Transitioning from Manual to CNC Machining

Hector Gamez, Machine Operator, working at a TRAK model DPMSX3P bed mill with ProtoTRAK SMX CNC control.

Specialty Machining & Fabrication (SMF) specializes in providing mechanical services and the machining of spare parts, retrofit parts and repairs. They are especially adept at reverse engineering and machining parts that are no longer available, such as large industrial pump shafts and housings used by municipalities. Since all of their turning and milling had been done manually, however, they found themselves working at full capacity at a time when they needed to increase productivity.

"We had been working six to seven days per week with two shifts per day," said Claudio Gamez, President and Owner, SMF. "When we tried to increase our capacity by hiring more personnel, we could not find any qualified people due to the nation-wide shortage of skilled machinists."

SMF considered buying new, high-end CNC equipment and introducing CAM into the shop. However, most of their work requires 2 and 2-1/2 axis equipment. "We focus on high mix, small lot machining, and did not have a need for expensive 5-axis machines," said Gamez.

The TRAK line of lathes and mills came into consideration with conversational based ProtoTRAK CNC technology from Southwestern Industries. "I have experience with G-code programming, CAM and ProtoTRAK technology. In my evaluation I determined ProtoTRAK was the fastest and most cost-effective way to increase our productivity," said Gamez. "We bought three Southwestern Industries 2460SX lathes and one 3-axis DPMSX3P bed mill. We originally bought the bed mill and one of the lathes over a year ago after reviewing the TRAK products at the AeroDef 2011 trade show. We subsequently bought the two lathes over the next half-year period. By buying the ProtoTRAK technology, I did not have to worry about finding the skilled labor that is in short supply these days. In addition, because TRAK lathes and mills are priced towards the lower end of the price spectrum, purchasing them would allow me to keep my fixed costs under control."

SMF machines many types of materials, including exotic materials. They work with everything from mild steel to high-temp alloys. "The quality of the parts produced by the TRAK machines exceeds that of the parts we machined manually," said Gamez. "The TRAKing feature we acquired with the lathe and mill is especially useful, as it has allowed our machinists who were unfamiliar with CNC technology to feel more comfortable with it." TRAKing allows an operator to run/execute a program by turning the hand wheels on the table. The speed at which the program is run is determined by the speed at which a hand wheel is turned. This level of machine control allows machinists to dry run their programs and/or verify their set-ups whenever they machine the first part of a lot, while at the same time increasing operating efficiencies.

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Claudio Gamez Jr., Machine Operator, working with the ProtoTRAK control on a Southwestern Industries 2460SX lathe.

As Seen in April 2013

SW SOUTHWEST SE SOUTHEAST NE NORTHEAST MW MIDWEST W WEST

MANUFACTURING NEWS

(l-r) David Gomez, Claudio Gamez Jr., Mirna Gamez, Jacque Shay, Hector Gamez, Claudio Gamez Sr., Ofelia Zesati, David Velez, Brian Gomez, Lester Gonzalez and Jose Chavez, SMF.

The DPMSX3P bed mill features a 50" x 10" table, 31" x 17" x 23.5" XYZ travels, 5 HP spindle motor and spindle speed range of 40-600/300-5,000 RPM.

The 2460SX lathes feature 60" distance between centers, 24" swing over bed, 4.09" spindle through hole, 15 HP spindle motor and spindle speed range of 40-670/100-1,800 RPM.

"We were also pleasantly surprised by the ProtoTRAK Math Help feature that allows us to quickly and automatically perform complex calculations," said Gamez. "The time and cost savings we have realized has allowed us to take on more work and we are now at the point where we are once again running at full capacity and are ready to acquire more machines. In fact, we recently acquired a vertical turning lathe to machine our large industrial pump housings."

Transitioning from manual machines to the ProtoTRAK CNC technology has allowed SMF to decrease the amount of time it took to complete a milled part by as much as 75% (from four hours to one hour). In some instances, they reduced turning times from six hours to as low as 25 minutes. This is helping them achieve their goal of maintaining a flexible business that can respond quickly to changing market needs.

As an example, they were recently approached by a customer who wanted a quote for a part they would ordinarily order from their supplier in Japan. It turned out that this supplier had a subtier vendor in South East Asia and the overall quoted lead time for the part was six months. SMF subsequently won this job because they were able to reverse engineer and provide this part to this customer within a few hours of receiving the order.

Additional machines utilized by SMF include conventional engine and turret lathes, conventional mills, boring mill, vertical turret lathe, chuckers, grinders, drill presses and broaching machines up to 1-1/2".

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SMF focuses on mechanical services and machining of spare parts, retrofits and repairs.