Shop Succeeds in Seamless Manufacturing

Island Precision Cabinets has accomplished what few American shops have been able to do –create a truly integrated, seamless manufacturing environment
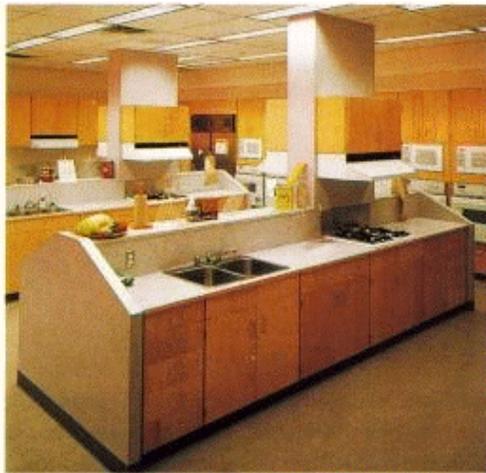
Island Precision Cabinets uses pre-finished panels to build its commercial casework. A recent job includes a home economics lab for a school in Victoria. Vancouver Island, Canada.

BY JEAN HYLAND

'IF IT AIN'T broke, don't fix it,' conventional wisdom tells us. But sometimes conventional wisdom is best ignored when a product or process can be improved upon –even ~f that requires rip-

ping everything apart to make it whole again. Such was the case with Island Precision Cabinets Ltd., in Saanichton, British Columbia.

Over the years this commercial cabinet shop had added a panel saw, edgebander, and computerized boring machine, and purchased cutlist and optimizing software to speed production, improve quality, and reduce labor times. Management also had begun developing ways to automate and speed the company's estimating process.

Owner Brian Timothy was amassing the right elements to bring the plant into the 21st century, but he lacked the common thread to cohesively tie this technology together. Although the boring machine was linked to the front office, nothing else was. Timothy envisioned greater things for his 12-man factory.

So, three years ago he took a hold step and completely reengineered the 9,500-square-foot plant. He updated and enhanced the software,

added all new state-of-the-art equipment and a conveyor system, built a mezzanine to free floor space, and made a firm commitment to seamlessly integrate the entire process, from estimating to assembly.

"In a very short period of time we basically took our plant apart and put it back together again," Timothy says. "As soon as we did, we saw a 25 percent reduction in labor."

"We've always been progressive, Timothy adds, "but this was a major change for us. It involved tying all the elements of the manufacturing process together."

That's progress

Today Island Precision is as technologically sophisticated as shops 10 times its size should be, but often aren't. A mixture of Pattern Systems software and in-house-designed estimating software fully links the front office to the CNC equipment on the shop floor. Add to that a unique color-coded and bar-coded product routing system, state-of-the-art material handling conveyors and lifts, and JIT manufacturing techniques, and you have a small shop that effortlessly pumps out (Canadian)$3.8 million a year in sales.

Front-end Automation

Cutlists for panels machined on this Selco panel saw are downloaded directly from the front office.

"We can get a fair amount of work through in a short period of time," Timothy says. Sophisticated equipment, however, isn't worth much if there aren't enough jobs to keep it running. That's why Timothy says the shop has become so dependent on the front office.

To save time in the front end, Timothy, along with Axel Wagner, operations manager, and Dean Crawford, programmers, wrote their own takeoff software, called Take Off. It speeds estimating.

This latest estimating software wasn't the shop's first attempt at automating estimating. As early as 1986 it had developed an estimating program in an obscure spreadsheet program called Words and Figures. "That program worked well and was 10 times faster than doing it manually," Timothy says. Then, developed another estimating program in Fox Pro. Now, after three years in development and written entirely from scratch —the Take Off estimating software moves the shop into a new dimension.

The shop's success now is based more on estimating. It's bidding on and winning more commercial projects in the area. Using the Take Off software, the shop produces three times as many bids as it could when it used its Fox Pro estimating program. "We can estimate more quickly and accurately, and manage the data," Timothy says.

Effortless link

Island Precision bought this Biesse boring machine with a few extra features it could grow into, such as an automatic five-tool changer. Boring instructions are downloaded from Pattern Systems' Drill-Mate software.

Once a job is awarded, the shop now can reuse its estimating data to manufacture its product. The actual estimate data can be exported and downloaded automatically into Pattern Systems' Product Planner software. Timothy says this capability eliminates chance to miscommunicate data between estimating and engineering the.

After a job has been downloaded from Take Off into Pattern Systems' Product Planner, cutlists are developed and jobs optimized. Drill-Mate software, also from Pattern Systems, generates boring instructions that can be downloaded directly to the shop floor.

Although many shops have difficulty automatically linking manufacturing software to CNC equipment on the shop floor, Island Precision Cabinets has managed to make it all work seamlessly.

