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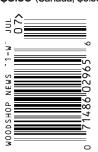
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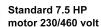


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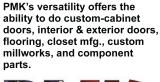
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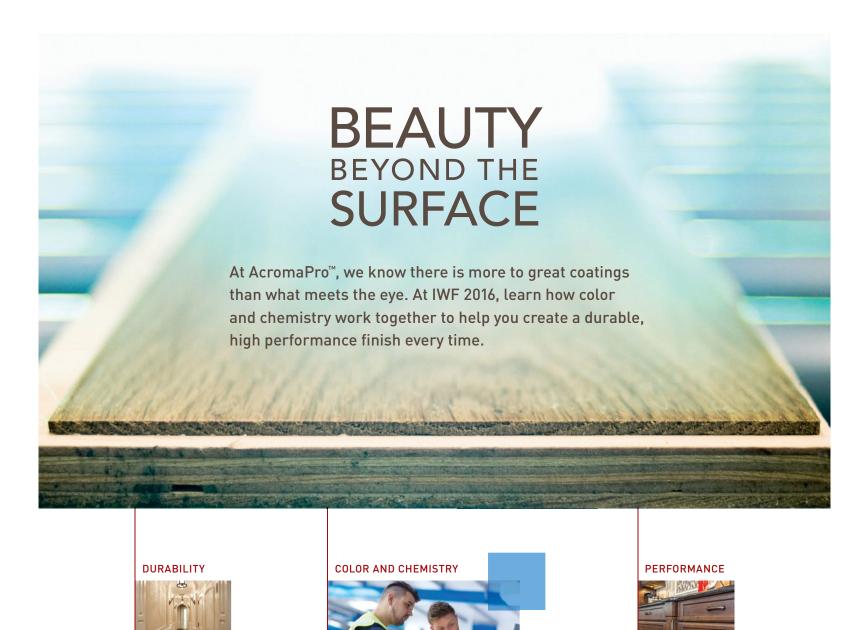


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ASSOCIATE PUBLISHER **RORY BEGLIN** $860\text{-}767\text{-}3200\,EXT.\,242; rory@woodshopnews.com$

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Woodshop News, (ISSN 0894-5403, U.S.P.S. 000-966),
Vol. XXX, No. 8, is published monthly by Cruz Bay Publishing, Inc., an Active Interest Media company. The known office of publication is: 10 Bokum Road, Essex, CT 06426, \$21.95 for one year; \$35.95 for two years (Canadian subscribers add \$12 per year for postage; U.S. funds, foreign subscribers add \$14 per year for postage; U.S. funds). Periodicals postage paid at Essex, CT, and additional mailing offices. **Postmaster:** Send address changes to WOODSHOP NEWS, PO Box 433212, Palm Coast, FL 32143-3212. Printed in the U.S.A.



TAKING STOCK

with TOD RIGGIO

WMIA scholarship money helps students, industry

he Woodworking Machinery Industry Association awarded \$36,500 in scholarship money in May for students pursuing woodworking education. About half of the money is going to 12 college students selected by the trade group's educational foundation board of trustees.

"There were some difficult decisions this year," WMIA president Larry Hoffer says. "We received a record number of scholarship applications, including 14 female students, nine of whom received awards."

"In assessing the scholarship award applicants, the WMIA education committee uses a blend of criteria to search for the winners," adds committee chairman Iason Howell, who is also president of Weinig/Holz-Her. "Ranging from a student's own expression of their passion to have a career in the wood industry, to their professor's and employer's references and opinions of the same, to their academic success, the evaluation is thorough and oriented to benefit the student winners and our industry alike."

This year, the WMIA started a pilot program for schools to receive scholarship funds. Pittsburg State (Kan.) University, Hennepin Technical College in Minnesota and New England School of Architectural Woodworking in Massachusetts were eligible, receiving a total of \$18,000.

Canada has a new voluntary standard for formaldehyde emissions from composite wood products. But an analysis by Brian Sause, director of the Hardwood Plywood and Veneer Association's laboratories isn't very favorable.

