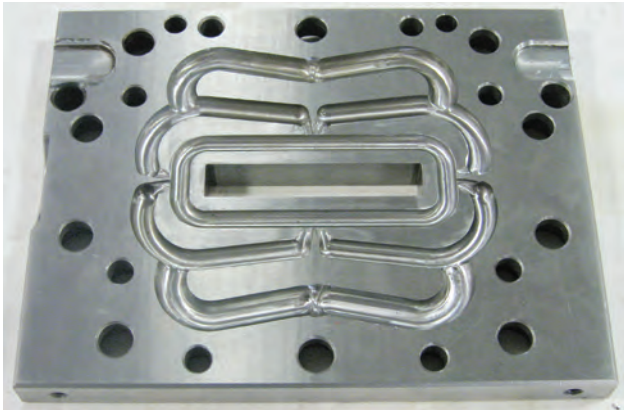


New Technology Expands In-House Capabilities



Sample die machined by an LPM.

Superior Plastic Products, Inc. (SPP), a blow molding business, acquired the ability to make its own molds, and then decided to expand the business further by adding extrusion capabilities. Outsourcing the tools and dies needed proved to be a challenge due to long lead times, so the company sought a way to overcome this challenge.

“When we began looking for shops that could make our dies and tools, we learned that lead times were typically around six months,” said Elmer Weaver, Shop Manager, SPP. “This did not include the time and effort it would take for us to evaluate and accept the tooling. Needless to say, we felt these lead times were unacceptable and we did not want to incur the additional costs associated with the tooling evaluations. We subsequently decided that we would try to make the extrusion dies and tools in-house.”

However, making their own tooling presented a new set of challenges. Due to the sheer number and type of tools and dies required, the SPP team would have to become adept at cost-effective small lot machining. This meant that they would have to acquire equipment that minimized lot changeover times.



Front row (l-r): Elmer Weaver, Alex Rodriguez Jr., Chris Weaver.
Back row (l-r): Josh Martin, Dan Fisher, Earl Wenger, Ben Kauffman.

The company also faced an additional challenge: how to find and keep skilled machinists. “None of our people—with the exception of one—had any machine shop experience prior to joining us,” said Weaver. “Everyone else learned on the job, and their capabilities were limited. We needed equipment that was easy to learn and use.”

“Based on our experience, we knew we would need a machine with an automatic tool changer to meet our schedules,” said Weaver. “A 5-axis machine would address our productivity needs, but would also contain many features and capabilities we would never use, so the acquisition of one would not make sense. We then considered new versus retrofitted/rebuilt equipment. The latter would be less expensive, but we were concerned about product support, so we eliminated it as an option.”

SPP chose a TRAK LPM machining center from Southwestern Industries because it met all of their requirements. Besides having an automatic tool changer, the LPM features the following:



Stair brackets machined using the LPM's 4th axis capabilities.

- The ProtoTRAK conversational language based CNC. “We have ProtoTRAK controls on our TRAK mill and lathe, so we know how easy it is for machinists to learn and use this control,” said Weaver. “Most importantly, it does not require our people to have detailed G-code programming knowledge. The ProtoTRAK PMX model CNC that comes with the LPM can be programmed in background mode (‘staged’ mode) for a future job while it is already machining a part on the table. It provides us with flexibility in terms of file types and storage, and provides documentation features that assist us with our quality control efforts. Most notably, it stores notes and photographs within the program that address set-ups, tooling and other useful information relating to current and repeat orders. All of this information is instantly accessible via the PMX control.”
- A quick changeover system that makes small lot machining cost effective. The LPM contains an integral Jergens Ball Lock fixturing system that is machined into its table. With this system, the operator always knows the datum of the part or parts relative to one of the three primary Ball Locks built into the table. So, once the initial set-up has been completed and the dimensional accuracy of the machined part confirmed, it can be repeated at

Continued on Page 2

As Seen in September 2013



MANUFACTURING NEWS
www.mfgnewsweb.com

any time with the LPM ready to go within a few minutes. This is because when a program is saved, the ProtoTRAK LPM PMX control not only saves the process information and any program notes, but also the datum positioning data.

