

Opening the doors to automation

Custom door manufacturer uses CNC machining center for specialized machining operations

By Jeff Crissey

FOR CUSTOM DOOR MANUFACTURER

Industrial Millwork (IMC), Seneca, Kan., makers of Lag-Design doors, business is booming. Beginning in 1986 with the manufacture of custom stile and rail panel doors, IMC's offering has grown over the last 20 years to include five product lines: Custom doors; 20-, 45-, 60- and 90-minute positive pressure fire doors; hurricane security doors; Wilderness Series doors; and Grand Opening exterior folding and lift-and-slide doors.

"Two years ago we introduced our Grand Opening bi-fold system at the AIA show in Chicago," says Ken Hermes, president and owner. "Off that one show we had 500 architects that wanted more information. We didn't realize there was such a demand for those systems. Our hurricane-rated door line is selling very well in the Florida market. The post-Katrina rebuilding hasn't affected us yet, but we expect the Gulf Coast area to come around and require stringent hurricane building code standards."

The sudden popularity in IMC's new door lines led the company to improve its production methods to meet customer demand.

"I had been looking for three or four years for a CNC solution, with

the thinking that I could machine all the parts including the rails and stiles on the table," says Hermes. "But I couldn't find one that could give me enough production capacity. Then a representative from Delmac Machinery Group suggested I bring the assembled doors to the CNC and

ter is used to accurately size the doors and drill for the special hardware systems the company uses in its designs.

"The Busellato has been a tremendous piece of equipment for what we do," says Hermes. "I know other woodworking manufacturers use it for other things, but this is what we

bought it for. We are running 10-hour days with it right now, but we are already looking to add a second shift. We are using the CNC for very specialized machining operations, and we haven't found anything that it can't do. It's just a matter of programming it."

A look at production

IMC brings in kiln-dried rough lumber and a saw operator sorts through for color and defects before cutting the stiles and rails on a Pinheiro gang rip saw and Diehl straight-line rip saw. Stiles and rails are then sanded on a CEMCO two-headed sander.

Once all the parts are sized, they are profiled on SCMI T 130 shapers.

"We don't use tenoners or moulders because of our custom capability – we would spend too much time changing tooling," says Hermes.

The stiles and rails are then glued up and placed in a customized door



machine them on the table, since machining for hardware was where our real bottleneck was occurring."

IMC installed a Busellato Jet Concept CNC machining center from Delmac in September. The machining cen-

clamp. The panels are free floating, suspended in the frame with tubing that allows the panels to expand and contract. As its brand name Lag-Design indicates, IMC uses a 3/8" lag bolt system that meets or exceeds ANSI/ASME B18.2.1 standards rather than wooden dowels in its door construction. The lag bolt at the stile and rail joint remains tight even as the door expands and contracts.

"We had a special clamp made so we can glue the parts, put them in the clamp and then insert the lag bolts," says Hermes. "Once the bolts are in place, we can remove the door from the clamp while the glue dries. It takes us 5 to 10 minutes to put a door together and is a much faster system than wooden dowel construction."

Once the panels are assembled, the doors are sanded on a CEMCO three-headed finish sander to smooth any minor discrepancies in the stile and rail joints.

The assembled doors are then loaded onto the Busellato CNC machining center, where they are sized to precise measurements. The machine then routs and drills the



doors for hinges and hardware.

"Some of our doors use specialty hardware such as multi-point lock systems that require a groove down the edge of the door and a small mortise pocket for the function holes," says Hermes. "For our hurricane doors, we have to put a stainless steel plate across the stile and rail joint to hold the door together, and the Busellato perfectly routs the pockets out to accept the plates."

Once the CNC operations are complete, the doors proceed to the finish area where operators hand-sand any handling marks and apply the necessary glass and moldings. The doors are then wrapped and packaged for shipping.

The company offers custom finishing, but outsources that work to a specialized company so that it can concentrate its production efforts on building the doors. **MW**

For more information, circle #380 for Delmac Machinery Group; #381 for SCM Group and #382 for CEMCO on the Reader Service Card.

STAND THE TEST OF TIME

*A new generation of
extended life straight bits.*

Extra Strong • Lasts Extra Long

Amana Tool's® own extensive research has led to the development of a new generation straight bit. The objective was to provide a solution for abrasive materials that typically dull ordinary straight bits.

Through comprehensive study and testing we've developed a special carbide and superior cutting geometry. The result is a new generation straight bit that outlasts other straight bits.

Amana Tool® #45422

Amana Tool®

High Performance Cutting Tools

Visit our website:
www.amanatool.com or call us at 1-800-445-0077

Circle 221 on Reader Service Card