"The Canadian Standards Association began the standard-writing process with an extensive volatile organic chemical standard and ended up on just formaldehyde," he says. "Although their stated intent was to harmonize with the existing California Air Resource Board's Airborne Toxic Control Measures on all sections relating to responsibilities of manufacturers and third-party certifiers, the CSA's standard falls short on how it is to be admin-

"Most surprisingly, the standard allows users to label product with either 'complies with CAN/CSA-O160' or 'certified to CAN/ CSA O160' depending on the level of participation in accredited third-party programs. This essentially allows self-certification and labeling within this standard through the 'complies with' statement as an alternative to third-party certification. No guidance is given on how a 'complies with' program would be monitored other than use of an accredited testing laboratory and specimen chain of custody.'

A shortage of workers is threatening growth of the construction industry, according to Associated General Contractors of America.

Construction employment dipped for the second consecutive month in May, but rising industry pay and plunging unemployment suggests contractors would be hiring more workers if they were available, according to analysis by the trade group.

"Although construction employment slipped in April and May, the industry has added workers in the past year at the double the rate of the overall economy," group chief economist Ken Simonson said in a statement. "Average pay in construction is rising faster than in the rest of the private sector and the number of unemployed construction workers was at the lowest May level in 16 years. These facts support what contractors tell us: they have plenty of work, but are struggling to find qualified workers to hire."

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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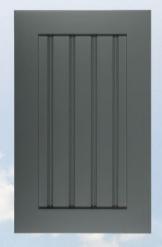
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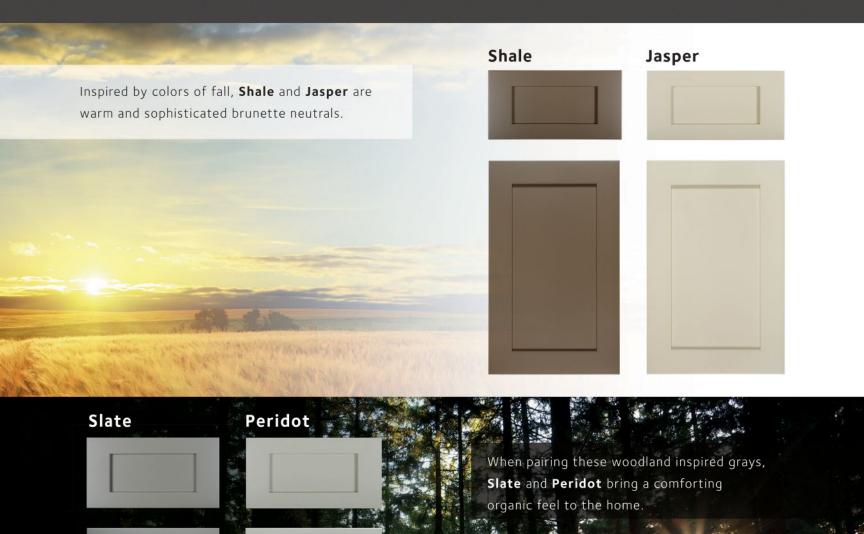




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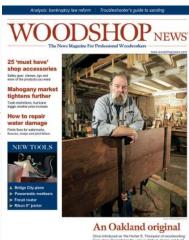
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FROM THE ARCHIVES

LAST VISITED IN 2006—





Garry Knox Bennett still amazes a decade later

By Tod Riggio

ur late senior writer Brian Caldwell profiled Garry Knox Bennett ("The Amazing Mr. Bennett") for the January 2006 issue after flying to Oakland, Calif., to spend time with the studio furniture icon. They bonded afterwards watching "Antique Roadshow."

In the opening few paragraphs, Caldwell wrote:

"In the world of studio furniture makers, Garry Knox Bennett is truly one-of-a-kind. The word 'unique" is often overused, but in the case of Bennett, it seems so appropriate. Instead of using drawings, he has the remarkable ability to design furniture in a wildly imaginative head. He builds on the fly, incorporating an array of materials and objects.

"I was once introduced in Berea, Ky., as the Hunter S. Thompson of woodworking," Ben-



The furniture maker in his Oakland, Calif., shop.

nett said. "Goddamn, I always loved that. I just thought that was terrific. It's just mouth-wise."

"At 6'9", he has an imposing presence, but he turns out to be quite the charming character."

