



Application Story: Breton Machine

STONE CUTTING CONNECTS WITH AEROSPACE

BRETON KNOWS HOW

In an age where computers seem to run just about everything, the same onboard controls used to shape the wing sections of jet fighters now cut marble, granite, porcelain, ceramic and engineered materials.

At the Italian machine builder, Breton S.p.A., represented in North America by Breton USA, they build a wide variety of machines for stone cutting. These include individual station machines as well as full production lines, complete with all automation systems and production management software.

Breton was founded in 1963 by Marcello Toncelli, father of the present owners, brothers Luca and Dario Toncelli. The company is located in Castello di Godego, between Venice and Verona, in northern Italy.

Among the various machines designed and built by Breton, which include metalcutting machine tools for the mold/tool & die markets, are all the following for the production and processing of marble, granite, porcelain, ceramic and engineered materials (composite stone): Speedycut CNC bridge saws with rotating tables, Joycut CNC bridge saws with rotating heads, Contourbreton CNC contouring machines with three of five interpolated axes, Goldenedge edging machines and the company's patented Combicut combination bridge saw and waterjet machine.

Likewise, the company engineers unique production equipment to produce tiles, slabs and large block sections which are subsequently cut into slabs. These machines use organic and inorganic bonding agents, quartz, silica and calcareous aggregate, with output capacities currently up to 500 square meters per work shift.

Typically, Breton's customers, who represent international conglomerates and small shops alike, work in high-precision manufacturing

environments to produce the highest quality surface finishes and end products in their respective industries. Those industries range from external/interior cladding, tiles, kitchen, countertops, vanities and inlays to various 3-D end products as fountains, washbasins, shower trays, bas-relief decor and funeral masonry.

On these CNC machines, Breton incorporates the Siemens SINUMERIK 810D and 840D CNCs, plus full motion control solution packages, including drives, servomotors and HMIs. All the controls are PC-based with Pentium processors, Windows XP operating systems and, as needed, the same proprietary Siemens software and path-generating interpolation programs found in the aerospace industry. For example, on one of their five-axis contouring machines, Breton routinely installs TRAORI, the Siemens transformation orientation function that provides the fastest, most reliable contouring in the industry, according to Siemens and Breton engineering. By referencing the workpiece position via touch probes, rather than the conventional table or chuck vectoring, set-up is immediate, as workpiece coordinates for a job are automatically acquired and oriented so that the CNC can adapt the work program instantaneously. Moreover, with the sophistication of TRAORI, point-to-point positioning and path generation are replaced by linear, circular interpolation; however, axis motion is programmed with the user's CAM system.

Breton also uses a PC, using pre-defined logic, for storing and processing data related to production, workpiece measurements/checks, tooling condition and also for managing network communication with the user's host computer to transfer workpiece programs, production data etc. When a production line is involved, the CNC manages all external ancillary equipment functions such as importing the image of a stone slab via video,

Above Left: Breton S.p.A. in Castello di Godego, Italy occupies a 38,000 square meter (286,000 square foot) facility, where an impressive array of stone cutting and metal cutting machinery is designed, engineered and built.

Above Right: A Breton GOLDENEDGE stone edging machine with Siemens SINUMERIK 810D CNC onboard.

managing bar code scanner input/output, maintaining in-feed/modem communications when Breton provides Internet service assistance. All Breton CNC machines are built with internal Ethernet boards and integral modems.

Breton's Product Development, Ing. Giuseppe Andorlini, notes, "The open architecture of the Siemens CNC allows us to customize the user's front end, offering the possibility of creating the ideal user interface for the particular machine. It means that we can provide a highly user-friendly software package for the machine operators. That's very important in our industry. The CNC has many parameters and functions that allow the operator to adjust and calibrate the machine quickly and easily. Since the PC base works with all the standard Windows functions, it's not only easy-to-use, it's far more efficient."

Andorlini also notes, "The assistance that Siemens has provided us is excellent, especially in the areas of training and applications engineering. We have a solid relationship with them and that helps us develop and constantly improve our products to better satisfy our own customers' needs."

In addition to CNC machines for stone cutting and metal cutting, Breton also builds saw frames, block saws, calibrating machines, conveyor belt polishing machines, longitudinal saws, cross-cut saws, squaring and chamfering machines, filling machines, robots for in-feeding and unloading slabs, cutting islands for granite strips and tile packaging lines, resin treatment and even slab restoration lines.

While none of the stone products cut on a Breton CNC machine will likely take flight, they are often cut, shaped and finished with similar accuracy to others that do. This would seem to be one example of a technology transfer that's "rock solid."



Top: The SPEEDYCUT is a CNC bridge saw with rotating table. All cutting head and table functions are precisely controlled from an easy-to-use PC-based Windows program.

Middle: The Breton JOYCUT is a CNC bridge saw with rotating head design.

Bottom: CONTOURBRETON is a CNC contouring machine with multiple interpolated axes. It uses TRAORI, the proprietary Siemens function for cutting path generation, which is similar to what's used at many aerospace manufacturers.

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