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October 2016

Home on the range

Cole Custom Cabinets marks 54th year in Casper, Wyo.

***IWF 2016:
Post-show report***

***CNC for
small shops***

***Sleek and simple
lead latest trends***

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- XYZ Optimus CNC

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- Footprint: 36 3/4" W x 23 3/4" D
- Powder coated paint
- Surface speed of drums: 2,300 FPM
- Two 6" x 27 3/4" aluminum drums
- Dual 4" dust ports



W1678 5 HP, 26" Dual Drum Sander

1 HP, 14" BANDSAW

- Motor: 1 HP, 110V/220V
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W1706 14" Bandsaw

VARIABLE SPEED PLANER MOULDER with Stand

- Motor: 2 HP, 240V, single-phase, 10.8A, 3450 RPM
- Precision-ground cast iron table size: 14 1/8" x 10" x 7/16"
- Max. planing width: 7"; height: 7 1/2"
- Cuts per inch: 64-300
- 2 HSS knives



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W1812 Planer Moulder w/Stand

2 HP, 10" OPEN STAND HYBRID TABLE SAW



- Motor: 2 HP, 15A at 120V, 7.5A at 240V, single-phase, 3450 RPM
- Footprint: 21" L x 19 1/2" W
- Max. depth of cut at 90° angle: 3 1/4", at 45°: 2 1/4"
- Precision-ground cast iron table size: 57 1/4" W x 37 1/2" D x 35 3/4" H
- Built-in mobile base
- 4" dust port

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W1837 2 HP, 10" Open Stand Hybrid Table Saw

3/4 HP, 13" BENCH-TOP OSCILLATING DRILL PRESS

- Motor: 3/4 HP, 110V, 1725 RPM
- Overall height: 38"
- Spindle travel: 3 1/4"
- Swing: 13 1/4"
- Drill chuck: 5/8"
- Speeds: 12, 250-3050 RPM
- Table: 12 3/8" dia.
- Table swing: 360°
- Table tilt: 45° left & 45° right



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W1668 3/4 HP, 13" Bench-Top Drill Press

12" X 15" BENCH-TOP WOOD LATHE

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W1836 Bench-Top Wood Lathe

POCKET HOLE MACHINE

- Motor: 1/2 HP, 120V, single-phase, 3A, 17,500 RPM
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W1685 1 1/2 HP Dust Collector

16" SCROLL SAW

- Motor: 1/8 HP, 120V, single-phase, 1.2A, 60 Hz
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- Max. cutting width: 16"
- Blade stroke: 5 1/4"
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W1713 16" Scroll Saw

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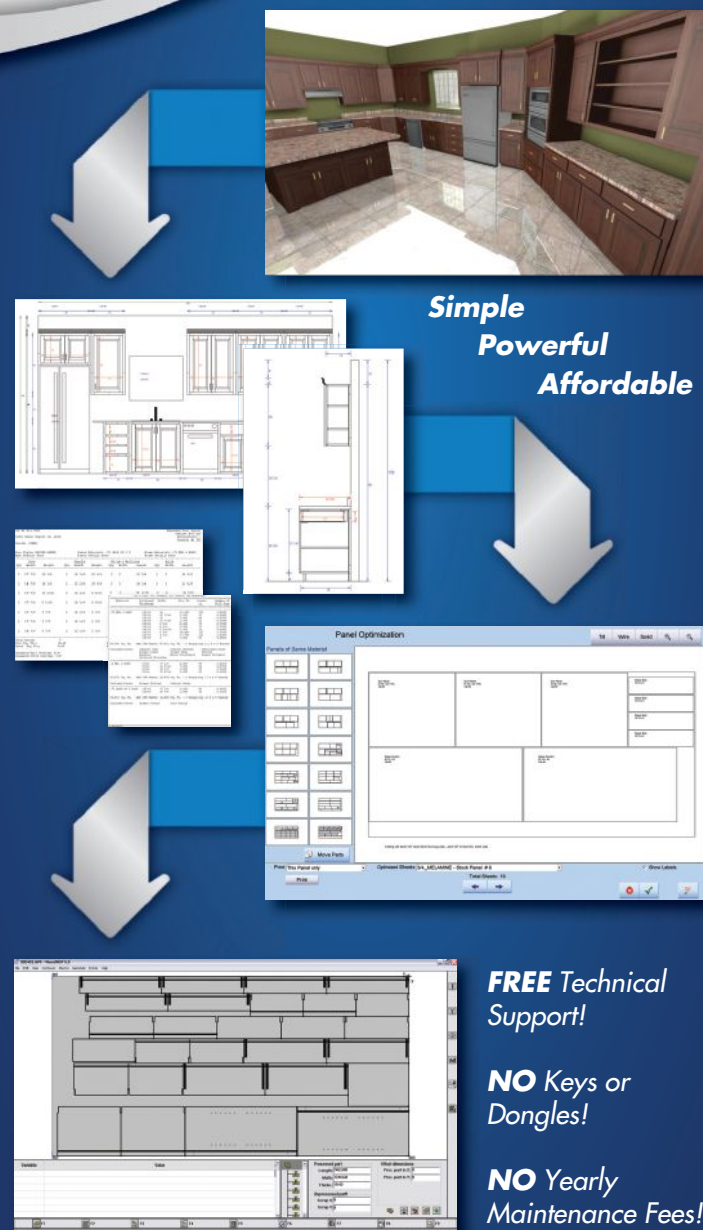
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PHOTOS: BRIAN PAYNE/REDUX PLUS (TOP, COVER)

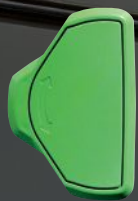
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BLOGS



Over the Workbench

Talkin' shop with former editor A.J. Hamler



This Business about Woodworking

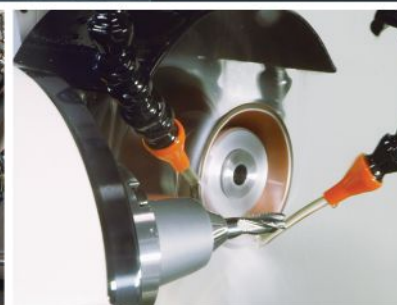
Share an opinion with David DeCristoforo but don't expect to be right

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TAKING STOCK

with TOD RIGGIO

IWF brought a lot of energy to Atlanta

You know it's a good IWF when ...

- Exhibitors talk about their sales without being asked.
- You can easily spend two or three days exploring the machinery venue.

- The suppliers' venue is abuzz with activity.
- There aren't many long faces at the hotel bar.

IWF 2016 was bigger than recent shows and made a certain magazine editor happy with plenty of new tools, machinery and technologies to fill several upcoming issues. Our coverage begins on Page 10 and will probably end around next spring, just in time for the buildup to the 2017 AWFS fair.

ON OUR RADAR: There were a number of products that grabbed our attention, which you'll learn more about in the coming months.

The Wood Wizz (woodwizz.com), available from Baker Products, impressed attendees with its ability to surface and finish slabs, burls, tabletops and even recycled timber. A 5" cutter, featuring 10 square cutter inserts, with a 3-hp motor gets the job done. The cutter is attached to a gantry, which is manually moved over a flatbed with a 4'8" x 11'8" material capacity.

Freud (freudtools.com) presented its next generation of solid carbide tooling and new CNC router bit sets.

Black Box Vacuum Solutions (blackboxvac.com) had several single-phase vacuum solutions for a CNC router.

Centipede (centipedetool.com) showed its Portable Work System, a steel frame support that sets up in seconds and folds up like a beach chair. There's a 2' x 4' Sawhorse model and 4' x 8' version that the company says can support up to 3,000 lbs.

The Magswitch Workholding System (mag-switch.com.au) features On/Off magnet clamps for use on a steel table or fence.

Lamello (swissinvis.com) presented the Invis Mx2, a hidden fastening system that's opened and closed with the rotating magnetic field of the Mx2, chucked in a cordless drill.

The Magpi forming machine, available from Stiles (stilesmachinery.com/magpi) creates arcs to a specific radius in minutes.

IWF 2016 was also heavy on new hardware solutions, CAD/CAM software, low VOC and waterborne coatings, CNC machining centers, and dust collection.

FUN FACT: According to my free step counter app, I walked an average of 7 miles per day at the cavernous Georgia World Congress Center while covering the IWF. This, however, pales in comparison to the 9 miles a day logged during the family vacation to Walt Disney World.

AWFS UP NEXT: Online registration has already begun for the 2017 AWFS fair, which runs July 19-22 in Las Vegas.

"The 2017 fair will include an expanded trade show floor, which is already close to 80 percent sold (as of Sept. 1)," says Rob Howell, the show's chair and sales manager for SCM Group North America. "As exhibitors, we are excited about the upcoming show and that is very apparent by the response the AWFS has received from repeat exhibitors, exhibitors new to the show and many that are returning to the show after sitting several out. It's a strong market right now and people do not want to miss out on new opportunities." **W**

Working with tools and wood is inherently dangerous. We try to give our readers tips that will enhance their understanding of woodworking. But our best advice is to make safety your first priority. Always read your owner's manuals, work with properly maintained equipment and use safety devices such as blade guards, push sticks and eye protection. Don't do things you're not sure you can do safely, including the techniques described in this publication or in others. Seek proper training if you have questions about woodworking techniques or the functions of power machinery.

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NEWS DESK

Stiles dubbed its booth "Stiles City" at IWF 2016. It was the show's largest booth at 26,000 sq. ft.



Double-digit growth makes for bustling IWF

By Jennifer Hicks

With more buyers, more exhibitors, and more exhibit space, the 2016 International Woodworking Fair surpassed most measures that suggest a strong show.

Attendees and exhibitors interviewed by Woodshop News say the biennial show, held Aug. 24-27 at the Georgia World Congress Center in Atlanta, either met or exceeded their expectations. There was plenty of new products to explore, new technology to consider, and best of all, business to conduct. The atmosphere, in a word, was upbeat.

"We had double-digit growth in attendance, exhibit space and the number of exhibitors. The show floor was very active and exhibitors were seeing high demand for their products," says Tom Onsrud, president of exhibitor C.R. Onsrud Inc. and the IWF 2016 chairman.

There were more than 16,000 verified attendees/buyers, up from 14,400 in 2014, according to the IWF.

Stiles, the fair's largest exhibitor, reported double-digit sales growth and a 65 percent increase in lead increase in lead generation over its IWF 2014 performance.

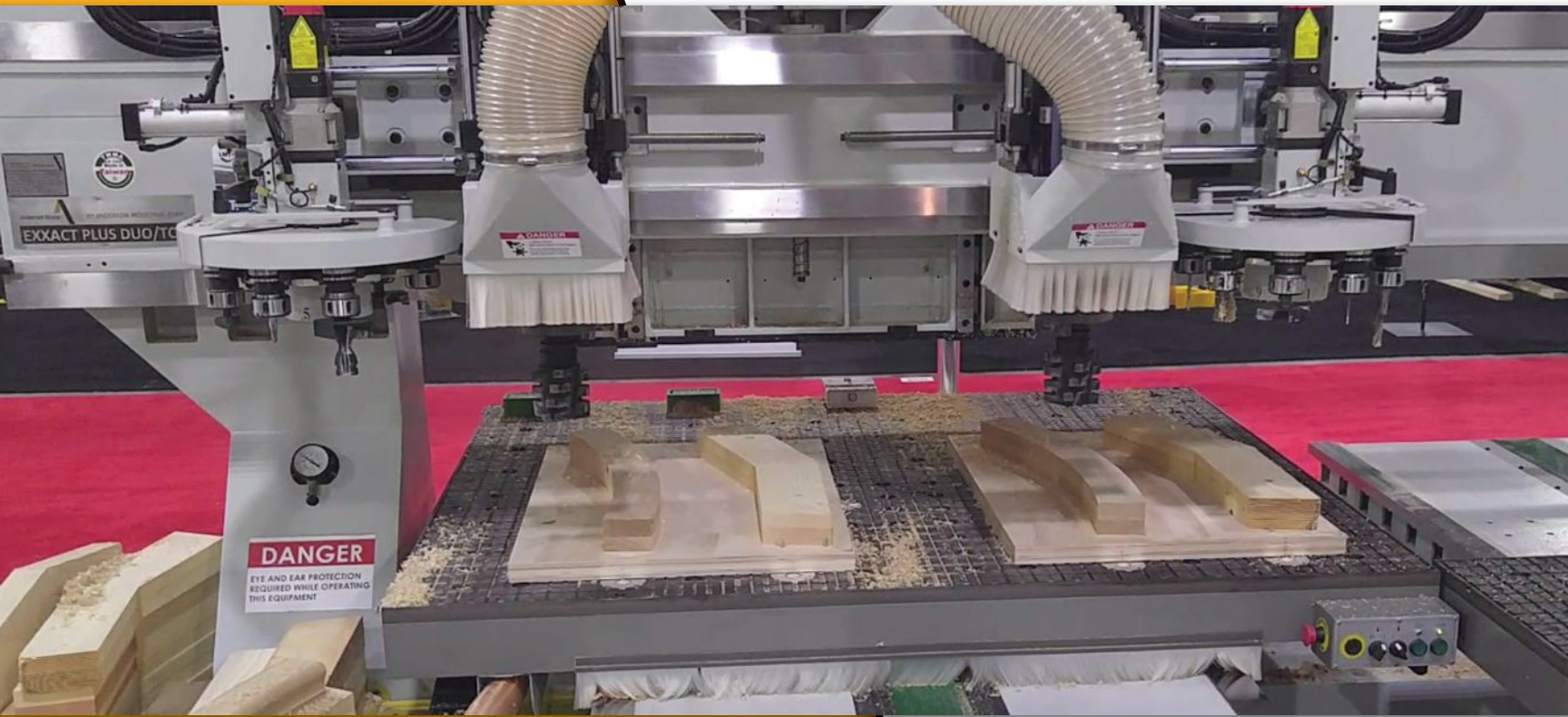
"We appreciated the opportunity to meet thousands of guests and share our technology and solutions with visitors from across the globe," Stiles marketing manager Chris Dolbow says. "We wanted to focus on inviting our visitors to journey with us towards improving their production and making smarter decisions about their future, providing strategic recommendations that make sense for their business."