In another passage, Caldwell paints the portrait of a successful studio furniture maker from another era:

"There are four decisions Bennett has made that he points to as being pivotal in shaping his life. The first was marrying his wife, Sylvia; the second was starting up a very profitable roach clip business in the 1960s; third, buying property in Oakland and exclusive Alameda; and fourth, pounding a 16-penny nail into his "Nail Cabinet."

"The cabinet was created for the Contemporary Artisans Gallery in San Francisco and Bennett caused quite a stir by driving a bent nail into the upper door and leaving a few hammer marks on the polished surface.

"Man, that nail cabinet just put me on the map," he said with a little shake of his head. "It got into some publications that weren't necessarily craft publications. It was the most sophisticated piece of furniture I have made to date. That was more time then I ever spent on anything."

"There has been much speculation over the years as to why Bennett pounded the nail into the 1979 piece made of padauk, glass, copper and lamp parts. Many believe it was a repudiation of decades of traditional furniture made by "the woodies."

Bennett said, "It was premeditated only to the degree that I knew I couldn't drive that nail in that padauk with it in the cabinet. Well, maybe I should have and split that door out. But that wasn't quite the intention. It was just something I felt I needed to do."

We had some leftover quotes for a sidebar, but it wasn't PG material. So I wrote this introduction:

"Staff writer Brian Caldwell spent a memorable day interviewing Garry Knox Bennett at his home and shop in Oakland, Calif. Unfortunately, not everything Bennett said is printable. But for your enjoyment, here's what we were able to salvage."

To read the entire feature, visit www.wood-shopnews.com and search for 'Bennett.'



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NEWS DESK

IWF 2016: Exhibitor wait list sign of 'pent-up demand'

By Jennifer Hicks

has a good problem on its hands making room for more exhibitors. More than 1,000 exhibitors have contracted for space, creating a wait list in the machinery section, while space was added to the supplier section. At more than 500,000 sq. ft., IWF 2016 is the already the biggest fair since 2008.

he International Woodworking Fair



IWF will take place Aug. 24-27 at the Georgia World Congress Center in Atlanta.

IWF 2016 chairman Tom Onsrud is also expecting a large turnout from attendees, buoyed by a strong economy and interest in new technologies.

"There is a pent-up demand for technology, knowledge, design and production efficiency to match the manufacturing industry capacity and customization needs to supply a global consumer economy," Onsrud says.

In May, attendee registration was 25 percent ahead of the pace set in 2014. Hotel bookings and interest in the IWF educational sessions have also increased, according to producers.



The fair will feature plenty of CNC machinery, power tools, saws and finishing products, Onsrud says. It will also feature new sections dedicated to cabinets, closets and storage and wood flooring.

The educational program features 59 sessions and six symposiums, focusing on finishing, veneering, closets, composites, wood flooring and countertops.

This is also the show's 50th anniversary of the Challengers Distinguished Achievement Awards, presented to multiple exhibitors for innovative technology. There are 21 finalists and winners will be announced on opening day.

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Transitional design tops new trends survey

By Jennifer Hicks

ransitional — described as a marriage between traditional and contemporary — is the top style in kitchen design, according to the 2016 Design Trends Survey from the National Kitchen & Bath Association.

Traditional and contemporary finished second and third in the annual survey, while industrial and farmhouse were also recognized as the most popular design choices by NKBA members.

Neutral colors — including whites, offwhites, gray and beige — are most often specified, according to the survey results. Most of today's kitchens feature two or more colors, including the cabinets. And most customers choose two countertop materials — one for under cabinets and a second for an island.

Strong demand continues for outdoor kitchens. About half of respondents said they completed an outdoor kitchen project in 2015 and expect to do another one this year.

The most popular kitchen features include pullout shelves, garbage disposals, built-in coffee stations and wet bars. A wine fridge was considered a must by almost three-quarters of the respondents.

An emerging trend is to include a dedicated space for pets, including a feeding station, area for a crate and storage for food.

Wood flooring, charging stations and pocket doors also received a significant number of votes.

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WOOD MARKETS



Red oak enjoys home-court edge

By Jennifer Hicks

he market for Northern red oak (Quercus rubra), a traditional choice for furniture, millwork, trim and flooring, is as strong as ever, according to most hardwood dealers interviewed by Woodshop News.