- The ability to run CAM generated G-code for complex jobs that could involve hundreds or even thousands of ProtoTRAK program events. G-code editing can be done directly at the machine without having to go through the process of going back to the computer, revising the program and re-posting it. Finally, Southwestern Industries offers a DXF converter software package that allows ProtoTRAK programs to be generated quickly and easily from imported CAD DXF files.

"We also selected the LPM from Southwestern Industries because its salespeople are responsible for customer product training," said Weaver. "We feel this accountability gives them more credibility. They cannot just sell you their product and walk away—they have to come back and train you."

"We had our LPM installed on a Tuesday, but delayed our training by a few days because we already owned some TRAK products and wanted to play with the new machine for a few days to learn what questions to ask," said Weaver. "When Southwestern's salesman, Mike McGarry, arrived the following Monday to train us, we had already run three jobs. It is that simple. We spent a few hours learning the Ball Lock system and the training was completed before noon."

SPP personnel program their basic jobs directly on the PMX control. For their complex jobs, including 3D surfacing, they utilize the LPM's GCD and networking capabilities. Operators can retrieve a CAM generated program directly from the machine via the network and run it. They use the G-code editor if and when needed to do minor code editing (e.g., feed rates and spindle speeds).

For tooling, SPP generates ProtoTRAK programs directly from DXF files and then completes the programs at the machine - a task that Weaver says even their least experienced personnel can accomplish.

In order to take advantage of the LPM's Jergens Ball Lock workholding system, they have built and use standard fixtures that attach directly to the LPM table, or to the Southwestern Industries standard fixture plates that attach to the LPM table. According to Weaver, it allows their changeovers to be easily accomplished within a matter of minutes.

According to SPP, the LPM allowed them to meet all of their expansion goals. "In fact, we were so satisfied with the LPM that we bought a second one with a 4th axis," said Weaver. "When



Chris Weaver at the CAM work station.

the second LPM arrived we put it to use with no training."

"It takes us less than one third of the time to go from design to end product on the shelf using the LPMs, versus the time it would have taken had we contracted the extrusion dies and tools out," said Weaver. "And, the cost is approximately 50% less."

The TRAK LPM features a 15 HP 8,000 RPM spindle, table travels of 31" x 18.5" x 21" (XYZ), 16 tool capacity automatic tool changer and integrated 4th axis. The TRAK LPM measures 13.9' x 7.37' x 9' (LWH) and has a table size of 35-3/8" x 19-5/8". It has a variety of fixture plates for use with the integrated Jergens Ball Lock positioning system. A cart is included with the mobile tool setting system.

SPP machines and fabricates a wide variety of materials for its products. Materials include: 6061 and 7075 aluminum for blow molds; 4140 pre-hardened (28 - 32 Rockwell) steel for extrusion pullers; A1 and D2 tool steel for stamping tools; 304 stainless steel for tooling for sizing extrusions and vacuum plates; and PVC. The company utilizes SolidWorks for designing, have robot welding capabilities, metal shears, a press brake and two wire EDM machines.

Superior Plastic Products provides builders and homeowners with maintenance-free vinyl fence materials and vinyl post and railing products. Years of design and vinyl product manufacturing experience ensure structurally sound vinyl fencing and railing products that meet required building codes. Vinyl fence and railing products from SPP are backed with a lifetime warranty.

"From the time of its inception, Superior Plastic Products, LLC (formerly Quality Fencing & Supply) has worked diligently to provide products that are not only attractive in design but are manufactured of the finest materials available and built to last," said Weaver.

For more information contact:
Elmer Weaver, Shop Manager
Superior Plastic Products, Inc.
110 Peters Road
New Holland, PA 17557
717-355-7100
elmer@superiorplastic.net
www.superiorplasticproducts.com

Bruce Meredith
Marketing Manager
Southwestern Industries, Inc.
2615 Homestead Place
Rancho Dominguez, CA 90220
310-608-4422
info@southwesternindustries.com
www.southwesternindustries.com



Alex Rodriguez at the controls of an LPM machining center.