Cefla Finishing North America said the fair exceeded expectations. "The tremendous turnout and level of interest we saw points toward market potential that continues to grow," national sales manager Brent Warren says. "The conversations we had indicated that companies

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liked what they saw and are ready to make investments."

The show featured a machinery hall, dominated by CNC and other production machinery, and a smaller hall for hardware, computer software and material suppliers.

There was a thirst for knowledge as exhibitors presented solutions and potential buyers responded with questions about what they'd see in return from their investment.

Attendee James McGrew of James McGrew Cabinetmakers in Columbia, S.C., who was searching for an edgebander, is a huge proponent of attending the show for that face-to-face contact.

"This show was great. My first one was in '96 so I remember it before the Internet, Google and the recession when the booths and vendors lined the hallways as well as the main floors. The industry has condensed and so much is done online that the old days of pressing the flesh are well on their way to becoming a chuckle in a history conversation," McGrew says.

"The need to see and feel the machinery will always be there, especially for the small cabinetmaker who has little room to make a bad equipment purchase. A wrong decision for a \$25,000 tool can put a shop under as quick as a drop in sales."



Attendees visit Mozaik Software's booth at IWF 2016.

Mark R. Lorge, and educator in the wood manufacturing technology department at Fox Valley Technical College in Oshkosh, Wis., has been attending IWF since 1986 for the same reasons.

"This was my 10th show and I've seen it go through boom years and lean years. I'm a firm believer that every post-secondary educator should attend this show and the high school woodworking instructors that are invested in this industry should attend as well. Where

else are you exposed to the scope and variety of vendors and suppliers in woodworking?

"The opportunity to network with the industry leaders as well as colleagues from around the country and the world is invaluable. It may be easier to do a web search for a specific product than it is to attend this show. However, you will not get the total sense of the product you are searching for as well as the opportunity to do physical and esoteric evaluations in a working environment." **W**

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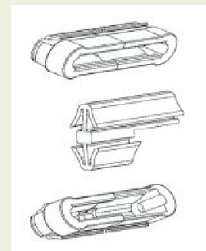
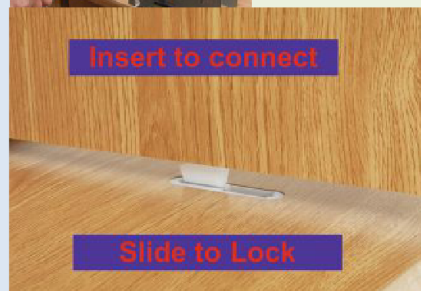


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Ben Grant incorporated his interest of clock gears and mechanisms into this desk that won Best of Show in the 2016 Design Emphasis contest at IWF.



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"I'll just program it myself."

Good luck! That thing needs a constant stream of programs to run. Solving problems, like damaged or scrapped parts or defects in material means even more CNC programs. Programming custom cabinets on a CNC router is a full time job....not to mention the cost and effort for cabinet software...good thing you have nothing else to do.

When you consider everything, that cheap router isn't so cheap after all. In fact, to match a Thermwood Cut Center they would have to pay YOU to use their router.

Instead of looking for the cheapest possible CNC Router, do yourself a favor and talk to Thermwood about how the Cut Center will save you time and make you more money!



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"Being able to go to the machine, pick out a cabinet or a piece of furniture, plug in the size and start feeding material is huge"
- Donovan Mumma - GM - Byrne Custom Woodworking - Lenexa, KS

North Carolina woodworker takes Best of Show award

By Jennifer Hicks

A pleasant diversion to the hustle and bustle of IWF is the Design Emphasis competition. This year's contest featured 121 entries and 39 finalists, led by Best of Show winner Ben Grant of Haywood Community College in Clyde, N.C.

Ben Grant, the principal of Ben Grant Woodwork in Waynesville, N.C., impressed the judges with a writing desk that has wooden gears visible through the top. The gears turn when the drawer and pull-out writing surface are opened and closed.

"I was doing lots of end tables before and I wanted to do something bigger, so I made a desk," Grant said on the show floor. "I looked at a lot of pictures of old clocks in designing it. I always thought the mechanics were interesting and aesthetically pleasing, so I wanted to add them somehow in this piece."

Grant also won the second place or merit

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2016 Design Emphasis results

ACCENT FURNITURE

Winner: Julian Harris, Haywood Community College

Merit: Timothy McNamara, Seattle Central College

Honorable Mention: Benjamin Zickmund, Herron School of Art and Design

COMMERCIAL

Winner: Kelly Romig, Appalachian State University

Merit: Tommy Teav, Seattle Central College

Honorable Mention: Romig

SEATING

Winner: Zachary Manual, Kansas State University

Merit: Jonathan Bingham, Western Piedmont Community College

Honorable Mention: Amanda Housh, University of Idaho

CASE GOODS

Winner: Harris

Merit: Brady Montgomery, Pittsburg State University

Honorable Mention: Christian Franczyk, Milwaukee Institute of Art and Design

DESIGN CREATIVITY

Winner: Kasia Sweeny, Appalachian State University

Merit: Ben Grant, Haywood Community College

Honorable Mention: Ian Anderson, Brigham Young University

award in the design creativity category for a lounge chair featuring slats that resemble xylophone keys. He is currently converting his garage into a shop and plans to work for himself. He says the awards give him the confidence to make a living as a furniture maker.

"This year we had a couple of new schools who registered and did quite well in the competition," IWF director of operations Liz Hosp says. "Overall, we saw a lot of variety. This time students seemed to push the envelope a little more with abstract work. Some of the designs were creative and more unexpected, like a live edge table that was designed to sway as part of the design concept. It seems the students are thinking outside the box a little more."

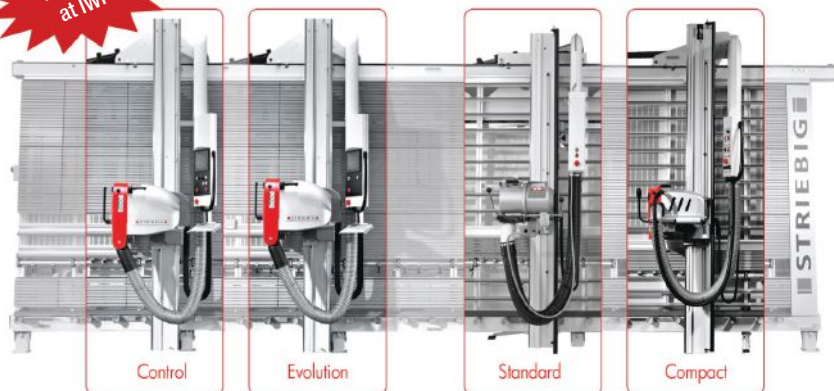
"The students chosen as finalists get a few free nights at the show so they can go to the award ceremony and stay a few days to get the chance to meet people at the show and talk about their projects. Many of them talked with judges and got tips on their work." **W**

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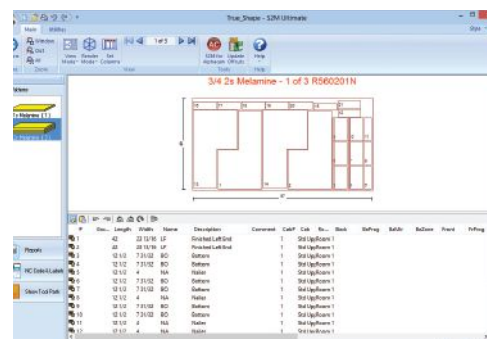


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NEWS DESK

San Diego man wins Craftsman's Challenge at IWF

By Jennifer Hicks

Craig Thibodeau of San Diego won the grand prize in the 12th annual Veneer Tech Craftsman's Challenge.

Thibodeau's "Automation Table," an Art Deco design, impressed the judges with highly complex mechanical functionality and exceptional craftsmanship featuring pau ferro, maple and maple burl, ebony and various marquetry woods, according to Veneer Tech, a manufacturer of face veneer, sheet veneer and edgework in Newport, N.C.

Thibodeau won the design competition's \$3,000 top prize, recognizing excellence in veneer wood-working, plus \$1,000 for an early deadline entry. Herzog Veneers won \$2,000 as the veneer supplier and sales representative Julianne Barata was awarded \$1,000 in recognition of participation in the supply chain.

There were nearly 100 entries this year, according to Alan Hubbard, sales manager at Veneer Tech, the contest's sponsor. He says all were exceptional examples of fine craftsmanship.

"Just like every year, all the works entered this year, whether winners or not, were very impressive. The skills that some of these craftsmen have are just phenomenal and this year was one of the best as far as presentation goes was. We thought there was a good turnout and it was great to see some of the winners there," Hubbard says.

Category winners were:

Architectural Woodworking: Bespoke in Larchwood, Iowa, for "Transitional Paneled Office."

Cabinetry: Paul Mann Custom Boats in Manns Harbor, N.C., for the interior of "Caught Up."

Furniture: David Bondy of Rancho Santa Margarita, Calif., for the "Coliseum Coffee Table."

Marquetry: Ken Cowell of Yorba Linda, Calif., for "The Lady."



Craig Thibodeau's "Automation Table," the grand-prize winner in the 12th annual Veneer Tech Craftsman's Challenge presented at IWF 2016.



Specialty Items: Rolling Arts Bicycles of Burr Ridge, Ill., for "Meep-Meep."

Student Design: John Ausel of Thaddeus Stevens College of Technology in Quarryville, Pa., for "Federal Card Table."

The entries in this year's competition can be viewed at www.veneertech.com. [W](#)



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T10464: 24" W x 11¾" D
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- Number of spindles: 1
- Spindle speed: 18,500 RPM
- Dovetail bit size: 10° angle x ⅝" long
- Dovetail shank diameter: 12mm
- Maximum dovetail height: ¾"
- Minimum dovetail height: ⅝"
- Maximum thickness: 2⅝"
- Minimum thickness: 1⅜"
- Maximum stock size: 59" long x 16½" wide
- Minimum stock size: 7⅞" long x 2⅞" wide
- Overall size: 38⅝" W x 26½" D x 56⅞" H
- Approx. shipping weight: 539 lbs.



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- Shank size: 10mm • Fence length: 74¾"
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- Table working height: 35"
- Spindle travel: 4"
- Spindle size: 1¼"
- (¾" and ½" spindles available as an option)
- Spindle speeds: 7000 and 10,000 RPM
- Maximum cutter diameter: 6"
- Exposed spindle length: 4"
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Exotic species sales boosted by recent trends

By Jennifer Hicks

IWF exhibitors of hardwoods and veneers were pushing exotic species to a receptive crowd. Dealers interviewed by Woodshop News say shops are looking for alternative materials to help

their custom projects stand out.

"We're seeing a lot of exotic species being used for furniture, doors, windows, trellises and live-edge pieces," says Omar Linares of Beacon Hardwoods, a wholesaler in Miami. "That goes for pretty much all of the main species except for African mahogany. The

pricing on that is way down."

Beacon's booth featured thick slabs of angelique (*Dicorynia guianensis*), a dense, medium-brown-colored wood from French Guiana and Suriname. It's a teak substitute used for ship decking and industrial flooring.

Northwest Hardwoods, based in Tacoma, Wash., presented imports from Africa, Malaysia, Central and South America, and Burma, used for millwork applications, exterior doors, custom moldings and other high-end projects, according to Todd Walker, the company's national sales manager for exotics.

"People like to have other options than the usual materials so they can stand out," Walker says. "Our top sellers are sapele, African mahogany and sipo, which are all considered African redwoods with a different grain pattern. I think it's the reddish color people are looking for because these woods are not easy to machine due to their high silica content."

David Thomsson, president of Brookside Veneers in Cranbury, N.J., says he's seeing an ongoing trend of woodworkers using dark exotics with lighter woods to produce a bold contrast.

"We typically see them pairing a dark species such as wenge, Macassar ebony and English or Persian walnuts with something light like rift white oak or on the import side anigre, which is a light African hardwood that stains well and lets end-users tweak the final color," Thomsson says.