Miles Gilmer of Gilmer Wood Co. in Portland, Ore., says domestic oak sales are better than they were years ago.

"I still bring in English brown oak and a bit of European oak, but I find the native species tend to be selling better because that's kind of what the shift is. People would rather buy native species than imported."

Steve Jackel of West Coast Woods in Watsonville, Calif., says white and red oaks have both been selling well.

"There's not really an oak industry on the West Coast for anything other than pallets. We sell Eastern white and red oak and they're steady. Rift white oak is really the only real problem because it's in tight supply. Our customers use the Eastern oaks mostly for cabinetry and flooring and wall panelling, trim and baseboards to match flooring. The usual stuff; nothing dramatic," Jackel says.

Bruce Stevens of Highland Hardwoods, a retailer and wholesaler in Brentwood, N.H., says his customers favor Northern red oak for its pinkish color.

"It grows plentifully from western Massachusetts up through Vermont. That's the big geographical source of Northern red oak. Southern oak has a browner color to it and the growth rings are much larger and it's just not preferred for any official business for the most part up here," Stevens says.

"Red oak's been a staple in New England for a century because it's an indigenous species of the area here. It isn't in as much demand presently for the flooring trade as it was four to five years ago. Now people are looking for hickory and white oak for that. But we still sell red oak for cabinetry."

Terry Baird of Baird Brothers Fine Hardwoods in Canfield, Ohio, confirms red oak is selling, but isn't convinced the trend will last.

"As far as sales go, it's a little slow for us, but red oak sales in general have been steady. We sell a lot more red oak flooring than white, but white's been doing a little better lately. The supply seems to be increasing in a general sense. I get a lot more calls on people trying to sell it than buy it," Baird says.

Nationally, red oak wholesales for about 1.80/mbf (4/4 FAS) and retails for about 3.20/bf.

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Until now, adjusting an old-fashioned spring-lift murphy bed that was "too heavy"

or "too light" meant taking the murphy bed apart in order to add or remove one or more bulky, hazardous metal springs. (Heavy gloves and eye protection were a must.) It's one of the many reasons why professional murphy bed manufacturers and their customers, as well as jet airplane and luxury automobile manufacturers, prefer state-of-the-art gas springs instead of metal springs.

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IUULS TECHNIQUES

DeWalt's cordless planer features brushless motor

By Jennifer Hicks

eWalt has a new 20-volt cordless planer with a brushless motor, useful for scribing cabinets and countertops, chamfering handrails, shaping and tapering trim and more, according to the company.

Powered by DeWalt's 20-volt Max battery platform, the planer has the obvious advantage of no cord.

"Cords are always getting in the way," product manager Jeff Beck says. "A lot of the applications we see in the field involve guys sizing down doors to get them to fit within the jam line. Typically when they're doing this they're taking the door outside and stretching an extension cord outside or, if they do it



while it's fastened, they still have the cord getting in their way."

The brushless motor helps the planer maintain speed under load. It offers a width capacity of 3-1/4" and adjustments in 3/32" increments.

"This has similar power to what you get out of an electric unit. What we wanted to do was make sure the user does not notice any difference in power," Beck says

The planer weighs 6.7 lbs. and is well-balanced for horizontal and vertical use, according to DeWalt.

Other features include a twin blade drum and carbide reversible knives.

The planer sells for under \$200 with an edge guide.

For information, visit www.dewalt.com.

