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SMART&HUMAN FACTORY
AWFS BOOTH 8200


AT THE FOREFRONT OF CHANGE

SCM North America Showcases Smart Factory Technologies at AWFS Fair


SCM North America won a prestigious Visionary Award in the inaugural Industry 4.0 category at the 2017 AWFS Fair.

The world-wide technology leader will attempt to repeat that feat at this year's show taking place July 17-20 in Las Vegas. In fact, SCM has a trio of entries for this year's Visionary Awards, which salute new product innovation. These and a host of other woodworking machinery will be on display at SCM booths 8200, 8214, 8600 and 8807.

We dug deeper into SCM's newest ground-breaking technologies through an exclusive interview with John Park, vice president of engineering, and Mark Craig, vice president of sales.

 *Let's begin our discussion by taking a closer look at each of the three entries SCM has submitted for the Visionary Awards competition starting with the Morbidelli x200 CNC router. How does the technology you will demonstrate at the AWFS Fair differ from what we have previously seen in the field of CNC nesting?*

Mark Craig: Nesting is a concept that was born in the United States but has spread around the world. The big thing is that nesting in itself is very mature at



Dynamic nesting,
collaborative
robots and
Industry 4.0
solutions are
among the many
innovations to be
presented in Las
Vegas.

at this point. We saw the need to move the technology forward by incorporating some very unique technologies in our new product line. We're not adapting general duty routers that were turned into machines to also do nesting. These routers were designed and built to do nesting from the get-go.

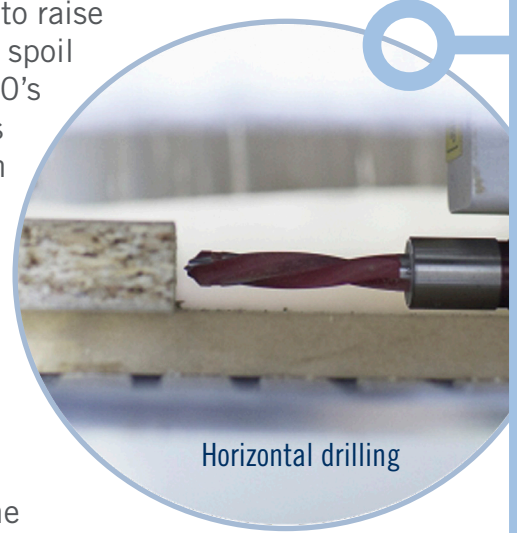
One of the biggest problems with nesting is keeping the parts in place. Because you are using a vacuum hold-down, as you cut out parts it becomes more difficult to keep them in place. Any movement can cause fissures and ruin the part. To prevent this, we have developed a

very unique dynamic vacuum table system. It's actually a double system. It has a normal vacuum as all machines do for holding pieces down but it also has an intensified vacuum right where the machining is happening to keep the pieces in place.

John Park: In nesting, the further you cut the more you lose vacuum suction. The natural order of progression is to drill first, and then progressively cut parts beginning with smaller ones and then the large ones. But you can still have some parts that move because of the cutting forces. So, if you can apply more vacuum to those smaller parts then you improve your probability that you cut perfect parts.

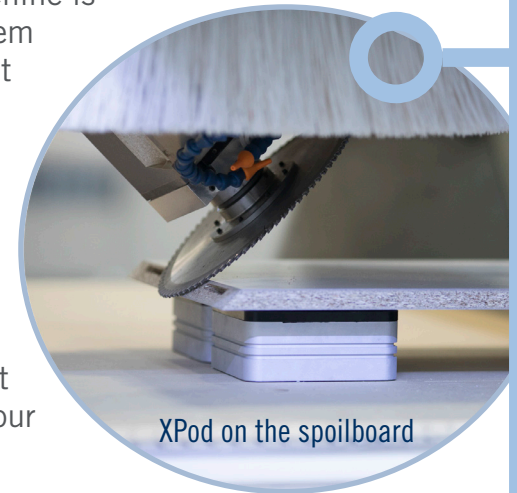
Our dynamic nesting system has the necessary software support and a table that is sectioned off in small enough zones so that additional vacuum can be applied along the cutting path to really provide value. That's a pretty big breakthrough and will allow more accurate machining of smaller parts like drawer fronts, toe kicks and rails at faster tool speeds. If you improve the number of parts that are good over the overall productivity for the day, then you have improved the process. Dynamic nesting does that.