"This trend with the contrasting is holding for projects across the board, from cabinets to offices, in residential and commercial sectors. It's been going on for about four to five years which is what we'd call a mature trend, so we do expect it to end, but don't know when. For now, it's still going strong." **W**

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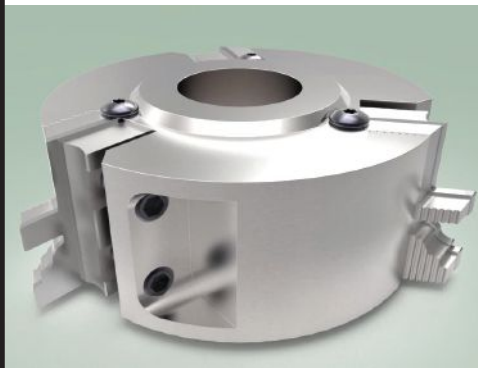
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TOOLS & TECHNIQUES

Seven companies capture Challengers' Awards at IWF



Salice Air

By Jennifer Hicks

Salice America was one of seven IWF exhibitors to win a Challengers' Award for the Salice Air, a door hinge available with soft close or push open actions.

Product manager Shawn Pressley describes the hinge as a perfect synthesis of aesthetics and functionality.

"Combining refinement in design and compactness of size with the highest performance qualities, Air is also available with Salice's Push system for the opening of all types of handle-less doors," Pressley says. "Air is suitable for a host of applications and offers furniture designers new dimensions of elegance and modernity of design."

With a thickness of only 10mm, air is in-

serted into the top and bottom of the cabinet and the door. It is adjustable in three directions and can be used with wooden and aluminum-framed doors.

The hinge sells for about \$40/pair in both nickel and titanium finishes.

For more, visit www.saliceamerica.com

The Challengers' Awards recognize companies for developing innovative technology in products, services or manufacturing techniques that will advance the industry.

The other six winners were:

Giben by Andersen **Nested CNC router**

The new Giben by Anderson model GS CNC router is designed to out-produce conventional routers by as much as a 100 percent, according to the manufacturer.

"With speed and precision, the new GS CNC router bridges the gap between nesting on a conventional router and cutting books of panels on a beam saw," the company said in a statement. "It offers the best of both worlds. With an average nest time of around half that of a standard



Giben by Anderson CNC

router, it can produce nearly double the output of a conventional machine."

"The new model GS offers linear motor technology on both X and Y axis for incredible speeds for both positioning and machining. This innovative approach drastically reduces cycle times for both drilling and routing alike."

For more, visit www.giben.com.

Biesse

Viet Opera R robotic sanding machine

The Opera R, at its essence, is a CNC router with a sanding attachment, but with the capability to sand with the grain in any orientation and the profiles of five-part doors and window frames.



Viet Opera R at the Biesse booth.

"The Opera R presents the only automated solution for sanding of MDF doors with flat center panel, as well as removal of cross grain scratching of solid wood doors," the company said in a statement.

For more, visit www.biesseamerica.com.

Bacci America

CNC router for shaping, sanding cabinet doors

The Bacci CNC sander shaper is a fully automatic machine, complete with an all-new user interface screen and controls.

"The operator scans a bar code on the door, which then triggers the pods to automatically position," the company said in a statement. "The door is then loaded onto the vacuum cup tables and automatically positioned under the shaping head where it's profiled."

For more, visit www.bacci.com.

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activate the laser edging function layer. The result is perfect, invisible joints, according to the company.

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For more, visit www.onsrud.com/polaris.

Fastenlink

Fastenlink connector

Fastenlink is a hidden connector system that replaces wooden dowels, cams, screws and other fasteners.

The patent-pending design uses a groove cut into the tip of the plastic dowel, creating a shoulder that slides into a tapered ramp



cut into the wood that guides the Fastenlink dowel until it clicks into the locked position.

"We believe this can radically change our industry for the better, which then will change it for the consumer too," vice president of operations Jamie Mindrup say. "If companies can cut their own assembly time drastically, it lowers the cost of the product for the consumer."

For more, visit <https://fastenlink.com>. 

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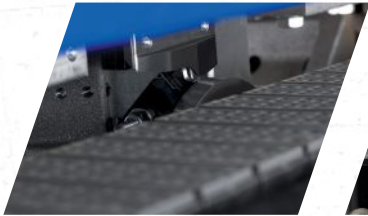
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The cabinet hardware jig.

Kreg Tool debuts several new products at IWF 2016

By Jennifer Hicks

Kreg Tool unveiled several shop solutions at IWF, including hardware installation jigs, a pocket-hole plug cutter and mobile project center. Product manager Dave Stone says the new products are designed to be intuitive for beginners to use, but are robust

enough for professionals.

The three new jigs, all priced under \$30, are durable and adjustable, allowing woodworkers to position hardware and guide a drill for accurate and repeatable results.

"The alternative to using these is you measure and mark by hand, buy an expensive jig, or make your own jig. But a single self-made jig often gets used only once. These are adjustable, accurate and easy to use for consistent applications each time and are inexpensive," Stone says.

Kreg presented a cabinet hardware jig is for installing knobs and pulls. It features hardened-steel drill guides, adjustable edge guide, built-in measuring scales and sells for \$24.99.



The pocket-hole plug cutter.

Its new concealed hinge jig sells for \$29.99 and is a real help for getting doors to fit correctly, according to Stone.

"When installing a hinge you need a certain offset to get the distance right and transfer the measurement to the workpiece. With this jig, it tells you exactly where to place the hinge," Stone says.

Kreg also presented a new drawer slide jig that holds the slides and drawer box in the desired position, freeing the installer's hands. It sells for \$24.99.

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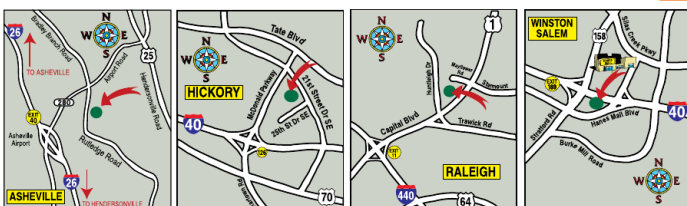
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AXYZ International unveils Optimus panel processor at IWF



By Jennifer Hicks

With its sleek and modern industrial design, the new Optimus CNC panel processor from AXYZ International grabbed the attention of attendees strolling through the aisles of machinery at IWF 2016.

"We've been building routers for over 20 years for other industries, but had no major focus with the woodworking and cabinetmaking industries," vice president of sales Greg Jenkins says. "We worked with an industrial designer and wanted to focus on building machines for doing cabinetmaking."

"What we really want to focus on is giving customers a local experience. Customers will have the advantage of buying directly from an established manufacturer rather than a third-party supplier and all that this entails in terms of reliability and ongoing technical support."

Optimus is supported by Cabinet Vision's Solid Essentials software, which provides design, parts nesting and programming functions.



Optimus is available in three models (4000, 5000 and 6000). Key design features include a heavy-duty steel base, a twin-head routing/drilling carriage and an integrated dust extraction system, according to the company.

Options include a range of high-power spindles and multi-spindle drill heads, a 10-station automatic tool changer and a fully automatic sheet-handling system.

Pricing for the Optimus starts at \$90,000.

For information, call 800-361-3408 and visit www.axyz.com. 



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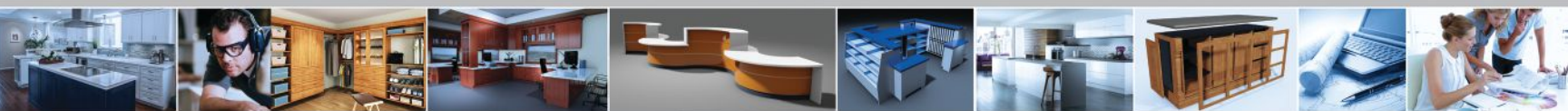
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Axiom Tool debuts Elite Series at IWF

By Jennifer Hicks

The Axiom Tool Group presented the AutoRoute Elite Series of small-format CNC routers at IWF.

"These have servo-driven motors which means they are faster and more accurate, allowing us to enter a more industrial space in the market," company president Todd Damon says.

"They are an alternative for stepper control machines. The servo drives can compensate for different material loads, such as with dense hardwoods, and maintain a consistent cut at a faster speed."

The Elite Series has two models: the AR8 with 2' x 4' table, and the AR16 with a 4' x 4' table. They sell for about \$10,000 and \$12,000, respectively.

Both models offer 7.87" of Z-axis travel and feature a 3-hp electro-spindle motor with an integrated liquid cooling system, according to the company.

The routers do not require computer attachment for operation. Instead, files are transferred to the controller via a USB storage device.

"Professional fabricators will find the machines useful for rapid prototyping, instrument making, furniture component production and sign making," Damon says.

The company also offers the Hobbyist, Basic and Professional lines under its Axiom Precision brand.



"We are intentionally avoiding the flat panel CNC market here (at IWF). We are strategically filling a hole in the industry where there is a need," Damon adds.

For information, visit www.axiompprecision.com. 

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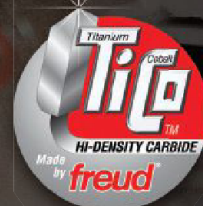
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Staying on the straight and narrow

A good dust-collection systems needs as few twists, hard corners, ribbed flexible hose and other obstacles as is possible

By John English

Physicists and fans of the CBS comedy “The Big Bang Theory” are familiar with particle accelerators, those massive machines that propel charged particles to incredible speeds in a confined orbit. While they use electromagnetic fields to make molecules move, woodshops use air pressure to achieve a similar end.

Essentially what happens in the shop is that a large volume of air is compressed into a confined space (a hose or pipe) where the negative pressure at one end exceeds the positive pressure at the other.

Woodshop dust is moved by vacuum, rather than pneumatics where the air is first compressed and then moves toward a low-pressure environment. The mechanics involved in a vacuum transfer of pressure are volume and velocity: how much air needs to be moved and at what speed?

Think of a large log sitting in a mountain streambed, where only a trickle of water is flowing. It doesn’t matter how fast that tiny volume of water runs, it will never move the log. Now imagine that there is plenty of water, but it’s a very lazy stream. The log is suspended (floats) in the water, but barely moves. We now have volume with-

Ecogate’s blast gates help control airflow by equipping each machine with a sensor that allows the gate to open automatically, and only as machines need dust collection.



out velocity. After a storm, big waters rush through and carry the log away. That’s volume and velocity.

The first key here is suspension. Nothing happens until the flow is large enough to lift the log. So there needs to be enough air in a dust-collection system to pick up and carry shavings, chips and all sizes of dust particles and suspend them in the air flow. Suspension is achieved by creating the correct balance between the volume (the size of the pipes or hoses) and the velocity (speed) of the air. The latter is determined by the strength of the fan less resistance.

If our mountain stream flows down a steep grade in a straight line, it will flow fast. However, if it has to navigate through a canyon with innumerable twists, navigate Class 5 rapids and deal with beaver dams, the speed will be both reduced and uneven. At times, it will accelerate and at others it will create almost still ponds behind obstacles like those dams.

The more twists, hard corners, ribbed flexible hose and other obstacles that we throw in the way of a woodshop’s dust collection system, the more we disturb the flow. The optimum option is to perfectly size individual collectors to each machine and connect them with a single length of straight pipe. As that’s almost physically impossible, woodshops have through the years resorted to attrition rather than finesse. We simply increase the size of the system until it overcomes the obstacles. We use bigger pipes and bigger fans

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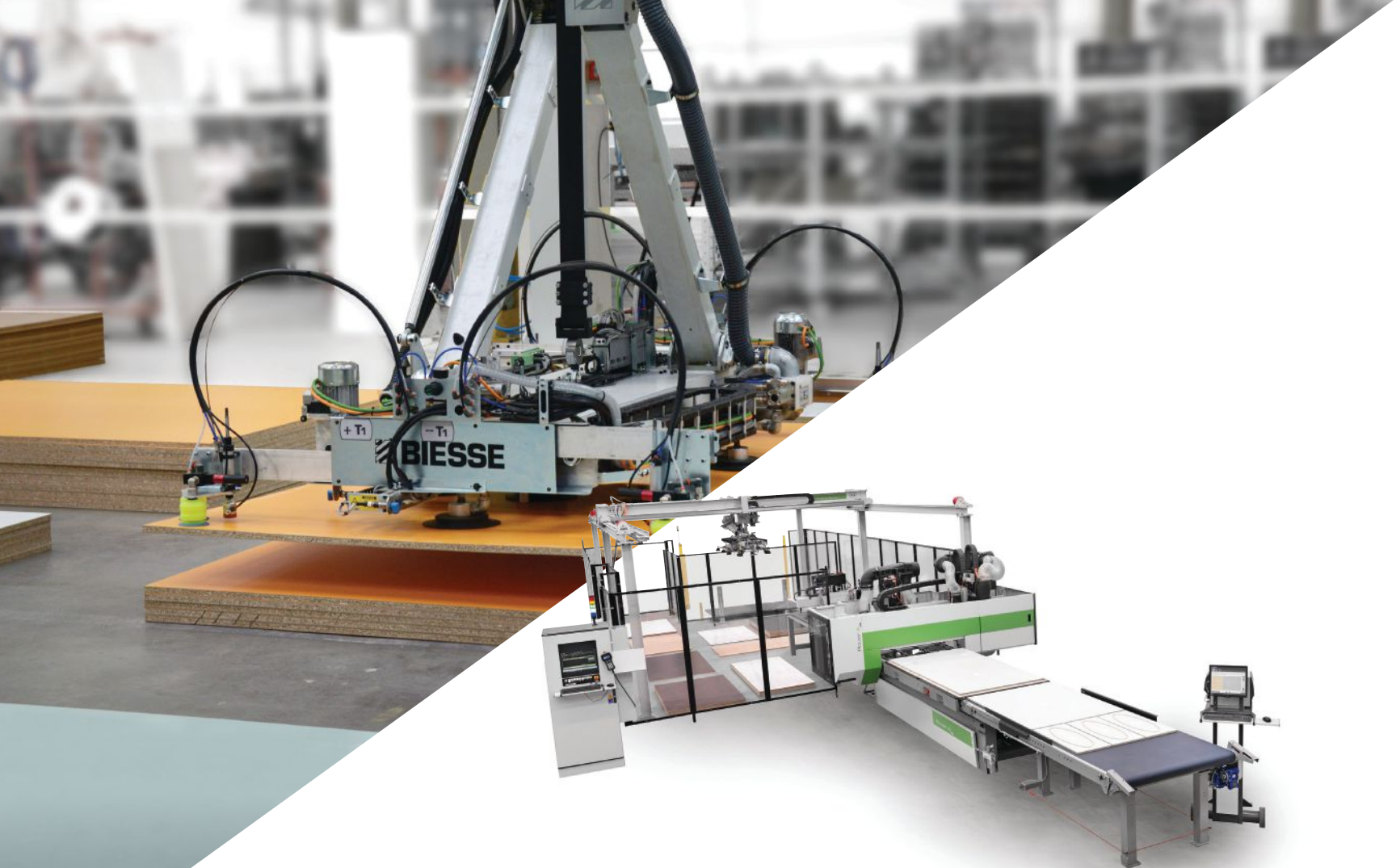
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to compensate for sharp bends and poor planning. That costs us money in both electric bills and floor space. A little fine-tuning can save some dollars, but also deliver much better dust control.