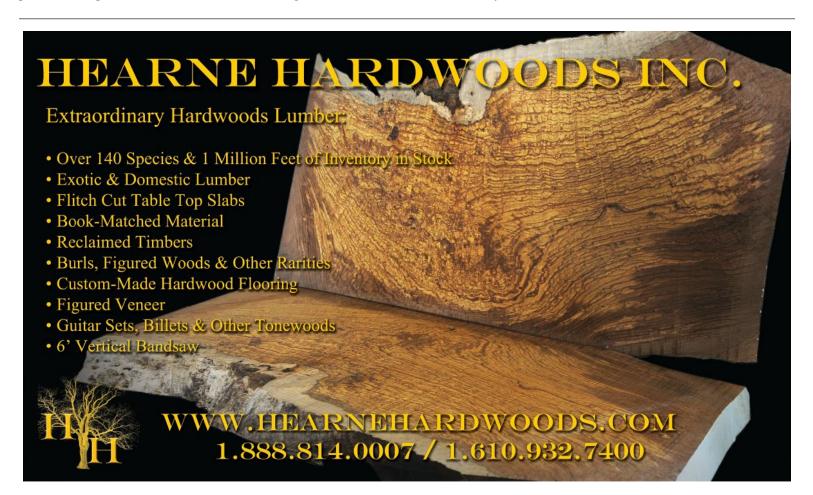








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50 Hill Street, # 509 Southampton, NY 11968 1-800-868-9663 Fax: 631-537-2396 Virutex@aol.com TigerStop calipers help

boost accuracy

By Jennifer Hicks

igerStop introduced the TigerSPC (Statistical Process Control) calipers to simplify quality control for parts as long as 16'.

The calipers, available in lengths of 8' and 16', are accurate within +/- .006" and should be used early and often during sawing, drilling, boring and other operations, according to the company.



"Customers have been requesting a way to check their parts accurately. What we found is you cannot inspect the quality of a product at





The TigerSPC (top), and the swivel block and standard snap-in jaw attachments.

the end of the manufacturing process. It's got to be done throughout the process," TigerStop regional manager Scott Brode says.

"By using this type of product throughout the manufacturing process, you can tighten accuracy and reduce your reject rate because defects are caught sooner rather than later."

Attachments include snap-in jaws for endto-end measurements, miter jaws to measure the long side of miter cuts, mullion half-lap jaw attachment to measure the center to center distance between two half-lap joints and swivel block attachment to measure from hole center to hole center.

Changing the jaws takes a few seconds and there's no loss of calibration, according to TigerStop.

TigerSPC is available with an optional TigerStop table system to produce a working length of 4' to 16'. Optional TigerSPC software logs measurement data for export to statistical process control programs.

For information, visit www.tigerstop.com.







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ers, and home hobbyists can profit through Safety Speed's inexpensive Panel Pro vertical panel saw. This less expensive model allows one person to cut large sheets safely and accurately in a small space without taking a big chunk out of their budget. For more information visit www.panelpro.com.

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Jet Smart panel-processor produces precise results

By Jennifer Hicks

The new Jet Smart automatic boring and grooving machine from Casadei Busellato is designed for shops of all sizes, capable of drilling multiple horizontal and vertical holes, routing with automatic tool changes and sawing in the long axis, according to the company.

Product manager Arthur Ross says the Jet Smart is ideal for general drilling, sawing and routing applications where low lot sizes are being produced.

The panel-processing machine is about 7′ wide and 14′ long and requires minimal operation. Once the edge of the panel is in place, the machine will pick up the part without assistance so the operator is free to find the next part.

The Jet Smart can finish cut to size or receive parts already banded. The machine will read the front edge and then pull the part into the machine by bottom edge-clamping units and hold it down with a pressure beam.

"The Busellato Jet Smart [automatically] adjusts the top pressure beam when the width changes from one part to the next and for this we allow just three seconds between parts for setup time," Ross says.

"Small shops may find the most benefit in that the squaring parts is always a challenge with a table saw or even older sliding table panel saws. Some craftsmen actually cut each part two and three times to ensure squareness. By cutting panels oversize, the Jet Smart can trim both ends and the top for precision."

