



Application Story: King Machine

CNC Retrofit Improves Tire Mold Machining

By a retrofit of the CNC on its Johnsford VMC, King Machine of Akron has documented a 30-50% increase in efficiency of its tire mold manufacture, according to company Programming Manager, Rob Snodgrass.

King recently installed a Siemens SINUMERIK 840Di control package, including drives, motors and an ADI4 board to interface with its external spindle system. The Johnsford VMC is utilized to do light milling, as well as 4/5-axis simultaneous engraving on sidewall sections of tire molds. Typical King molds are 25"–60" O.D., made from 1020 steel or 6061 aluminum, sold to domestic and foreign tire manufacturers.

As Snodgrass explained, "We use the CNC for axis motion control, as well as spindle and auxiliary functions such as tool changer, lube system and the two rotary tables on our Johnsford VMC. The Siemens Retrofit Group provided a turnkey solution, sending applications and field service engineers to our location to do the job, including several days of training. Plus, all our calls during post-processor development were answered immediately."

King internally stores both the mold part program and machine data information on its own networks. Using a standard Ethernet connection to an existing network, the CNC accepts millions of lines of code in a few seconds. King operators can then run the entire part program, or block search to a specific area in the program, instantly.

King operates multiple engraving centers at their facility and has documented the increase in efficiency, as a result of this CNC retrofit, according to Snodgrass.

The company operates a 33,000 sq. ft. facility in Akron, OH which houses four- and five-axis engraving centers, both manual and CNC

vertical turning lathes, manual and CNC horizontal milling centers, CNC vertical machining centers, small precision grinders, various drill presses and sand blasting equipment.

Snodgrass observed the Siemens CNC was "the fourth different control package I've used over the years on machine tools which perform the same or similar work to what we do here at King. The operators have needed to spend a minimal amount of time relearning the Johnsford VMC (vertical machining center) because the new control was very familiar in feel and operation to the older controls. It's also been the first package to perform as advertised, from day one!"

Above: Typical tire mold produced at King Machine of Akron.

Siemens SINUMERIK 840Di CNC package, retrofitted onto a Johnsford Vertical Machining Center for tire mold production at King Machine of Akron.



Tom Curfiss of the Siemens Retrofit Group states, "The SINUMERIK 840Di is built upon a standard Windows NT platform and an industrial PC with Pentium processor, which allows the 840Di to streamline the process. It also enables users to increase productivity in a broad range of motion control applications,

including milling, turning, grinding, robotics, material handling, welding operations, presses, laser cutting and more."

King Machine is an ISO9001:2000 Certified, Tier II supplier, founded in 1958. They supply two-piece, segmented and truck/bus tire molds. ■

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