The primary options for improving performance are to upgrade the filter bags, change ribbed hoses to smooth pipes, reduce the number and severity of direction changes, size the ductwork correctly and the big one — control vacuum loss.

Bigger and better bags

Upgrading filter bags can play a huge role in improving any system where the air in the shop runs through a dust collector to be “scrubbed” and is then returned to the shop.

American Fabric Filter, located in Wesley Chapel, Fla., has spent the last couple of decades designing and fabricating custom bags and sleeves for everything from home hobbyist collectors to 100-plus-hp factory bag house systems. The company maintains that “a small collector’s performance can improve dramatically with increased filter area.” The idea here is that a larger bag on a small shop’s single or two-stage collector will allow more “clean” air to escape back into the shop, so the net effect here is usually a considerable increase in the number of cubic feet of air being processed.

Commercial shops might require a little more effort and investment. To operate more efficiently, large bag systems usually need larger filters with thicker fabrics, and some-

times American Fabric Filter even adds extra (sister) bags to get the proper air flow without creating more back pressure.

One way to describe back pressure is that more air is coming in than can escape. As this pressure builds up, the velocity of the air flow reaches its peak farther and farther away from the filter bags. If the air is slowing down before it reaches the bags, it will begin to drop its cargo.

Bill Pentz, an expert in this field (online at billpentz.com), has ascertained that it takes 4,000 cubic feet per minute (FPM) to keep dust and chips in suspension (that is, floating rather than settling). That speed requirement is so high because most systems include at least some stretches of vertical pipe where the effort to lift the debris involves more than air flow: the collector is also combatting gravity. If your filter bags are too small, your system can’t generate enough speed. If the inside surface of the bag(s) is clogging too fast, the system will slow down. And if the bags are undersized, they clog faster. It’s a vicious cycle.

Depending on the material you’re processing (mainly MDF or perhaps hardwoods?), you might also need to look at the weave — that is, the size of the holes in the filter bags. Small holes collect finer particles, but clog faster. Fine powder builds up on the inside of the bag and works in two ways: it partially clogs the holes and thereby reduces air flow, but it can also intentionally reduce the size of the holes and still allow air to flow. It’s a delicate balance, but well worth a conversation with a bag designer. The smaller the particles you can efficiently trap the better, as these are the most dangerous for workers to breathe. But if the system is too tight, the air flow is reduced at every machine and a lot of those tiny particles will remain suspended in the shop’s ambient air.

There is no magic micron number here. The bag filter rating depends on the size of the fan, the diameter of the ducts, the weave of the bag and the materials being processed. Every shop pretty much requires a custom evaluation.

The hose hindrance

Yes, there are a few very well-engineered flexible hoses on the market that cause almost no resistance when properly installed. They’re expensive and generally share one characteristic: the inside of the tube is relatively smooth.

Remember those river rapids? Well, cheap corrugated hoses have much the same effect on air flow as rocks do in water. They cause turbulence. At the edge of the flow, each rib catches a little of the air and turns it back on itself. Over a long stretch, there’s a cumulative effect that can slow down velocity and thus volume.

And it’s not just the ribs. Every curve in a flexible hose is another obstacle to air flow. A



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much better option is to use metal pipe or grounded plastic pipe.

If the ductwork has to change direction, then the turn needs to be made in a slow, graceful curve rather than a sharp turn. Asking air to dramatically change direction causes a backwash. There aren't too many naturally occurring 90-degree bends in rivers and air behaves in much the same way water does. It's a good idea to physically walk the dust collection lines in the shop, just to see if there's anywhere a transition can be improved by evening out a sharp curve.



Ecogate supplies blast gates, intelligent controls, machine activity sensors and a variable frequency drive on the fan motor that automatically starts and stops the dust collector, as well as making the system use significantly less power.

Is your ductwork sized correctly? Yes, it gets smaller the farther it is from the bag, but are the diameters a matter of convenience (that's the stock pipe size that was available) or intentional design? Once all the machines are in place and their dust port sizes are known, it might make sense to measure the lengths of the runs, check the CFM rating on the collector and then give a professional designer a call. Odds are that, in most shops, some stretches of ductwork are either too wide or too narrow.

Control vacuum loss

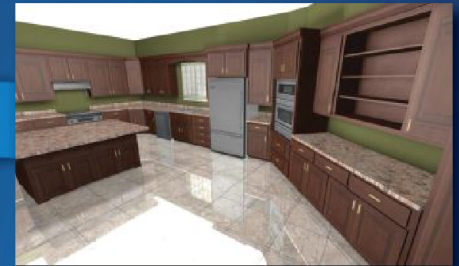
Attrition can be described as throwing more and more resources at a problem until the sheer volume of the solution overcomes the challenge. Yes, you can upgrade the bags and tweak the ductwork and maybe even invest in a bigger, better collector. But the largest potential efficiency could be a lot simpler: just shut the gate.

Blast gates are a pain. There's no getting around that and woodworkers have a long history of just leaving them all open because the task at hand "will only take a few seconds." We're human and the only sensible solution is to completely automate the entire system's blast gates. That's not as big a challenge as it sounds: most small shops can get by with a wireless system that costs less than a decent miter saw and can be installed in an hour or two. It's a solid investment that saves time, money ... and lungs. [W](http://www.cabinetpro.com)

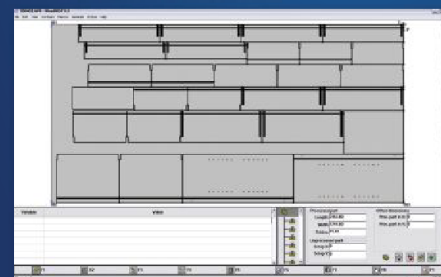
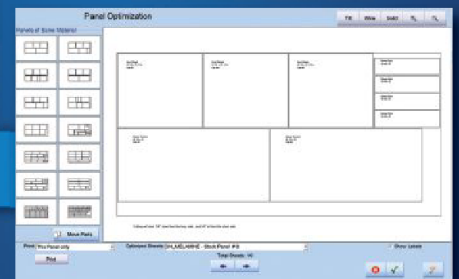
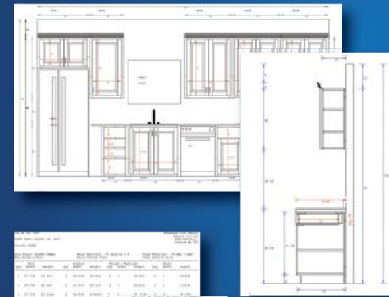
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- Scoring blade tilt: 0-45°
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- Total table size: 8" x 76¼" • Infeed table size: 8" x 43¾"
- Cutterhead knives (G0490W): 4 HSS, 8" x ¾" x 1½"; (G0490XW): Spiral cutterhead with 40 indexable cutters
- Cutterhead speed: 4800 RPM • Cutterhead diameter: 3¾"
- Max. depth of cut: 1/8" • Max. rabbeting depth: 1/2"
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- Feed motor: ¾ HP • Glue and edge motor: ¼ HP
- End trim motor: ¼ HP
- Flush trim motor: ¾ HP
- Buffing motor: ¼ HP
- Heating element: 1455W
- Table size: 10½" W x 78¾" L
- Min. panel dimensions: 4¾" W x 9½" L
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- Maximum depth of cut: ¼"
- Rabbeting capacity: ¾"
- Cutterhead diameter: 3½"
- Number of carbide inserts: 60, 14 x 14 x 2mm
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- Max. cutting width: 20" • Min. stock length: 7½"
- Max. cutting depth: ¼"
- Feed rate: 16 and 20 FPM
- Number of carbide inserts: 96 (G0454ZW)
- Number of knives: 4 HSS (G0454W)
- Knife size: 20" x 1" x ¼" (G0454W)
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- Overall size: 44" W x 56½" D x 43½" H
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- Max. cutting height: 9"
- Max. cutting depth: ¼"
- Min. stock length: 10"
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- Blade size: 131½" long
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- Min. stock thickness: ¾"
- Min. stock length: 8" (G0453W), 6" (G0453ZW)
- Max. cutting depth: ⅛" • Feed rate: 16 and 20 FPM
- Cutterhead diameter: 2½"
- Cutterhead speed: 5000 RPM
- Power feed rollers: solid serrated steel
- Table size: 41¼" x 16"
- Overall size: 38" W x 42" D x 42½" H
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- Table elevation motor: ½ HP
- Precision-ground cast iron table size: 24" x 35½"
- Max. cutting width: 24" • Max. cutting height: 9"
- Max. cutting depth: ¾"
- Feed rate: 20-40 FPM
- Cutterhead speed: 5000 RPM
- Cutterhead dia.: 4½"
- Approximate shipping weight: 1935 lbs. (G9741), 2024 lbs. (G9961)



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G9741 \$7995⁰⁰ SALE \$7650⁰⁰

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- Cutting capacity/throat: 18¼"
- Max. cutting height: 12"
- Blade size: 143" long
- Blade widths available: ⅛"-1¼"
- 2 Blade speeds: 1700, 3500 FPM
- Overall size: 36" W x 32" D x 76" H
- Approximate shipping weight: (G0514X) 460 lbs; (G0514X2B) 512 lbs.

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William and Linda Cole.

HOME *on the range*

Cole Custom Cabinets offers soup-to-nuts service
and a small-town feel in Wyoming

BY JENNIFER HICKS

Cole Custom Cabinets of Casper, Wyo., does everything but grow the trees, as the owners like to say. The one-stop shop designs, builds, finishes and installs custom cabinetry and countertops for kitchens and baths, casework for other parts of the home, and provides some millwork services.

Owned by husband and wife William and Linda Cole, the company has eight employees and operates out of a 20,000-sq.-ft. facility featuring a large production area, office space and showroom. Conveniently located in the center of this small and quaint Western town, their competition mainly consists of big-box stores.

The Coles are looking to retire, having put their business up for sale about three years ago. But finding a buyer has been difficult. The area is a magnet for transient residents who move in and out with the health of the state's oil industry, which has dominated parts of the local economy for decades.

"Business around here is all oil-field-related and oil is down right now so we're in a slump. What keeps us going is we are a well-known cabinetry shop. We're pretty much the only custom shop here in town," William Cole says.

A LOCAL RESOURCE

The shop competes against the big boxes with this simple marketing mes-

sage: "Custom work doesn't mean it's more expensive; it means better quality."

"A lot of our clients are residential, but we also do a few commercial jobs for apartments, doctors' offices, local business and kiosks for the local mall," Cole says.

To acquire business, the company invests in occasional radio and



William Cole entered the cabinetmaking business in 1962.

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Cole isn't "pushing it" like he used to, but he's still in the shop everyday.

TV commercials, but work is mainly sought through word-of-mouth referrals. Local real estate agents have traditionally mentioned the business when Cole Custom Cabinets are featured in homes they're showing.

"That's often been a surefire sell of the house," Cole says. "Our customers mainly want our work done in their kitchens, bathrooms, laundry rooms and closets. They want built-in entertainment centers and we do some libraries."

MERGING INTO CABINETRY

William Cole didn't exactly plan to be a professional cabinetmaker, but like his peers had the common sense to use the hands-on skills he learned growing up to earn a living as an adult. Originally from Elkhart, Ind., his father, William Cole Sr., tapped into the trailer door industry, making and customizing hollow core doors.

