

CNC Router Cuts Leadtime 63% For Build-To-Order Furniture Manufacturer

Styles and tastes change so quickly in the furniture business that any company that builds up a substantial inventory risks having to unload it at a substantial loss if customer buying patterns change. Cherry Tree Custom Woodworks, Orange Park, Florida, helps small furniture retailers overcome this problem by providing such a fast response time that most of its customers don't need to give the go-ahead to produce a product until they have an order in hand from their customer. The critical issue then becomes producing the piece as quickly as possible in order to keep the customer happy. Cherry Tree has dramatically reduced delivery time by producing most items on a Techno low-cost computer numerical control (CNC) router that produces highly accurate work from a CAD program, eliminating the need for what used to be a very time-consuming and skill-intensive manual task. The time required to produce a typical piece has been cut from 27 to 10 hours, so fast that in most cases customers assume that their furniture is simply being delivered from stock.

Cherry Tree Custom Woodworks produces beds, entertainment centers, drawers, mirrors, and just about anything else that you can imagine in the area of custom furniture. The company serves as the manufacturing arm for a number of small and highly creative furniture designers and marketers. These companies typically sell their wares over the Internet or through retail outlets. Many of these companies are relatively small operations whose sales volume can fluctuate drastically from month to month. Building up an inventory of products would leave the company open to a major financial hit if customer demand did not match

their own projections. Most of these companies try to avoid these problems by scrambling to build customer orders as they are received. But the last thing they want to do is antagonize a customer by making them wait too long. They typically look for small woodworking manufacturers like Cherry Tree that can respond very quickly to meet their needs.

Need to respond quickly in the virtual furniture business

In the past, a quick turnaround was difficult because Cherry Tree used the typical labor-intensive process that has been used by custom furniture manufacturers for many years. Craftsmen and women cut out pieces from medium density fiberboard (MDF), plywood, or hardwoods using traditional shop equipment. If the piece has curves or other complex shapes, a template is usually produced and the parts are trimmed flush to the template. Building an accurate template requires a huge amount of skill. Even cutting out and drilling simpler pieces with straight edges to the required level of accuracy is no job for a beginner. As the complexity of the design rises, the time required to build it also increases, to the point where a company that uses traditional methods may decide that it isn't practical to even bid on the job.

Arthur Allison, owner of Cherry Tree Custom Woodworks, faced these kinds of problems. In some cases, he was unable to provide customers with the delivery dates that they originally requested. In other cases, he had to turn down work because he was unable to deliver it in the time frame that it was needed. Arthur was aware that many larger furniture manufacturers had already moved to CNC equipment

which allowed them to take much of the skill and time out of the job of



accurately producing difficult shapes. But the equipment that he had seen advertised and in shows was either cost prohibitive or else could not provide the level of accuracy and ruggedness needed to meet his requirements. For a number of years, he watched the CNC equipment market and waited for a machine to come along that would meet his requirements.

Low cost plus high accuracy

"The LC machine from Techno is the first one that I saw that economically provided the accuracy and durability we needed," Arthur said. "The machine was designed with just the right mix of features for the small to medium sized custom furniture manufacturer. For example, it has ball screws on all three axes and a closed-loop servo control system. These are the kind of features that are required for the accuracy that our customers demand. Yet the machine with a 50 by 96 inch travel complete with all required software costs under \$20,000. When I saw the Techno, I realized that this was a machine that could pay for itself very quickly with the volume of work that I had to put through it.

I took a close look at the machine at one of Techno's technology centers and proved to myself that it could not only handle every job in our shop but also make it possible for us to take on jobs that we weren't capable of handling in the past."

Techno's LC series CNC routing system provides a number of critical features that allow it to deliver accuracy and long-term reliability of a level that has previously only been available from machines at a much higher cost. The LC Series machine is constructed on a heavy steel base, includes a T-Slot aluminum table surface, ball screws on all three axes, closed-loop servomotor drives, and comes with Techno's Windows-based G-Code interface that is upgradable free for the life of the machine. These premium drive components offer smooth play-free motion, a high level of accuracy and repeatability, that requires minimal maintenance. The closed-loop servo control system provides constant position feedback, higher power, and smooth continuous motion that eliminates the possibility of losing position in the middle of a part. With these high-end features, it was easy to recognize that we would get high-speed routing and superb cut quality.

The new method of producing furniture to order

Arthur now produces most furniture pieces by a new and much more efficient method. His customers can provide their designs in the form of paper drawings. Once he has a drawing in a CAD/CAM software program, he makes any desired modifications and scales it to any size. When he is satisfied, he automatically generates a G-Code program used by the router to produce the design. He loads the material on the machine, pushes the start button and walks away while the router finishes the part. The time required to produce a typical part has dropped from

hours to minutes.

As a typical example, Arthur mentioned a dresser designed in the form of a lighthouse that he builds for one of his customers in response to consumer orders. The dresser has many pieces with complicated curved surfaces that are required to create a fairy-tale look. In the past, Arthur produced it by first drawing each piece in full scale on paper, cutting out the paper, gluing them to plywood, then cutting the plywood to shape with a scroll saw, and finally sanding the board so it could serve as a pattern. Each pattern lasted long enough to make three to five pieces, unless it was nicked by the saw used to cut out the finished parts. Using this method, it took Arthur about 27 hours to produce the dressers. Now, he imports the drawing into EnRoute 3, converts it to a CAD file, and exports G-Code. Then he loads the machine with wood, pushes the start button, and watches while it cuts out each piece. He can now produce a dresser in only 10 hours, and about half of that time he can be doing other things while the machine is cutting out the pieces.

A complete package including training and support

Arthur added that the Techno sales staff was very helpful in helping him select the right machine for his needs and providing the training he needed to quickly become productive. The machine has proven to be very reliable, not requiring any service outside of routine maintenance in the year that he owned it despite the fact that he keeps it running nearly nonstop. The machine comes fully assembled and includes Techno's Windows-based CNC G-Code interface with free lifetime software upgrades. The machine is available in five sizes, with work envelopes of 30 by 24 inches, 48 by 48 inches, 48 by 96 inches, 59 by 120 inches, and 78 by 120 inches. Each of these models provides a repeatability of

0.001 inches, a resolution of 0.0002 inches and a maximum speed of 250 inches per minute, with an available upgrade to their high-speed version of 900 inches per minute. There is also a wide selection of spindles, software, and accessories to choose from such as laser scanning modules, 2D and 3D digitizing probes, vacuum tables, 4th axis rotary tables, coolant systems, and tooling. Arthur chose the 4-foot by 8-foot model which best fits his material sheet sizes and his total investment including software was under \$20,000.

"In the past, producing complicated parts used to be a very difficult and labor intensive task," Arthur concluded. "It was not unusual even for an experienced person like myself to ruin a part and have to start that part over. The purchase of a CNC router has greatly improved the situation. Now, I can program the item once and then reproduce the program with 100% accuracy on the CNC router whenever a customer places an order. The time required to turn out the typical item has been reduced by nearly 2/3. This means that I can help my customers provide better service to their customers by delivering furniture in much less time than was required in the past. I have also been able to reduce my prices by an average of 10%, which makes me more competitive. In spite of that price reduction my profitability has increased because I can now get more done in less time. Clearly, CNC routers have the potential to help the domestic custom furniture business compete much more effectively with imports and large chains."