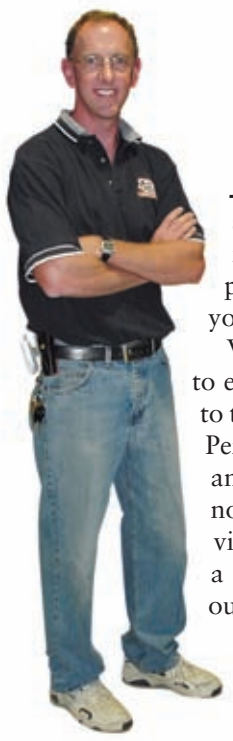
From the Centre With Steve Bader

Putting the "wow" in wood



Most of us, I'd like to believe, are in this industry today because at some point in your life, you saw a figured piece of wood or beautiful piece of furniture and thought to yourself, "wow."

Well, I recently had the opportunity to expose a group of Grade 8 students to the beauty of wood. Let me explain. Periodically, Conestoga College hosts an event called "Trades and Technology Day," and this year I was invited to participate by co-ordinating a workshop for students from various local school boards. I gladly accepted and then thought, what do I do with 40 kids? Forty potential woodworkers?

I immediately realized that the biggest challenge was to up the "wow" factor as much as possible. In consultation with my own kids, I was told that "things have to move, spin, make noise, and include music and flashing lights." Well, I couldn't do much with the music or lights, but for me, that meant a project for our Watkin CNC router. Specifically, I decided on a small clock they could assemble and take home.

Upon their arrival, I decided this half-day from regular school should still be somewhat educational, so I threw out the question "How many different kinds of trees are there in the world?" The answers ranged from 50 trees to 100 billion trees. When I told them the correct number was close to 10,000, I heard one boy whisper to himself "wow."

Wow point number 1, I thought.

Later in my presentation, I showed the group sample pieces of purpleheart, pau amerello and ebony. When I explained that these pieces were unstained and simply their natural colour, I heard a "cool" from another youngster.

There's wow point number 2.

We then proceeded to the CNC machine at the back of the shop. I explained the machine and how it is really a perfect example of how high-tech woodworking has become today. Before the program began, I was asked, "How is that thing going to stay there?" The young, potential future woodworker meant the part blank on the spoilboard.

"By vacuum," I answered.

"You mean, like my mom's vacuum cleaner?"

"Exactly, only this one is bigger," I said.

"Cool," was his reply.

There's wow point number 3.

As the program was executing, cutting a perfect circle, with multiple tool changes for routing, profiling and drilling, one girl exclaimed to me, "My dad has lots of tools and things in the garage, but he doesn't have anything like this!"

Score wow point number 4.

The final step in the manufacturing process was to apply a linseed oil finish to the clock. Many of the kids remarked how their maple and cherry pieces changed colour as soon as the oil hit it.

"Mine is stripey!" one said of his curly maple piece.

"Wow," said another.

That's wow point number 5, I thought.

The oil dried relatively quickly and the kids were able to assemble the clock movement and install the hour, minute and second hands just before leaving to catch their buses. As they were filing out the door, one boy said to me, "I never thought wood could be so cool."

"Me neither," said his buddy.

Wow, I thought. Mission accomplished. WW

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The CNC Shop With Tom Morin

Who should nest?

Now, I think nesting is revolutionary. For a long time though, I just didn't "get it." How could it possibly make sense to cut up a sheet of melamine on a router? After all, you can stack four sheets in a beam saw.

It started to make sense when I read Furniture Manufacturing in the New Millennium by lean manufacturing proponent, and owner of Thermwood, Ken Susnjara. Nesting does cut a part more slowly, but if you stand back and look at the whole manufacturing process, nesting can be much faster and cheaper than the traditional saw/point-to-point method.

Handled properly, nesting speeds throughput and lowers work-in-progress.

The temptation with a beam saw is to cut as big a batch as possible in order to get the best material yield. Straight-line optimizers put all the like-sized parts together so you can get the best stack height. The result is that the parts for one product end up scattered across several sheets. It takes time to sort the parts back out, and this sorting can't start until the whole batch is cut.

A nesting optimizer, on the other hand, is able to keep a product's parts together so there is little or no sorting, and no need to wait for the whole job to be cut before assembly can begin. Since the parts come off the nesting router already machined, there is also no time wasted handling the parts as they move to the point-to-point.

With a nesting system, while one employee cuts and machines a job, another can be assembling the same job practically at the same time. A straight-forward job could be finished and on the truck in the same shift that it hit the floor.

Nesting costs less. With nesting there is no need to purchase a beam saw and heat the 800 sq. ft. of shop space that it would take up, not to mention the skilled labour that can be freed up for other work. Not only that, since it takes five to 10 minutes for the router to cut a sheet, its operator can be doing other work, for example edgebanding, while the router cycles.

Nesting is accurate. A well calibrated router cuts square, exact-sized parts. Beam saws are, by nature, a little less accurate. Nested machining ends up in exactly the right spot, resulting in fewer assembly problems and a better product.

Nesting does have its downsides, however. It relies heavily on software. You must buy a design package that will produce the nest patterns. It would not be possible to have an operator manually program these on the shop floor. A nesting shop must be willing to invest in implementing this before the system can be productive.

Loading a nesting router can also be awkward, so many shops invest in vacuum lifts to make it easier.

And some shops find they get a better yield nesting on five-foot by 10' material instead of four-by-eight-foot.

Small parts can be tricky to hold in place during machining, so solutions may have to be found for these.

Also, nesting routers cannot edge bore. Therefore, a shop that wants to use dowels or confirmats must have a separate horizontal boring machine to do this work.

Depending on the machine, a nesting router process about 30 to 50 sheets per shift. Higher volume than this requires an additional router, or a beam saw.

If I had the contract making bookcases for Ikea, I would not nest. Clearly, for repetitive high volume work a beam saw cannot be beat. However, increasingly that sort of work is done offshore. The work that has stayed here in North America is custom work. If your batches are small, you should seriously consider nesting. WW

Tom Morin is the owner of Morinwood Manufacturing Inc. Send comments or questions to tom@morinwood.ca.