"You couldn't buy a hollow-core door back after World War II in the '50s and the trailer industry needed a narrower, shorter and lightweight door. So I helped him make those for a while, then in the '60s we moved (to Casper) and started doing framing. We brought our table saw, band saw, joiner and shaper and set up shop in a two-car garage."

Their work got noticed, but the town needed a cabinetmaker. There was a shop for sale, which the Coles bought in 1962.

"We bought Stasiak Cabinets and back then everyone who was building houses, all the contractors were associated with them. We thought that was a little tough for people to remember, so we just changed the name to Coles.

"It was still all word of mouth back then. My dad and I would stop at job sites to see what was going on and we used to go to the lumberyard every morning to see who was

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The shop has in-house finishing and builds countertops, too.

getting what for a foundation, etc. We'd ask them who's doing their cabinets. We only put out about three kitchens a month back then, but it picked up."

They eventually moved into a Quonset hut, a flat slab of concrete with a rounded steel cover, but soon needed more space. They started building their current shop in 1969. It was still a father-son business at that point, but employees weren't far off.

BATTLING THE RECESSIONS

Cole Custom Cabinetry has been through several tough economic climates and was hit hardest by those attributed to corporate oil giants moving their business elsewhere or halting operations due to pricing, availability and a number of other factors.

"There've been tough years. In 1962 Pan Am moved out. It was a big oil field company and that put the town in a big slump, and then in the '80s when we had another recession with the oil being down and things were very slow."

In 1989, the shop stopped making cabinets for about 14 months. There wasn't enough demand. The Coles, including daughter Cari, switched to a custom motor coach business turning road buses into luxury motor homes, which seemed promising with Yellowstone National Park only a few hours away. Naturally, they named the company Cole Custom Coach and, once they found interested buyers, purchased pre-built, running Prevost buses to renovate with all of the custom interiors imaginable. The company competed and sold 11 buses in total and a picture board in the office illustrates all of the work.

"We still did some cabinets, but the whole idea was to make money. Marathon Coach and Country Coach started at the same time so we thought, 'Why don't we start doing that.' But here we are in Casper, not centrally located and it's tough to travel here in the winter, so those things made it tough to do warranty work or modify if it they wanted a cover on a mirror or something.

"Then, in '91, the contractors came back and wanted cabinets, so we came back. That was for all brand-new home construction and that's mostly what we do now. In 2010 and 2011 it was really busy and, after 2011, things evened out. Right now it's kind of mellow. We have one \$70,000 project we're working on in a new house, though."

MOVING FORWARD

The Coles are, as always, ready to accommodate whatever request comes in. They are busy keeping up with the new design trend of painted woods in light colors such as white, gray and blue as opposed the dark walnuts of the '70s and natural oaks and maples of the '80s and '90s.

"Influencing the change are the HGTV and

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Cole Custom Cabinetry has been through good times and bad, and now it's for sale.

DIY shows and the most popular wood right now is hickory. They want lots of knotty hickory with natural finishes. It's very rustic. It's what people like in this territory. The more knots and character, the better. They can't get enough."

Being in a remote location, they frequently order materials out of town, mainly from Paxton Lumber Co. in Denver. They have a very low employee turnover and, while well-equipped with the basic shop staples, Cole says he likes to keep things on the "old fash-

ioned side" and do everything by hand without automated machinery.

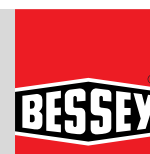
"We'd like to sell the place and have it continue as a custom cabinet shop, but there aren't that many master craftsmen out there and the way things are going around here it's not going to sell anytime soon. I talk to people and nobody says their kid wants to be a cabinetmaker and my two sons don't want to be cabinetmakers. It's hard to find help, too.

"My health is not real good, but I'm still

here. I'm not pushing it like I used to when I was here at 5 in the morning, but I'm here every day. It's nice to have all of the people come in after you're done and say they really appreciate your work. And we get to hear what all of their friends and family and what everyone said about the cabinets." **W**

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LIVING IN TOMORROWLAND

Even small shops need to plan for future expansion when considering CNC purchases

BY JOHN ENGLISH

Technology is advancing at a mind-boggling speed. For example, an impressive number of cars can park themselves now and driverless vehicles are just about here. In the workplace, the odds are that most of your own car was made and assembled by robots, not human hands. A single cellphone today has more computing power and memory than NASA's rockets did when President John F. Kennedy pointed us toward the moon.

So it's no surprise that even the smallest woodshops are putting programming and robotics to work at an unprecedented rate. The trick is to decide just how much and which parts of the operation should be automated now and what can be done in the future. We know that things will change rapidly as technology evolves, so any system installed now needs to be able to grow with us. The rule of thumb is to start small, but be prepared for expansion.

In the world of CNC routers, the term "small format" generally means low-powered spindles or even over-the-counter routers and a physically small work area. For many shops, that might indeed be all that's needed, depending on the type of work being done. For carving, engraving and creating accent panels, a small workstation might just meet both budget and space restraints and the learning curve on such a setup can be quite short. But if the shop wants to process panels, a bigger bed is in order.

A basic small format model, outfitted with a standard router, starts at about the price of a laptop computer. The cost of entry-

level units with small, dedicated spindles begins at about twice that. For example, the basic AutoRoute Pro from Axiom Precision (axiomprecision.com) comes with a 24" square worktop and is listed at \$5,499. And the ShopBot Desktop is in the same price range, beginning at \$5,145. Buyers can then choose to add a router to the Desktop for \$360 or a spindle for \$1,595. One nice feature is that the Desktop is designed to grow as a shop's needs develop. For example, it uses the same control and software as the company's full-sized tools and a number of bed sizes are available.

For smaller shops that are building bigger casework, the work area needs to be large enough to accommodate sheet stock and the spindle and movement motors must be rugged and large enough to handle the workload. Entry-level machines with full 48" x 96" beds and cutting speeds in the hundreds of inches per minute are still surprisingly affordable for a shop that can keep the machine busy.

Smaller woodshops tend to look at adding CNC capability as a way to boost production without hiring lots of people or adding several other workstations. The most obvious potential benefit is an almost immediate increase in production volume. A secondary gain is better overall quality due to better machining. The latter can sometimes take a bit of time to kick in because there's a learning curve as there is with any new equipment. And there are a few other little bumps in the road that a shop owner needs to consider before committing to a new CNC station.

GROWING PAINS

Time is as big a part of the investment as cash. Beyond the initial installation of the





Small format CNC routers include the Piranha from Next Wave Automation.

machine, somebody on staff is going to have to learn how to operate the specific CAD (design) software that comes with the router and also how to run this particular machine. The latter often includes becoming familiar with a separate CAM program that tells the machine what to do.

While people are training, they're not using existing machinery to get projects out the door and pay the bills. The shop needs to have sufficient cash (or at least credit) resources in place to handle the transition.

It's a good idea to train at least two people in case one leaves, gets sick or goes on vacation and that adds to the initial downtime. Training takes time, even with the best programs. Software has come a long way in recent years and most of the entry-level programs are now very intuitive and learned easily. Building standard boxes on a screen has become routine (once one learns a little of the terminology) and a shop can very quickly build up a library of the products that it makes most often. Much of the design process is template-oriented: one just chooses from existing options, pops the cabinets in place on a floor plan and makes minor alterations if necessary. That's especially true if the woodshop is outsourcing elements of each job: larger suppliers usually have a menu of products that dovetails nicely with the software program being used in the woodshop. And for parts being made in-house, most programs automatically generate cut lists and optimize (figure out the most efficient way to lay out or "nest" parts on a sheet of plywood).

Designing custom shapes can take a little time to learn – curves, offbeat sizing and so on. These are usually the elements that will be built in-house as opposed to being outsourced and this is where a CNC router can really shine. But it still takes some practice and experience before tackling highly technical design, unless the shop



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hires somebody who already has these skills. To get things up and running quickly, the ideal candidate is probably not a recent graduate from a technical college, but rather somebody who has also spent some hands-on time on the floor of a woodshop and is familiar with cabinet CAD. The machine supplier can offer some training and there are lots of online resources, but cabinet or furniture shops are by definition “custom,” so each one will need to figure out how to do things their way. That takes time.

Then there’s the physical part of the initial setup. Regular job production is going to be disturbed because of electrical and dust collection connections, plus physically moving things around to make room for the new machine – and both its infeed and outfeed spaces. There will also be connections to computers, scanners etc., and other impacts on the office such as perhaps designating a workspace and terminal specifically for CAD. All of this activity can ideally be scheduled for the slowest time of the year, but even then it still disrupts the flow of projects through the shop.

Beyond time and training commitments, a woodshop owner also needs to factor in the ancillary costs of upgrading to CNC. Yes, there are electricians and ductwork and maybe even a wall to knock down or move, but there are also some less obvious ongoing expenses. For example, there will be an impact on sheet goods inventory levels and shipping costs, the light and heat bills as more jobs are being processed, wages, insurance, interest on a loan or a lease payment, maintenance and new CNC tooling, just to mention a few.

CNC SOFTWARE

The transition from traditional machining to making parts on a CNC router is most likely going to be more gradual than planned. It will

For smaller shops, the first CNC purchase is most likely to be a single-head unit and the first big choice will be whether to invest in a 2.5-axis, 3-axis, 4-axis or 5-axis machine.

take a shop some time to understand what existing tasks can be performed on the new equipment. But once those are identified, the team can begin to explore new areas of production.

In shops that build highly individualized furniture, CNC software that includes advanced 3-D modeling can potentially eliminate traditional prototype building. Being able to see things in scale from different angles on a screen and instantly reshape them is a creative tool that dramatically enhances design possibilities. Yes, we’ve had 3-D software for a long time, but today’s programs are exceptionally fluid. They allow the designer to consider what’s possible, rather than what’s merely convenient. They open the door to adding more art to the craft.

Software can make a huge difference in the financial return on a CNC investment, especially for smaller shops. While large casework manufac-



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turers can afford to experiment a bit and design custom software solutions, smaller shops need to get the machine up and running right away and keep it working profitably. That means they need access to both CAD and CAM programs that are immediately functional, at least moderately customizable, easy to use and able to grow with the needs of the business. They also need to be comprehensive, tackling several aspects of the production process from design and rendering through bids, cut lists and even the ability to deliver timing and part production reports.

The term "open architecture" means that a router will work with virtually all industry standard CAD-CAM programs.

It's essential that a woodshop entering the CNC arena performs due diligence regarding its software options. Among the more reputable programs (some of which are CAD, some CAM, and some both) are Alphacam and Cabinet Vision from Vero Software (verosoftware.com); EnRoute (enroutesoftware.com); Autodesk's ArtCAM (artcam.com); KCD Software (kcdsoftware.com); CabinetPro (cabinetpro.com); CabMaster (cabmastersoftware.com); CIM-TECH (cim-tech.com); MasterCAM from CNC Software Inc. (mastercam.com); Microvellum (Microvellum.com); Mozaik (mozaiksoftware.com); NUM (num.com); Rhinoceros (rhino3D.com); and Vectric's suite that includes VCarve and Cut2D (vectric.com).

Many of these programs can be leased rather than purchased, which can affect both the shop's budget and future updates to the software. Several companies offer free trials of their software, so a designer or manager can test drive a few different packages and find the best fit. Virtually every supplier offers comprehensive support packages that are structured in a few different ways: for example, you might have free support for a certain length of time, or a limited number of contacts, and after that a paid support package kicks in. Or all your support and education might be included in

the lease. Check the fine print and compare apples to apples when purchasing. For example, what constitutes a support incident? And does the per-incident price include a follow-up conversation? Most software manufacturers also have user forums where a potential client can visit with current users, or just eavesdrop on chat-rooms prior to purchasing, and witness a good cross-section of the opinions of other woodworkers.

Support access is an issue, too. Can you talk directly and immediately to a real technician, or do you first have to exhaust several FAQ menus and various website pages while your crew stands idly by the silent machine, waiting for an answer?

Some design packages lean more toward cabinet jobs, while others court your creative instincts, so it's important to be very clear when speaking with a salesperson and explain exactly what you expect the machine to help you produce. If you're not quite ready to answer that question yet – if you don't know what kinds of projects the shop will be building in a year – then a short-term lease might be a better move than buying a complete CAD-CAM package.

Some programs run on Windows only, while others run on Mac or Windows. That's not as big an issue as it used to be. Most output can be viewed on either platform, and saved to either Microsoft's 'the cloud' or Apple's iCloud. A lot of CAD operators, especially those who attended a design-based college program, are more familiar with a Mac environment. If they are presented with a software choice that only runs on Windows, their immediate instinct might be to discount that option. However, that could be hasty: the platforms have grown quite similar over time and, though there are still some intuitive differences where one's fingers begin to wander toward the wrong keys, the chasm is not what it used to be. Many programs will allow a user to import work

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done on a Mac and tweak it in Windows. Ask the salesperson, search the forums and check with other designers before saying no.

Or yes.

If a shop belongs to a professional woodworking association, it's a good idea to ask at a monthly meeting what other regional woodshops are using for CAD and CAM: it can be handy to have somebody close by who is familiar with the programs plus local hardwood or sheet stock suppliers, and also the area's outsourcing suppliers and the software that they use. Choosing software can be a bit overwhelming, and asking opinions can help reduce the number of choices.

