aluminum. Custom-built actions feature receivers CNC machined from 420 stainless steel and hardened to 44-46 Rc for greater strength and wear resistance, while bolts are made of 4140 chrome-moly steel hardened to 42-44 Rc. Zelenky said the use of dissimilar steels for the bolt and receiver minimizes or eliminates the possibility of galling. Receiver and bolt squareness, receiver straightness and receiver bore uniformity are held to tolerances of 0.0003" or less. Bores and raceways of receivers are

cut using wire EDM technology, allowing tolerances of 0.0003" or less for straightness and bore size. The company also turns solid copper alloy match grade bullets on CNC lathes, with bullet diameter and roundness held to a variation of 0.0002" or less.

Along with its production of firearms and components, Xtreme continues to serve general industrial customers. "We build a lot of parts for the glass mold industry, the forge and die industry and offshore oil rigs," said Zelenky. "For Alcan Cable in the Williamsport, PA, area we machine tooling used to make cable for

power lines." The shop also performs machining services for Interfuse Manufacturing, a Clarence, PA, manufacturer of a variety of custom molds and dies for the glass, refractory and forge and die industries.

The shop's origin as a maker of gun components has put it in the middle of a surprising production boom. Previously, 100-200 rifles represented a good production week; now the shop makes 500-600 rifles weekly. "The demand for firearms and related components has been driven to astronomical proportions as far as trying to make product," said Zelenky. "Everyone appears to be in panic mode. Legislation is threatened to be passed, and people are feeling that their rights are being infringed upon. People are scared, and they will pay anything for a firearm right now. There are so many components that you cannot buy because there is such a shortage. People are buying up everything they can

put their hands on. It is not only with the firearms but also with the ammunition; anything that has to do with the firearms industry." He said the big jump to 500-600 rifles a week started about six months ago, but the overall frenzy began to ramp up about a year before the presidential election. Zelenky does not think that semi-automatic, so called assault rifles, will be outlawed. "I do not think so. I do not think they are going to ban semi-automatic rifles because the term assault weapon is too vague and too broad. And now that people are finding out that a lot of these shootings were not done with assault rifles, they are puzzled now as to why everything got started in the first place. I think that they may be successful in limiting round capacity on the magazines."

To handle the heavy demand, Zelenky has added a wide range of manufacturing equipment including another



wire EDM, two pallet-loaded horizontal machining centers, another lathe and a four-axis milling machine. To boost output, in late 2012 Zelenky bought another Johnford SV48 from Absolute Machine Tools. The machine features a 51" x 27" working surface, XYZ travels of 48" x 28" x 24" and a 20 HP, 15,000 RPM direct-drive spindle. It utilizes CAT 40 toolholders. The shop's first Johnford VMC had a 10,000 RPM spindle, and Zelenky said the new machine's faster spindle has helped their throughput almost 50%. "A part that was taking us 20-25 minutes with our first Johnford now takes us 12 minutes, 10 seconds," he said. "We also added through-spindle coolant on the new machine, which helps immensely." The shop continually pursues productivity boosting strategies such as clamping multiple workpieces on the machine's relatively large table with the aim of consolidating setup time and maximizing the time that the machine is running.

Overall, Xtreme Machining's story is one of rapid and well-managed growth. "We went from one employee to 29," he said. "We are running nonstop seven days a week, with three eight-hour shifts a day."

Zelenky sees further expansion. "One of the things we are getting into heavily is overseas sales," he said. "We are becoming ITAR (International Trade and Weapons) certified. It is a very prestigious certification. It will allow us to deal with foreign militaries and foreign governments to acquire contracts."

For more information contact:

Steve Ortner
7420 Industrial Parkway
Lorain, OH 44053

440-960-6911

sales@absolutemachine.com
www.absolutemachine.com

ABSOLUTE MACHINE TOOLS

25+ experience in quality CNC machine tools sales, services, parts, and application engineering.

JOHNFORD

SV-48

(50 Taper High Speed Vertical Machining Center)

All box ways with 4 ways in the Y Axis
48" x 28" x 25" travels
944" / min. rapids all boxes
20 HP, 2 speed gearbox driven, 6000 RPM, 50 taper
24 tool Arm type ATC
Full closure
Dual rear discharge screw type conveyors
Caterpillar chip conveyor
1000 PSI coolant through spindle
Fanuc OiM-D with Manual Guide i Conversational

