



Application Story: Park Industries

INDUSTRIAL CNC PROUDLY ENTERS THE NEW STONE AGE

Park Industries designs and builds several lines of cutting, shaping and polishing machinery in St. Cloud, MN for its customers in stone fabrication industries. Often, such companies had machines outfitted with conventional controls, originally built for metalworking or woodworking machines and adapted for the particular parameters of stoneworking. At this 50-year-old company, they wanted to find a control which could be modified at the front end to suit the special set-up, programming, operational, service and training needs of stoneworking customers.

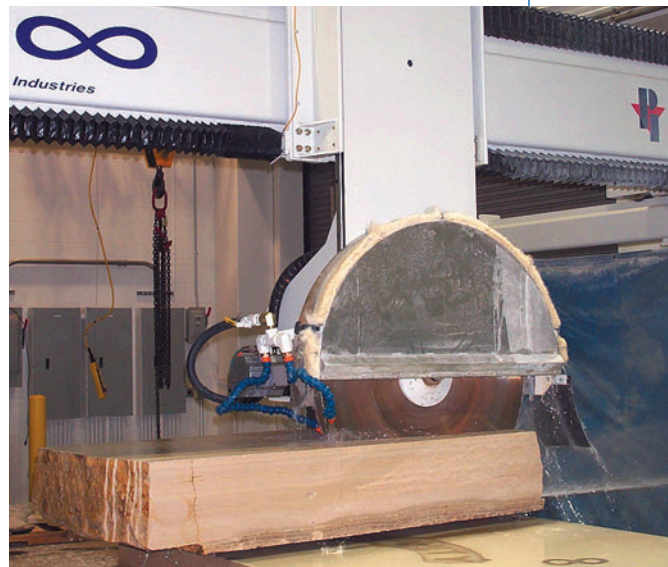
Park's customers cut natural stone, engineered stone (the amalgam of natural stone and a synthetic binder) and solid surface material (entirely synthetic) into various end products. Park operates an Architectural Division to serve the structural, landscape, curbing, monument, and related industries, while their Interiors Division markets machines to companies that produce kitchen and bath countertops, fireplace surrounds and mantels, stone furniture, decorating edging and other similar dimensional products. Park product offerings range from hydraulic stone splitting equipment and diamond sawing tables to edge shaping/polishing machinery and computerized gantry systems for cutting, milling and dual-saw blade orientation that can produce three-dimensional architectural shapes. The company designs, engineers and builds all its machines at its St. Cloud, MN complex, where Park operates full metalworking, welding, heat treating and finishing departments. Park also does its own electrical engineering, electrical assembly and machine software development in-house.

As Park Electrical Engineer Bob Penas explains, "On our DESTINY CNC Stonecenter, as well as INFINITY CNC Stone Profiling Machine and ODYSSEY II CNC countertop fabrication

system, we needed a CNC which had an open architecture orientation, so we could build in customized user interfaces. In the case of our new DESTINY model, we wanted to develop what we call STONECAM, a complete shop floor programming system. This system displays information and processes in the specific language of our stoneworking customers. That's very important. Stoneworkers have many traditional ways of describing how they process material and simply using a straight metalworking control interface would be too confusing."

After a review of the available CNCs, Park settled on the SINUMERIK 840Di from Siemens with Visual Basic front end and Profibus digital drive connection. As Bob Penas explains, "In the case of the DESTINY CNC Stonecenter, the machine and its Visual Basic software interface were designed specifically around the Siemens 840Di's control capabilities. With the INFINITY, the control is used very much out-of-

Above and Below: Park Industries' INFINITY CNC Stone Profiling Machine uses the Siemens SINUMERIK 840Di control for all axes and spindle movements. Control displays real time conditions in the stoneworker's language.



the-box with our enhancements to Siemens' HMI advanced CNC front end by using Visual Basic programming. It's faster to learn, easier to use with stoneworkers from traditional G-Code programming and allows us to display machine movements and programming routines specific to our customer's experience."

According to Karl Kleppek, Siemens Machine Tool representative to Park Industries, "The SINUMERIK 840Di is built upon a standard Windows NT platform and an industrial PC with a Pentium processor." He continues, "It is supported by the SIMODRIVE 611U drive series, as well as its decentralized drive technology, POSMO. This simplified, streamlined approach enables the increase in productivity in a broad range of motion control applications for all kinds of machine tools, including milling, turning, grinding, robotics, material handling, welding operations, presses, laser cutting and more." The totally PC-integrated control is ideal for applications where PCs are the prevalent choice or where there is a preference for the distributed configuration of the drives and I/Os.

With the SINUMERIK 840Di, the NC processor unit required on conventional controls located in the main electrical cabinet is omitted. A decisive advantage of the 840Di is that CNC operations, as well as all HMI functions, are driven by the PC processor. This PC-based solution is all the more versatile when you consider the broad range of integration options offered by the SINUMERIK product line. In addition, operator functions and machine data are transportable between the various controls, providing an open plant-wide platform for automation and control.

As an example, in the countertop industry, using a physical template of a job-site application is the typical way to create finished product. This template information is transferred into the control, using either a DFX file exchange to the machine or by indicating points on the template using a laser indicator. On the Park ODYSSEY II or DESTINY machines, an operator has the ability to move the machine over the template (full-sized vellum, cardboard or paper, typically) with the MDI to



enter locations indicated by a laser cross-hair. As each point is entered along a path, the operator tells the control whether the point is on an arc or a line. Tooling routines, feeds, speeds and entry/exit points are also applied at the control.

As a result of the success achieved integrating the Siemens CNC into their premier machines, Park has recently applied other Siemens control solutions on their JAGUAR II gantry bridge saw and YUKON automatic diamond saw. Park modified the operator interface to include stoneworking-specific work routines and language by using the Siemens PLC development software.

Siemens trained Park's personnel at their Chicago facility, as well as the Siemens OEM/HMI Group in Stuttgart, Germany. The training included applications support of the control integration and start-up; custom OEM HMI, SINUMERIK and SIMODRIVE training for Park's engineering, installation and service support groups; as well as training on Siemens-Weiss custom spindles. All of this support made Park's transition to Siemens a great success.

All axis and spindle movements on the Park machines are controlled by the CNC. Park also utilizes Siemens motors, drives and spindles on many of its machines.

Park Industries operates its Architectural and Interiors Divisions in St. Cloud, MN. The company builds a variety of stoneworking machines.

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