One of the most comprehensive online resources for a woodshop looking at CNC software or hardware is the Woodshop News resource guide. On the website (woodshopnews.com), click on 'Resource Guide' in the horizontal menu bar near the top of the page and then click on 'CNC Equipment & Services' in the left-hand menu.

Sometimes the initial choice will be made for you, as many machine suppliers bundle software with the purchase of their hardware. That's a good thing: the router manufacturer has already ascertained that the program is going to work well with the equipment, and if there has been some history any glitches will have been addressed. For example, ShopBot currently includes VCarvePro and Autodesk's Fusion 360 with a new tool purchase, and the company also offers options on Vectric's Aspire and Rhino 3D (the latter is a very popular general-purpose 3D modeling program).

CNC HARDWARE

For smaller shops, the first CNC purchase is most likely to be a single-head unit and the first big choice will be whether to invest in a 2.5-axis, 3-axis, 4-axis or 5-axis machine. That's almost entirely based on the type

of work being done. More axes means that the tooling (cutter) can approach the work from more angles. That can be a real boon with complicated profiles and odd shapes. But if all you're doing is releasing rectangular panels from flat sheet stock, it's hard to justify the investment in a setup that is capable of milling three-dimensional cogs. One option for shops on the cusp (milling flat parts now and possibly planning for more complicated work later) is to buy a 3-axis head that is capable of supporting an aggregate head down the road. An aggregate lets the operator install tooling at a different angle other than vertical.

Some CNC centers have a fixed bridge and one or multiple tables that can move parts around. Some have a moving gantry that travels while the work remains stationary. The size of the parts being made has some influence on the configuration you choose. And some tables offer sectional dust collection that can be rearranged for optimum performance.

Give serious thought to tool changers, too. They allow the operator to complete all of the setup before the job starts (usually up to about a dozen different tools). During the milling process, the machine will then automatically select, change and employ the right cutting profile as needed, without shutting down. This can really speed up production. On very small machines, tool changing is done manually, one tool at a time, but some form of automated tool changing is available on a surprising number of entry-level models.

High quality, maintenance-free, brushless servo or stepper motors are used to move the spindle on virtually all routers nowadays, and their action is very smooth. If you're looking at used equipment, check whether its motors can be updated. Have a look at the hold-down mechanisms on various machines, too. There are several after-market mechanical, pneumatic and vacuum-based products that can simplify this, especially for oddly shaped work. **W**



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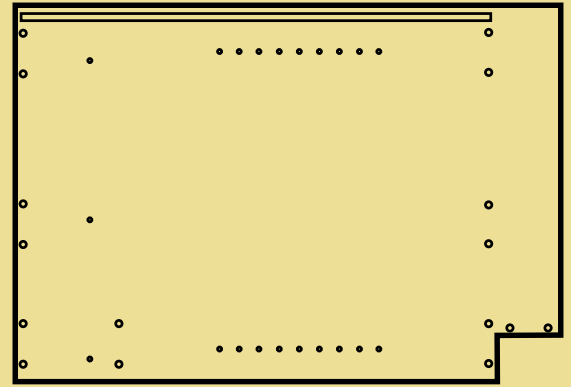


SLEEK AND SIMPLE

Trends in modern kitchens are trending toward conservative tones and design, but that might not last long

By John English

The old catchphrase “minimalism” seems to be making the rounds again. About 30 years ago, it described architecture that exuded Northern European starkness — aluminum and plastic with the remnants of a modified Bauhaus influence. In the mid-1990s, it referred to Corian countertops and appliance garages over light maple or hickory casework. And, a decade ago, minimal meant monotone walls, laminate floors and stainless-steel appliances. Now it’s back. And this time around, minimalism seems to encompass light-colored casework — white, gray, beige and tan — juxtaposed against dark granite tops or perhaps a dramatically black-stained accent species.



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We've come a long way from preformed Formica countertops and red oak cabinets, when minimalism meant nothing more than clutter-free work surfaces. Today's kitchen is more likely to feature flat-paneled, Shaker-style doors and a finish that disguises the wood grain, if it doesn't outright hide it. The distinctive personalities of hardwoods are, well, a bit too retro: the warmth of wood has been usurped by the anti-septic efficiency of high-tech tones.

Spotting consumer trends in any field is tricky because most diminish before they can be recognized. With kitchens and furniture, it's a little easier because the scope of the investment demands some level of permanence: most of us can't afford to redo the cabinets every time tastes change. So the design choices that we make are considered, rather than impulsive. Kitchen buyers tend to take their time researching their options and they make more educated decisions. That plays into every aspect of construction from using green materials to choosing appliances, designing workflow patterns and lighting and, of course, choosing wood finishes.

But while big-ticket items can help us identify consumer trends, the tendencies they reveal are usually a bit behind the curve. Clients are more likely to go with last year's trend — which they have seen for months in magazines and maybe in model homes — than the very latest thing, which they might only glimpse in an online article or hear about briefly from a woodshop owner who has just returned from a trade show in Atlanta or Las Vegas.

Repeat exposure solidifies one's acceptance of new ideas and that's what makes things trend. Take car colors, for example. During the last few years, the most popular automobile colors have been silver, white, black and gray. That high degree of non-committed blandness (which many designers call sophistication) has historically been evident in the years immediately following a deep economic recession. In hard times, people are a little wary of being — or even seeming — a bit too flashy.

Sociologists and market analysts agree that conservative colors (or a lack of color altogether) tend to make people feel that they are being more sensible, cautious and responsible.

"The recession wasn't our fault," they seem to be saying. "And we're certainly not going to tempt fate by standing out from the crowd during the recovery."

Those same bland color choices are true of expensive personal appliances such as cellphones and laptops. There are a lot of black or white smartphones out there and tentative color comes only in inexpensive cases that somehow feel less permanent.

Given the lack of confidence imbued by fresh memories of a deep recession, it's no surprise that so many woodshop clients are trending toward monochrome choices in their casework. The clients who can afford to buy custom cabinets are often the same people who watched in horror as their retirement funds evaporated a few years ago. They still have sophisticated tastes, but they are less likely to indulge a colorful whim than they were before the crash. It might be a while yet before we see lots of color in cars — or kitchens.

In the same manner, traditional wood tones often remind buyers of the recent past. Their memories are not yet seasoned enough to be nostalgic, so they are instinctively ignored. While organic materials will undoubtedly creep back into favor, for now they are less appealing than bright-white with dark contrasts. As the culture regains confidence, design will wander back toward the less-defined, less predictable grains and hues of hardwoods.

Color accents

In high-end kitchens and offices, strong color statements appear in countertops, appliances and personalized accents, rather than on the casework. They are splotches of drama framed within the cleaner lines. There's also a recent warming of attitude toward wallpaper as an ac-

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cent — something that had lost much of its popularity during the last few decades. That was in large part because of more conservative décor choices, but also to better paint options. Now, many color schemes begin with wallpaper and the designer or client then picks up a color from the paper to use as the finish on the cabinets.

When strong tones do appear, they tend to be incorporated as appliance fronts, farmhouse sinks, hanging light fixtures or perhaps brightly painted backsplash tiles set in a field of white. Occasionally a designer turns 180 degrees and delivers very dark cabinets with white or very light counters and glass tile backsplashes. Dark or black cabinet faces and doorframes, combined with bright, white, backlit interiors and glass doors is a trending look, too.

The floor can be a saving grace in these sparse and harsh environments. High-quality laminates or natural wood floors can bring a great deal of warmth to an otherwise sterile room.

Hidden hardware is becoming more and more popular, where handles and pulls are replaced by touch-sensitive options. The absence of traditional hardware increases the impact of that “minimal” design. Some designers are still choosing to use hardware as their splash of color, but most high-end buyers seem to prefer the hidden technology.

Open shelves haven't been widely popular since the 1930s, but they are making a strong comeback of late. Incorporated into casework, they allow a homeowner to customize the room by displaying personal items such as family heirlooms, kitchen collectibles or even small antiques that bring organic shape to an otherwise strong and linear environment. Sometimes the backs of open shelves are lines with solid wood V-grooved (TG&V) paneling that breaks up what would otherwise be a large flat surface — it introduces a low profile, yet still 3-D, visual effect. Grooved panels are generally painted or coated to match the white or off-white scheme because the light background enhances the impact of colorful items placed on the shelves.

Another trend of late seems to be fewer uppers (wall cabinets), so the room feels larger and more airy. The bases are usually finished in light colors and the countertops are dark to accentuate the horizontal properties of the space. When the kitchen is designed prior to construction (rather than as a retrofit), architects like to substitute windows for wall cabinets. Of course, the client is trading valuable storage space for an open plan. That presents an opportunity for woodshop estimators who can then ask the customer to consider extra casework in pantries, basements or even garages. A consumer's choice in wood finishes for those secondary spaces is often based more on budget than aesthetics: don't be surprised if they choose basic paint or foil over a built-up coating.

Other accents

Some designers are using horizontal solid-wood countertops to replace vertical cabinetry as a means of reintroducing organic elements in kitchen design. However, the trend is not toward more butcher-block, but rather toward solid-wood expanses. These are being built a safe distance from sinks and stoves to minimize water and heat exposure.

The trend ties into a return to the ancient function of the kitchen as the heart and soul of a home. After being relegated to formal dining rooms for decades, people are not just gathering in kitchens again, but even working in them at non-culinary tasks. Laptops, phones and tablets allow homeowners to work where they want and, in their homes, that often means gravitating toward the center of conversation. The traditional wooden kitchen tabletop is being incorporated into countertops in part to accommodate this fundamental shift in lifestyle. Bamboo countertops are gaining momentum, too, as they offer a more impervious and stable option than hardwood plank panels.

Gold, bronze and copper accents have seen quite a bit of growth in recent years and these accents work best with a more subdued background palette. Where they appear as stove hoods, counters and lighting, the boxes below them are often white or dark gray. [W](#)

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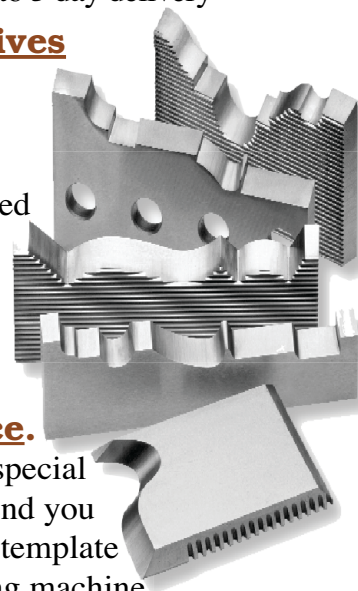
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FINISHING

with GREG WILLAIMS

The devil lives in the data

There have been a lot of changes in the finishing world in the last 10 years and that's where product data sheets come in

Tell the truth now. Have you ever used a new product, perhaps a stain, filler, glaze or sealer, without reading the instructions? Have you assumed that since you've been spraying lacquer for 20 years and you've had no problems for the last 18, that you've got it all figured out and don't need no stinkin' directions? Has that ever backfired?

There have been a lot of changes in the finishing world in the last, well, maybe a hundred or more years, and more rapidly in the last 10. Many of them are clearly beneficial, some are a pain without showing clear improvement in performance and most require some adaptation

of our thinking and our technique.

Unless you are working directly with a manufacturer's rep or a really informed distributor, you won't be advised of many important changes in the product you are buying and, even if you are, that rep or distributor might not be as diligent as you wish. There could be unstated and unwarranted assumptions that you know everything you need to know to profitably use the product.

When I was first working at Mohawk Finishing Products in the early 1980s, I quickly learned that many of the customers' problems with finishing products involved them not reading or

understanding the use instructions on the can and there was little else to inform them.

Today, with all the regulatory mandates concerning what has to be on the can (sometimes in several different languages), there's just not enough room for the details you need. Here's where the product data sheet comes in.

In black and white

Virtually all the manufacturers of professional finishing products make available to their customers and distributors, in hard copy or, increasingly, online, product data sheets, technical data sheets or product use instructions. These contain information such as:

Description of the product, guiding you in determining suitability of the product to your needs; physical properties such as chemical resistance; types of applications and working properties such as pot life and reduction. You don't want to buy five gallons of a product at a great price if it has shelf life of six months and you only need two gallons or a straight lacquer with little moisture resistance for a bathroom.

The PDS gives you that shelf life information, as well as other pros and cons of that product. Sales and marketing personnel might be interested to find that a particular product is recommended for use in kitchens and baths because

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A small finishing shop could be attracted to a ready-to-spray formulation that reduces the need to store more solvents, while a busy custom cabinet shop might need a fast-dry formula to speed production.

Technical characteristics can include gloss measurements, solids content (note difference between solid content by volume and weight), viscosity, recommended film thickness per coat, spreading rate (coverage) dry times to touch, handle, sand, recoat and ship. Also directions for incorporating additives, like reducer, retarder, flow enhancer, bubble breaker, flattening paste, colorants, catalysts or hardeners and limitations on types of additives that are acceptable.

It is almost always safer to use a single manufacturer's product line of topcoats, sealers, reducers and additives than to experiment with different manufacturer's products, risking incompatibility. Many coatings need a certain minimum total dry film build to achieve the desired performance and must not exceed a maximum total dry film thickness in order to avoid cracking and checking.

