

CASE STUDY

EMCO Maier Corporation
Dayton Richmond Concrete Accessories
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Improving The Manufacturing Process Through Innovative Technology Applications

Several years ago, Dayton Richmond Concrete Accessories of Dayton, Ohio began looking for a more efficient way to produce one of their major products, form ties. The form ties are long, slim pieces used at the base and/or top of modular type formwork to tie steel frame form panels together. The form tie's shape made it necessary to use two manual lathes during production, which was extremely time consuming. Dayton Richmond decided that it was time for a change and promptly began researching options to increase its production rate through the use of CNC lathes.



Bill Drewry, manufacturing engineer at Dayton Richmond, began exploring a number of machine tool company products. The challenge was to find a machine that had the capacity to maneuver the part material in a continuous flow, so as to avoid hand feeding the materials into the spindle and manually removing the finished part. Drewry found that most of the machines were either too big, too expensive, or did not have the flexibility to produce the family of parts.

“It was taking us six operations, two machine operators and nearly seven minutes to produce each form tie” said Drewry. “We knew that there had to be a way that we could make this process more efficient, but everyone we talked to did not have the machine to make this happen.”

Bill then sought out assistance from Advanced Machinery in Dayton, Ohio. Advanced Machinery put him in touch with EMCO Maier Corporation, a manufacturer of high quality, high performance CNC machine tools, in Columbus, Ohio.

“Given this challenging situation, we began testing a number of options and developed a solution that would manage the product stock from the left side and push it through to the right in one continuous process,” said Ed Marr, applications engineer at EMCO.

EMCO then presented Dayton Richmond with an option to customize one of its CNC lathes, the EMCOTURN 365MC, to fit its unique needs. The ET365MC features a main spindle and subspindle with full c-axis running at 24 and 17hp. All 12 stations on the tool turret are driven at 9hp/4000 rpm. The machine incorporates polygon turning and rigid tapping as standard features. It also has a compact machine bed and utilizes cross-roller linear guide ways to pass rigidity to the tool for superior accuracy and tool life.

To customize this machine for Dayton Richmond, EMCO first applied a bar feeder to the machine. The bar feeder allowed for the raw material to be automatically fed into the machine's main spindle. Next, the machine's right hand headstock was converted to a thru spindle style. EMCO then designed an

extension tube system that attached to the exit side of the right hand headstock, which protrudes outside the machine. Replaceable liners were incorporated to accommodate a variety of part diameters. To complete the system, a custom canted top table was built to accept the finished parts as they exited the machine. Unloading of the parts in this manner is automatic. The parts push each other through the exit tube onto the table and then roll out of the way. Therefore, no time is added to the part cycle for a dedicated unload operation.

“This machine is exactly what we were looking for,” said Drewry. “It not only gives us more flexibility, but we were able to achieve a better surface finish and better concentricity in the finished part.”

In addition to producing a better part, this machine also eliminated handling and increased productivity. With the EMCOTURN 365 MC, Dayton Richmond is able to produce 18 parts per hour, doubling its original production time. The machine is also being used to produce another part in the form tie family. The part was originally made from two separate parts but because of the new machine and its dual spindle capability, the company was able to make one part with improved quality and increase its overall productivity.

“EMCO didn’t just provide us with a machine, they provided a manufacturing solution,” said Drewry. “This solution helped us save money and time making Dayton Richmond a more efficient company.”