Craig: Another unique feature of the Morbidelli x200 is that it's the industry's first nesting router that can perform horizontal drilling without having to raise the part off the spoil board. The x200's horizontal drills can reach down to 7mm from the table surface. If you are doing anything 5/8 inch or more you can horizontal drill the center of the board without having any elevation cups or pods.



Horizontal drilling

In the event you need to do supplemental machining to a part, we are introducing a new technology called X-Pods. The vacuum system of the new machine is able to hold them in place without any auxiliary plumbing or clamping system. You basically put the X-Pod onto the top of the protective sheet and then put your part on top.



XPod on the spoilboard

THE NEXTING GENERATION

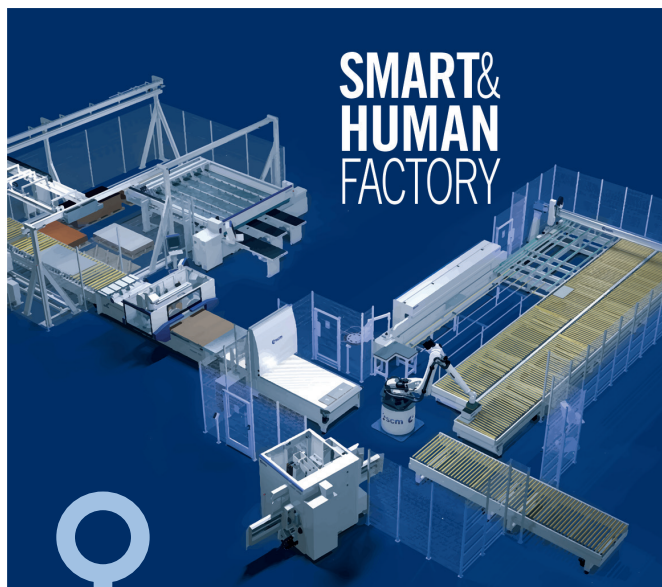


As I understand it, SCM's demonstration of the x200 will include an industrial robot. Is this a continuation of the lean manufacturing cell that SCM won a Visionary Award for at the 2017 AWFS Fair?

Park: Yes. It is a natural extension of that. The biggest development is that with the help of our integrator partner Edge Automation we've added a seventh axis. The robot moves along a linear track that extends its field of reach. At the show, it will go back and forth between unloading the Morbidelli x200 machine and either loading a bore and dowel or one of multiple stacking stations positioned along the track. A lot of the robot demos that you see at the shows are staged to show a concept but not actually a production reality. We are showing a seventh axis robotic system plus we have a similar system successfully operating in North America but this is the first time we've displayed it at a show.

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Craig: What we are trying to do is showcase a sensible lean manufacturing cell that can be customized with different degrees of automation for individual customer applications. We'll also be putting energy and space at our booth to demonstrate collaborative robots.



What do you mean by "collaborative robots?" What makes them different?

Craig: We've all become use to seeing big industrial robots at the show like the one that we won an award for two years ago. But we are getting more interest for collaborative robots that do light-duty jobs such as gluing up panels before you clamp the cabinet box. Somebody has to put glue in the holes. It's a very tedious job for a person. We'll show how it can be done by a collaborative robot.



Park: Some of the nice things about collaborative robots are that, generally speaking, your guarding requirements and the cost of installation are much lower.

We'll be showing two collaborative robot applications. One is for CNC gluing of end panels.

As Mark said, that's a pretty mundane, low-value yet still important task. If you are making 200 cabinets or more per day, you typically have one person devoted to that job. You can replace that person with a robot at reasonable cost and your pay-back is pretty quick. One of the big challenges for dowel construction is that the operator is charged with putting the right amount of glue in the hole. Too much glue and you squeeze out a mess.

Too little glue and you have a dry joint and can have failure. You're trusting an operator to do that day in day out. The robot is a better choice for that especially for repeatable precision.

We'll also be showing a collaborative sanding robot placed near a nesting machine for thermofoil door prepping. The operator unloading will also be loading the sander so we save a labor position by having just one person to do both functions; of course, you could replace the human element altogether with a material handling robot.



There's been a lot of buzz around Industry 4.0 and the Internet of Things at recent shows. SCM has entered Maestro Smarttech for a Visionary Award in the Industry 4.0 category. What are some of the key features and benefits of Maestro Digital Systems that help further SCM's stake as a leader of Industry 4.0?