Specifications can include general prep instructions and typical finishing schedule. These specifications are the result of laboratory testing and field experience with specific schedules designed to perform as desired.

Application directions can be very simple or comprehensive, according to the manufacturer's practices. One very good example includes catalyzation, reduction, temperature, viscosity and humidity parameters, and typical setups for air and fluid pressures and cap and tip setups for conventional spray, airless, air assisted airless and HVLP systems.

Some materials will not work well with some specific spray systems. Improper catalyzation can result in incomplete or slow curing. Over-reduction can cause runs and increase the cost of materials used. Under-reduction can cause poor finish quality.

Keep it handy

Finishing technicians should be very familiar with the PDS for the materials they are using and be alert for changes. The PDS should be stored in a convenient location for quick access. Management should monitor adherence to the approved application protocol and exceptions should be allowed only after thoughtful consideration and testing.

Performance tests on the materials, especially for kitchen and bath fixtures and commercial applications, are becoming more important. Moisture resistance, resistance to household chemicals, cleaners, abrasion, or food items might be required for certifications, such as the AWI or KCMA. Marketing and

sales personnel and literature use this data to promote the proper product for certain uses.

This data on a PDS is seen as more credible than vague hyperbole on a sell sheet and is more likely to be supported by actual test data according to standards such as the American National Standards Institute), the American Society for Testing and Materials) and many others.

Storage temperature, important with solvent base coatings, can be critical with waterbornes; too low a storage temperature can alter the performance of many waterbornes and too high a temperature can shorten the shelf life. While solvent-borne finishes can tolerate cooler temperatures, cold storage risks spraying with coatings below the recommended temperature for application, raising the viscosity of the coating. Applicators are often tempted to try to compen-

sate by adding reducer or retarder, which can slow drying and affect the production schedule, as well as adding the cost of the additive to the operation. Storage on a cold concrete floor, even if the ambient temperature is moderate, can result in lost time and energy in bringing the coating to application temperature.

Your coatings vendor has a vested interest in the quality and economy of the product you produce. He provides the product data sheet as a tool to help you reliably maximize that quality and economy by training technicians, guiding designers and engineers, purchasing and marketing, toward that end. **W**

Greg Williams, formerly senior touchup and finishing instructor for Mohawk Finishing Products, is now a freelance instructor and consultant.

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PRO SHOP

with DAVID GETTS

Being blunt: you owe it to your clients

We all know that person who blindly speaks what's on their mind. Even when what they say is the truth, it can often be offensive if not delivered carefully. It's very important to think before spilling words. How you craft a response or comment in the delivery of this ambiguous "truth" will depend on the situation and subject matter. For instance, everybody in the family might be aware of Aunt Sally's halitosis, but is it best to tell her bluntly or just offer her a breath mint?

Some topics and hidden information, al-

though truthful, should be left unsaid. Do the same rules apply in business? To a degree, yes.

For instance, unless you're in the business of designing and selling clothes, it's probably not a good idea to tell your client that you don't like the way they dress. After all, if you've been hired to build them a piece of furniture or remodel their house, I doubt it would be an appropriate conversation. However, if the subject pertains to something you've been hired to do as a professional, you might very well be within your rights to speak the truth.

The fact of the matter is that we should al-

ways be speaking the truth when it comes to our area of expertise. Just because it could be a bad thing to be blunt about Aunt Sally's breath does not mean it's bad to be honest about what you've been hired to do. You just need to separate the difference between expressing personal feelings and professional opinions. Simply put, being truthful goes far deeper than words alone, it should also be displayed through a form of action.

For example

A good friend of mine is in the process of building a new house. He does not have a background in construction, but he has worked as a tradesman, so the basic understanding of process is within his skill set. He has asked me a couple of times through the years on how to best do a particular phase, but has never really been interested in my advice. I understand.

Throughout my friend's 10-year journey of house building, I've had to bite my tongue a few times because I didn't want my "advice" to get in the way of our relationship. When they reached the window stage, like proud parents they posted social media photos of the first few installed windows. The photos clearly revealed their lack of window installation knowledge. Unlike a correct installation designed to repel exterior moisture,

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the technique used created an open invitation for water to enter the interior space. Living in Seattle, where we get a lot of rain, I've become very diligent about fighting off the natural intrusion of water. It's a common problem caused primarily from a lack of knowledge, laziness or both.

After reading a couple dozen posts from other friends about the awesomeness of the new windows, I quickly realized for me to say something would be like throwing a wet blanket on a homeless person. I didn't want to jeopardize my relationship, but felt it was important enough to educate my friend before finishing the house. That's when the light bulb went off in my head about the importance of exercising "the blunt truth." Situations like this demand that you, the professional, educate your clients. This can take many different forms and should also follow a descriptive path that guides, rather than shaming them.

If you have been hired to do work, you are a professional. However, that does not always guarantee you the right to be blunt. It's possible that the person you're working for knows more than you about the very thing you are doing. If you are truly an expert and have your client's best interest at heart, you don't just have the right, you have the obligation to share with them the truth about what the

results of your work will produce. If, because of your experience, you know how things are going to turn out in the end, should you not educate them about the foreseen results? Would you not want someone you hired to do the same? Of course you would.

Being blunt with the truth is only the first step. It can be the hardest one as well, as in the case of my good friend and his windows. Once you're practiced in the art of being blunt, it does get easier.

The key is not in spouting off your knowledge just for the sake of being right or expressing your opinion. It needs to be directed with a spirit of doing what is best for your client. If you've been hired by someone to do a specialized task, they are relying on you for your expertise. So if they try to lead you in a direction that you know won't work, don't put them down for it with your expansive "knowledge", but rather ease them into the truth with gentleness. Just because it's blunt does not mean it must be offensive.

Using words is only the first half of being blunt. Showing a client the better way with mockups or case studies not only will support your words, but will probably have more meaning to them. Much like offering Aunt Sally a breath mint rather than a mouthful of

hurtful words (albeit truthful), support material is non-confrontational and not personal, which are both important ingredients to guide with shared truths.

The bottom line

Clients only need full disclosure in those things that they are paying you to do. It's your job to educate them through drawings and specifications that should eliminate the need to be forthright about everything. They don't need to know that Bob the disgruntled employee cut all the parts wrong, but they do need the blunt truth that the schedule has changed.

Being blunt does not necessarily mean being honest. I never said not to be honest. I believe you should always be. Being blunt simply means telling clients all they need to know and nothing more. In other words, they could probably care less about what kind of glue you use, they just want you to assure them that your work will hold together.

And that requires you to be blunt about the truth, not open and honest about every detail of the truth. **W**

David Getts is a certified kitchen designer and owner of David Getts Designer Builder Inc. in Seattle.

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THE CUTTING EDGE

with R.W. LEE

Thermwood's software makes magic for shop owners

Of all the cabinet design and manufacturing software available to woodworkers, eCabinet Systems from Thermwood Corp. is certainly unique.

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It can take a job through the design and production phases and help with marketing, too. The presentations features alone make it worthwhile for shops without digital fabrication capabilities.

It can also be used with other design programs. And while it's configured for use with

Thermwood's CNC machines, it is also compatible with ShopBot's machines.

The eCabinet Systems is extremely versatile. While almost all the details about cabinets, designs, materials, hardware and assembly methods are contained within the program from the start, the program allows an almost infinite amount of customization.

The eCabinets software even eliminates paperwork through the use of Excel and macros. With Excel, both words and numbers can be imported and exported between the two programs, making transfer of information efficient and error-free. When Excel cannot be

used to transfer information, a macro can be used. A macro is a small custom program that is a series of written instructions or recorded keystrokes and mouse actions.

But it does take some time to master the program. The best way to start, after downloading the program, is to move your mouse over every icon to learn its function and investigate each icon's drop-down menu. You can also get the 700-page manual, "The Nearly Complete Guide to eCabinet Systems," for \$110. It's not cheap and a rather hefty read, but it's mostly filled with step-by-step diagrams for a more visual learning experience.

Thermwood also offers a one-week class at its facility in Dale, Ind., for the novice and more experienced software user. The cost is \$1,500, which includes lunch and snacks. Class size varies based on that week's interest, but you can't go wrong with one or 10 classmates. Attending is probably the best way to get up and running quickly.

For those who prefer to learn online, Thermwood offers a series of videos for \$25 per month. They cover the basics of using the software and can be watch repeatedly.

Then there are Scott Marshburn's videos on YouTube (search for "eCabinet tips" or "Scott



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Marshburn"). They provide plenty of tips and tricks, particularly useful after you've learned the basics of operating the program.

Program users are very active and supportive on Thermwood's forums, where company employees often chime in with helpful hints and product updates. I've received a lot of friendly advice from the forum that's helped solve problems and increase my shop's productivity.

The design process starts with what Thermwood calls "seed cabinets." These are the basic forms of cabinets that have no style, materials or joinery specified. A user then takes these "seed cabinets" and changes them to reflect his or her style of designing and building cabinetry. Another approach is to download from the libraries of designs provided by Thermwood, including frame and frameless cabinetry, closet cabinetry, and furniture.

The system produces a number of reports that will save any shop owner time and money and help in the selling process. The program generates nearly realistic views of the room and the proposed cabinets. There are third-party programs to produce even better photos of what the finished job will look like.

Thermwood's eCabinet Production Sharing program helps small shops take on complex

or large jobs that they might not otherwise try because of a lack of appropriate equipment, space or employees. For example, this is where you'll find a shop that has CNC machinery for hire.

The sharing program works seamlessly be-

cause eCabinets' coding is consistently interpreted by the software and electronics of a Thermwood CNC's controller. That's not always the case with G-code generated by other design and manufacturing software, which can result in wasted material and time. [W](#)

Kiln-drying instruction offered by N.C State

The Wood Products Extension at North Carolina State University is offering a course on dehumidification drying of lumber Oct. 6-7.

This short course will provide practical knowledge about using dehumidification to produce kiln dried lumber and the scientific background on related wood properties.

It will have value for those kiln operators beginning to operate a dehumidification kiln and those considering the purchase of a dehumidification kiln. Instruction, by university faculty, will be both in the classroom and through hands-on lab exercises using a 1,000 bf laboratory dry kiln equipped with a commercial lumber dehumidification system.

To register, visit www.ncsu-feop.org/biomaterials.

Forest groups start awards program for young researchers

The Technical Association of the Pulp and Paper Industry (TAPPI) and American Forest & Paper Association are accepting U.S. applications for the Blue Sky Young Researchers Innovation Award.

The theme of the inaugural awards program is "Game Changing Technologies for the Forest and Paper Industry — Unfolding the Potentials of Forest, Paper and Wood-based Products."

Winners will have the opportunity to present their projects to a roundtable of global forest and paper industry CEOs in Berlin, Germany in May 2017.

Applicants should be 30 years old or under. For more, visit www.afandpa.org.

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◀◀ **SNX TECHNOLOGIES** now offers its Xcel-Edge Finishing Cleaning Agent XE4 to a 250-count paper-wipe dispenser. The U.S.-made XE4 chemical cleans edgebanded laminate panel surfaces of fingerprints, oil, dirt, dust and other contaminants or washes quickly and without leaving a residue, according to the company. The paper-wipe dispenser with its single use sheets is ideal for wood-working shop use to eliminate the potential mess of liquid bottle spills and essential for cabinetry and closet installers while on location to improve spot cleaning without leaving a heavy industrial scent. For more, visit www.snstechnologies.com.

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- ▲ **MILWAUKEE TOOL** introduced the M18 Fuel Sawzall with One-Key, a smartphone app that lets the user track, manage and customize the tool's performance. Options to customize include adjusting the speed for smoother cut starts, engaging an automatic cut brake to help prevent accidental cuts in materials and optimizing for longer blade life. For more, visit www.milwaukeetool.com.

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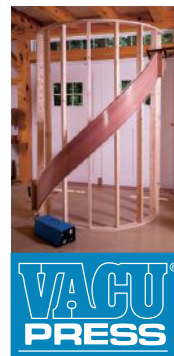


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◀◀ **CASTLE** presents its redesigned assembly table now with 12' workspace that includes two clamping arms. The AT Race 4' x12' table clamping arms glide smoothly on an open beam that allows face frames to extend beyond the top of the table. The open back provides more work area and can handle oversize frames without taking up valuable shop space, according to the company. It has a list price of \$6,225. For more, visit www.castleusa.com.



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◀ **ROCKLER** introduces the Dust Right Bench Sweep, a funnel-shaped receptacle that catches dust, dirt and debris swept off the end of a workbench or table. The bench sweep can be used passively, allowing gravity to pull dust and debris down into a bin, or actively, connected via 2-1/2" hose to a powered dust collection system. The hinged lid acts as a backstop in the passive setup and can be closed to function as a blast gate in the active setup. An optional plastic grid can be left in to filter out large chunks of debris and scrap as well as stray hardware or fasteners. It sells for \$29.99. For more, visit www.rockler.com.