Completed cutlists are downloaded directly from the front office to a PC linked to the Selco WN 200 panel saw. Wagner chose to have the cutlists downloaded to a separate PC because it's faster than using the saw controller, and it enables them to use the PC for other functions at the saw. For example, to diagnose problems more quickly at the saw, the shop loaded the saw's manual onto the PC. Now the operator can turn to the online manual immediately instead of searching for the hard copy.

To route projects through the plant, Timothy broke the plant into easily identifiable color groups, and then developed a color-coded routing system. For each job, the engineering department generates a color-coded label containing the sequence of operations, cut dimensions, part name, project identifier, program number, and banding color

– all in the color appropriate to the machining operation in the plant. With this system, there's never any doubt where a project should be routed next.

For each operation in the plant, the shop also uses a time-tracking system called Data Minder. Employees must log in to the system before beginning a new cutting, edging, drilling, handling, or assembly project. This system provides valuable feedback, giving the shop an accurate time per part per cutting figure to compare the cost of a phase of an actual run to the estimate.

To keep material flowing smoothly and quickly through the plant, the shop installed a series of roller conveyors and lifts. "There's no use having a lot of productive equipment if you have no way of moving it around," Timothy says. "Most plants do nothing with material handling."

From the saw, parts are banded on a Holz-Her 1447 edgebander, then bored on a Biesse Rover 342 machining center equipped with an automatic five-spindle tool changer.
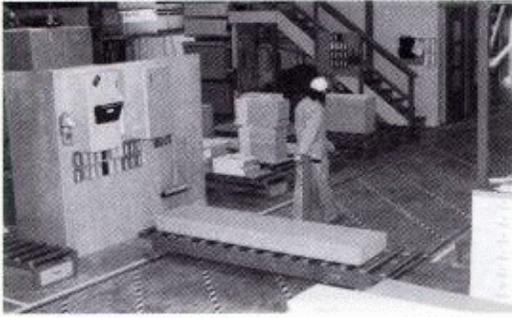
Panels are moved effortlessly through the plant and to the second floor mezzanine on a series of roller conveyors and lifts.

Run with it

Pattern Systems' Drill-Mate software interfaces with the Biesse Rover machining center to produce boring instructions for the parts. All of this is completed in the front office. Machine operators do no programming; they simply punch in the project number and run with it.

The shop has been pleased with its Pattern Systems software, especially Drill-Mare. "Drill-Mate is the most unrecognized package on the market," Timothy says. "It's the one thing that sets Pattern Systems apart from all the other packages our there."

Timothy says Drill-Mate handles the problems it encounters with nonstandard case dimensions, something other packages can't always do. "Drill-Mate takes care of that link for a company like ours," he says. "It ties a lot of elements together."

"The beauty of Drill-Mate," adds Wagner, "is that as we change our product, it changes with it. We don't have to remake everything." He adds, "Not only is the product designed parametrically, but we can do it all up front. A lot of people reprogram the controller through parametrics, but they do it at the machine. The key is to do it up front so the operator is running the machine as opposed to spending 80 percent of the time programming and setting it up."

From the boring machine, parts take a quick ride on a lift to the second floor mezzanine for sorting and hardware. Parts then are transported back down, assembled, wrapped, and loaded onto a waiting 45-foot trailer.

Completed jobs rarely come to a stop before being loaded onto trucks. "We like to make it and ship it our the door. That's throughput," Timothy says. "That's what our whole shop is based on. Throughput and eliminating bottlenecks."

The conveyors were a key element in making the shop's JIT manufacturing techniques work. "There s no value in cutting eight or 10 lifts a day if you can't move the parts out afterward," Wagner says. "We looked at the plant as a solely integrated process from unloading panels from the trucks, to moving material through the plant, to shipping it out the door. Everything's integrated."

Timothy learned a bit about throughput and bottlenecks through hooks he read. But some of his basic management and manufacturing techniques were ingrained in him early in his career. He once worked at a high-end casework shop owned and run by Germans,

"The Germans opened my eyes about how you do things well, and do them quickly." Aside from being simply great tradesmen, the Germans also had great systems in place, Timothy says. "You could see how much you can accomplish if you have both of those things."

Knowing that 3 mm PVC edgebanding was becoming more popular, the shop made sure its edgebander could handle it. This Holz-Her edge-bander features radiusing, heating. buffing, and scraping stations.

Seamless Shop

Perhaps because of this early influence, Timothy's shop operates more like a European plant than most North American plants. The shop is immaculately clean and well lit, and employees wear neatly pressed khaki jumpsuits. Conveyors transport work in process efficiently and quickly from station to station and out the door. And, most importantly, software links this process together.

PLANT FACTS

Island Precision Cabinets Ltd.

Saanichton, British Columbia

- **Product:** commercial casework   **Plant size:** 9,500 square feet

- **Employees:** 12   **Annual sales:** (Canadian) $3.8 million