Craig: By the end of the year, every SCM machine model that has a computer control will have IOT capabilities through our Maestro Connect digital services. We've invested a lot in IOT because we believe in it. What we will show in Las Vegas will be an evolution of what we showed at IWF last year, but with a more in-depth analysis of what's happening in the machine and more intelligence with respect to preventive analysis of machine operations.

Most of the time we can avoid what can become huge issues through the help of data acquisition enabled by IOT to stop the problem at its source as early as possible. Some of the issues have nothing to do with the machine itself. It might have to do with tooling, materials or electrical supply. The more we know - meaning SCM, the customer, and even the tooling and other suppliers - the better guided we are to prevent issues. We feel that the future is in prevention and proactivity which is what Maestro Connect offers our customers.

A centerpiece of the Maestro Digital Systems is Maestro Smarttech. SCM exclusively offers

this audio/visual technology to help diagnose and correct machine problems remotely. The customer can put on the Smarttech glasses so that one of our expert technicians can view what he or she sees and communicate in real-time. The SCM tech can also show schematics, parts manuals, and pretty much whatever else is needed on the screen to guide the customer through almost any operation. This is a huge solution to a very big problem. The Smarttech technology combined with the IOT data acquisition technology puts us and our customers in an improved position to keep the machines up and running and if they do fail, getting them operational quickly without lost time and the cost of bringing in a service technician.

Park: We live in an interconnected world. Everybody has a smart phone, an iPad or some kind of electronic device. Our customers are used to using apps.

Our Maestro Connect platform has been developed to give customers access to more information so that they can make real-time decisions and have the ability to check up on their machines no matter where they are. They don't have to physically be in the factory to see how many cycles it's hit or to know if it's



running or down for maintenance and what those maintenance activities are. With Maestro Connect, they use their devices just like how they check on their house to see if the alarm is on or off.



SCM's third Visionary Award entry is *Maestro Active*. How does this advance machine control interfaces?

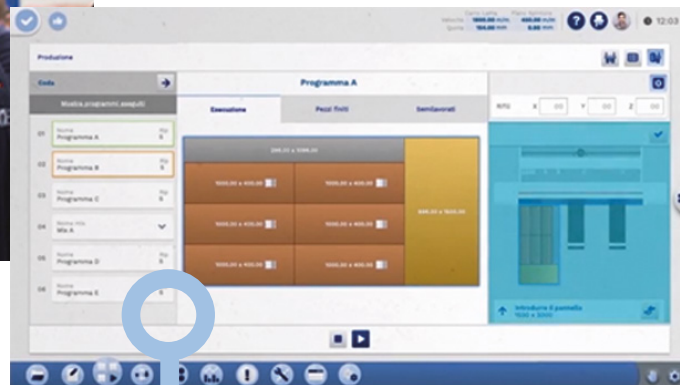
Park: Maestro Active is revolutionary. SCM is the first woodworking machinery manufacturer to unify its operator interface software across all of its technologies with the same look and feel. The graphical interface is strong. Once an operator is familiar with using the touchscreen features to run one of our machines, he can more easily learn to operate another. This is especially beneficial for cross training operators on multiple machines.

Craig: We're creating a standardization of the interface so that the whole factory can have equipment that is recognizable to any operator. When an operator goes from running a CNC to running an edgebander he/she readily understands things like how to go the main menu, how to find a job, how to cut and paste or how to change speeds. Those are the things that typically trip people up.

The best example that we have been able to come up with is if you know how Microsoft Word works, all of the functions and features of Excel are easily recognizable. So, while an edgebander and CNC machine have different functions, the graphics and menus will be very familiar. Why no one has done this before, I don't know. But now that SCM has taken the lead, I assume everyone else will eventually follow.



Maestro active **M**
Advanced Human Machine Interface



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What are some of the other notable technologies SCM will present at the AWFS Fair?

Park: We'll be showing the Flexstore panel storage and retrieval system connected to a panel saw. They won't be connected to the Morbidelli x200 CNC router and the robot just because of space considerations.

Craig: We're going to have a very nice presentation on surface finishing with our sister company Superfici. We'll have a pretty impressive display of sanders, planers and distressing equipment in combination with Superfici finishing machinery.

We have everything from classic machinery for the one-man shop to fully turnkey production systems for the whole factory. When you visit

SCM's booth, you'll definitely see what you want to see or at least some form of it.