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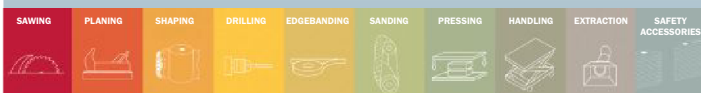
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While Wendell Castle's exhibition is just beginning, an exhibition of Sam Maloof's work has ended in Alta Loma, Calif.

Wendell Castle exhibit on display in upstate New York

By Jennifer Hicks

"Wendell Castle Imagined" opened Aug. 17 at the Rochester Institute of Technology's University Gallery in Rochester, N.Y., and runs through Nov. 11. The exhibit is the first to focus on the studio furniture maker's creative process. Work includes drawings and select sculptural and dimensional work.

The exhibit goes through the process in which Castle creates drawings that capture a concept and form as the initial step in designing sculptural furniture. Using translucent paper through which the former drawing is viewed, he reworks the form until he is satisfied that it is a road map for the journey from paper to three-dimensional form, according to the gallery.

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Maloof's iconic rocker was a crowd pleaser.



Castle's connection with Rochester and RIT stems back to when Harold Brennan, director of the School for American Craftsmen, recruited Castle to join the faculty in 1962. Castle maintained his own studio near the RIT campus during the '60s.

Today, Castle is recognized as the "Father of the Art Furniture Movement," hav-

ing shown his work around the globe and gaining numerous awards for it. His designs are organic, bold and often whimsical. Crafted from hardwoods, plastics, concrete and metals, Castle uses multiple disciplines that include stack lamination, hand-carving techniques, casting forms in bronze, and programming a 6-axis CNC milling robot to

carve. He moved to Scottsville, N.Y., in the '70s where he continues to maintain an active design and production studio.

For more, visit www.rit.edu/fa/gallery.

Sam Maloof exhibit

"Sam Maloof Woodworker: Life, Art, Legacy," closed in August at the Sam and Alfreda Maloof Foundation for Arts and Crafts gallery in Alta Loma, Calif.

Held as part of a year-long celebration of the Maloof Centennial, the exhibition brought together more than 60 objects including examples of Maloof's furniture, drawings, photographs, works of art, documents, video excerpts, ephemera and other items.

Chronicling Maloof's lifelong journey as an artist and craftsman, the exhibit was organized into four themed gallery spaces offering insights into his art, mentors, innovations and lasting impact.

In the course of his career (1949-2009), Maloof produced more than 5,000 furniture works. The exhibition had been in development for almost three years.

For more, visit malooffoundation.org. [W](#)

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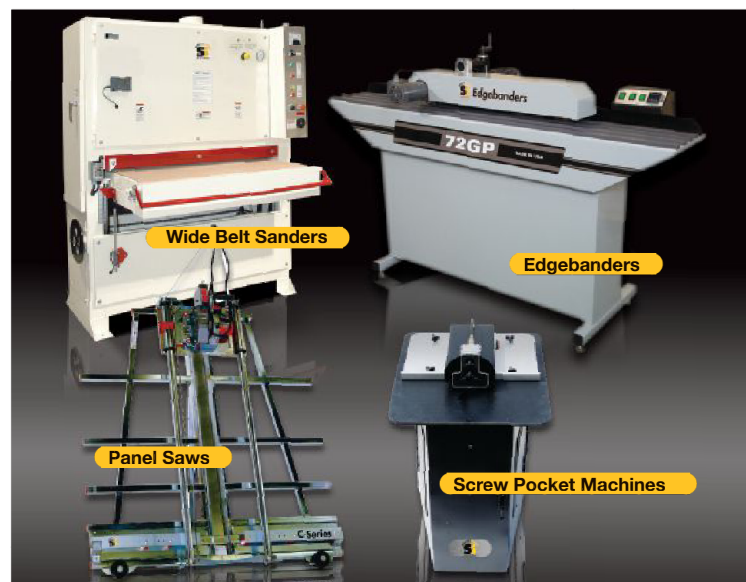


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CALENDAR

Organizations sponsoring meetings, classes or shows of interest to professional or hobbyist woodworkers are invited to submit items to: Calendar, Woodshop News, 10 Bokum Road, Essex, CT 06426; editorial@woodshopnews.com.

Include name, dates, location, description of event and a contact address or telephone number. Calendar items, which should be typed or printed clearly, must be received a minimum of 60 days before the event.

Please note that fees, as listed, might not include materials or shop fees. Check with a specific class for further details.

The complete national calendar of events is continuously updated at www.woodshopnews.com.

— Compiled by Jennifer Hicks

ARIZONA

Now through Oct. 29 — The Vision Gallery in downtown Chandler is hosting the sixth annual Makin Furniture+, an exhibition of handcrafted furniture by Arizona artists. It will feature functional furniture, turnings,

wood carvings, wood bending and more. For information, email curator Steven Makin at makinfurniture@yahoo.com.

Jan. 9-26, 2017 — Fundamentals of Traditional Woodworking 1, a hands-on course that covers fundamental skills. This is the first of a three-class series. Location: Southwest School of Woodworking in Phoenix. www.swcfc.org

CALIFORNIA

Monthly — San Fernando Valley Woodworkers meetings are held on the third Thursday of each month at 7 p.m. at the Balboa Park Sports Complex, Gym Building, at 17015 Burbank Boulevard in Encino. www.sfvw.org

FLORIDA

Ongoing — The Dunedin Fine Art Center is offering six-week woodturning classes at its Cottage Campus taught by AAW professional member Tony Marsh for beginners and intermediate-level participants. Full-day classes are held on Thursdays. Call 727-298-3322 or e-mail education@dfac.org.

Monthly — Woodcrafters Club of Tampa

meets every third Thursday evening at 3809 W. Broad St. in Tampa. For information, visit www.tampawoodcrafters.org.

Jan. 10-12, 2017 — Kitchen & Bath Industry Show, an exhibition of new products, industry trends and manufacturing technologies. Location: Orange County Convention Center in Orlando. For information, visit www.kbis.com

GEORGIA

March 10-12, 2017 — Southern States Woodturning Symposium. Scheduled demonstrators include Stuart Moritmer, Dixie Biggs, Dennis Pallus and Windsor chair maker Greg Pennington. Other events include a gallery, trade show and auction. Location: Clarence Brown Conference Center in Cartersville. www.southernstatessymposium.com

INDIANA

Oct. 7-8 — Woodworking Showcase 2016. Annual woodworking event at the L.L. Johnson Lumber and Johnson's Workbench location in South Bend. Industry experts showcase the latest in woodworking innovations and technology. For information, visit www.theworkbench.com

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MARYLAND

Monthly — The Howard County Woodworkers Guild meets the first Saturdays of the month at the Bain Senior Center at 5470 Ruth Keeton Way, Columbia, Md. from 9 a.m. to 12 p.m. Open to all those working in wood. For information, email Manny Flecker at aaron0641@hotmail.com

MASSACHUSETTS

Oct. 8-10 — Paradise City Arts Festival Northampton. A juried fair hosted in the spring and fall featuring furniture and other handmade items for the home. Location: Three County Fairgrounds, Northampton. www.paradisecityarts.com

Oct. 12-16, Nov. 9-13 — Five-Day Bare Bones of Wood Carving Workshops. Location: Calvo Studio in Gloucester. www.davidcalvo.com

Oct. 28-30 — Two- and three-day wood carving classes. Location: Calvo Studio in Gloucester. www.davidcalvo.com

Oct. 15 — One-day introductory wood carving classes. Location: Calvo Studio in Gloucester. www.davidcalvo.com

MISSOURI

Oct. 23-25 — The 64th annual convention of the Architectural Woodwork Institute. Trade show features educational programs, professional speakers, plant tours and networking opportunities. Location: InterContinental Kansas City. For more, visit www.awinet.org.

NEW YORK

Monthly — Sawdust and Woodchips Woodworking Association meetings are held on the first Wednesday of each month at 6:30 p.m. at the Cold Springs Fire Department in Baldwinville. www.sawdustwoodchips.org

Monthly — Northeast Woodworkers Association meetings held on second Thursday of the month at various locations in Albany area. www.woodworker.org

NORTH CAROLINA

Oct. 26-27 — CMA Regional Event. The Cabinet Makers Association will sponsor the event hosted by Biesse, featuring seminars from industry experts and plant tours of local woodworking shops. Location: Charlotte. www.cabinetmakers.org

RHODE ISLAND

Nov. 4-6 — Fine Furnishings Show featuring furniture and other handcrafted items for the home. Location: Pawtucket Armory Arts Center. www.finefurnishingshows.com

SOUTH DAKOTA

Monthly — The South Dakota Woodworkers Guild meets the last Thursday of every month (except August) at various members' shops. The club has hand tool and woodturning groups. www.sdwoodworker.org

TEXAS

Oct. 27-Dec. 3 — Texas Furniture Makers Show. An annual juried exhibit featuring furniture makers from Texas. Location: Kerr Arts and Cultural Center in Kerrville. www.kaccker-ville.com

WISCONSIN

Oct. 12-15 — Great Lakes Kiln Drying Association fall meeting and kiln drying seminar. The three-day event in Wausau will feature educational presentations and local plant tours. For more, visit www.glkda.org.

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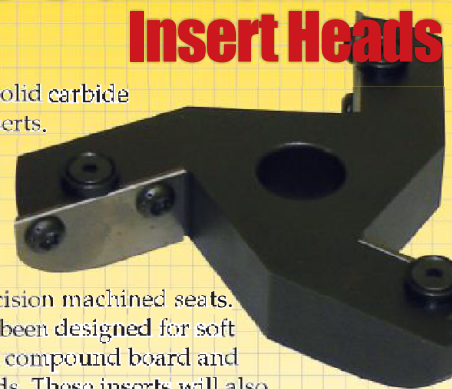
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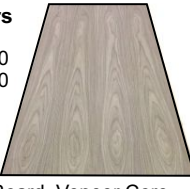
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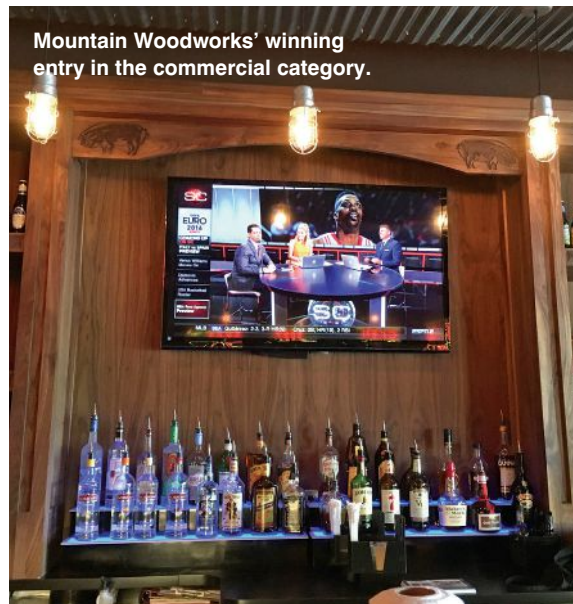
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Wm. H. Fry Construction Co. won first place in the residential kitchen category for a custom kitchen made with cherry and maple PureBond hardwood plywood.



Mountain Woodworks' winning entry in the commercial category.

Top PureBond fabricators recognized

Columbia Forest Products announced the winners of its fifth annual PureBond Quality Awards competition during the IWF show in August. The competition recognizes exceptional design and craftsmanship using PureBond hardwood plywood materials to create interior spaces and finished goods that are visually distinctive as well as functionally impressive.

The PureBond Fabricator Network members competed in three categories based on design distinctiveness and practical application. Contestants competed for prizes in each of three categories including residential kitchen, residential other, and commercial. Jurors selected eight projects.

"The PQA competition is a way for us to recognize the exceptional work being produced by our PureBond Fabricator Network members. We've forged strong partnerships with woodshops and craftspeople all across North America who build quality custom installations and furnishings for residential and commercial clients using our formaldehyde-free, healthy-for-you PureBond brand of hardwood plywood," Columbia Forest Products marketing director Todd Vogelsinger says.

Winners were Wm. H. Fry Construction Co. in Cupertino, Calif. (residential kitchen); Bright Wood Works of St. Petersburg, Fla. (residential other) and Mountain Woodworks of Big Pool, Md. (commercial).

Judges were C. T. "Kip" Howlett Jr., president of the Hardwood Plywood & Veneer Association; Ang Schramm, a 45-year veteran of the building materials industry; Katherine Swank, chairwoman of the Department of Interior Design & Merchandising in the College of Health & Human Performance at East Carolina University; and Chip Wade, a woodworking specialist and television host.

PureBond was developed in conjunction with scientists at Oregon State University and has been in production since 2005. Since then, more than 80 million panels have been shipped. For more, visit www.columbiaforestproducts.com. **W**



The winning bath project by Bright Wood Works.

60 Grit

Rough humor by Steve Spiro





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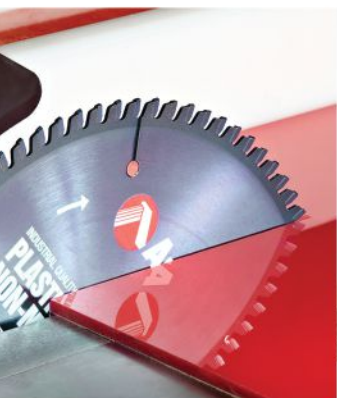
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