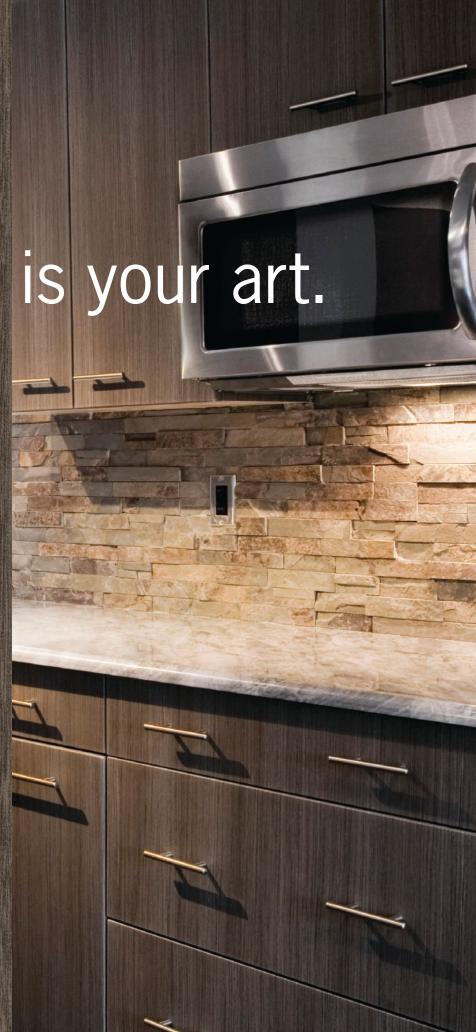
The Jet Smart sells for \$69,900, which includes delivery, installation and six days of training. Additional software and bar code scanning options are available.

For more information, visit www.casadei-busellato.com.

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Virutex presents new panel joining system

By Jennifer Hicks

irutex offers a new panel joining system that uses fixed plastic connectors rather than biscuits.

"This is for people who make knock-down furniture and it's also for cabinet-makers," Virutex president Alex Akavan says. "When you make cabinets, the boxes are big and you have to put them on top of each other to ship. Here you don't use glue like you do with a biscuit joiner. So you can assemble and



disassemble items to save on freight and eliminate damage during shipping."

Akavan adds the system is cleaner and quicker than biscuit joinery because there's no glue involved.

The system can be integrated with CNC production. Virutex also sells a hand-held router, model AB181, specifically designed with index points for installing coordinating connectors on each panel.

The connectors, sold in boxes of 100 or 1,000, cost about \$0.78 per set. The AB181 router sells for \$680.

For information, visit www.virutex.com.



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Keeping in mind that color and style will set the scene for any kitchen and bath design, Elias Woodwork also continues to ensure the quality of colors currently offered while developing new colors in an effort to keep up with ever changing trends in the industry. Sample doors and color chains are available for minimal cost.

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priced. All this coupled with employees willing to go above and beyond to ensure quality is what makes them proud to be a manufacturing supplier.

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FINISHING

with BOB FLEXNER

Helpful hints for applying water-based finishes

witching from solvent- to water-based finishes has some advantages, primarily reduced odor and fire hazard, as well as reduced harm to the environment. But the switch can be difficult because the application is different.

It's true that pulling the trigger on the spray gun and covering the surface while keeping the gun moving doesn't change much, but there are differences that cause enough problems to discourage switching unless forced to do so by the changing VOC laws.

Here are some of the problems and how to deal with them:

First, before you even begin spraying, you should be more diligent than with lacquers to strain the finish. Solid pieces of lacquer falling into the finish from the lip of the can dissolve back into the finish. But this doesn't happen with water-based finishes. Also, water-based finishes can sometimes coagulate a little in the can. Always strain water-based finishes.

ATOMIZING

Water-based finishes don't atomize as easily as lacquers, especially if the finish is cold. The best spray guns to use are airless and air-assisted airless, especially the latter. If you use a turbine HVLP, the more stages the turbine has the better. Three is minimum.

You can thin water-based finishes with water to improve atomization, but the thinning is different than with lacquer. Very little water makes a much bigger difference than lacquer thinner in lacquer. So try 5 percent or so at first and see how this works.

The problem with water is that it has a high surface tension, so it might not improve flow-out at all. It also might increase grain raising. So a better reducer is usually a glycol-ether solvent. The one commonly available is ethylene glycol monobutyl ether. It is sold under a number of names, including EB, butyl cellosolve and 2-butoxyethanol. Take a look at the ingredients on the can or at the MSDS to be sure this is what you're getting.

Adding EB directly to the finish is usually a bad idea, however, because the solvent shocks the finish into crystallizing. It's better to mix the solvent half-and-half with water, then add it. This usually works well and creates better flow-out. Keep the amount you add very small, however, until you figure out what works best with your specific brand of finish.

Also, keep in mind that temperature affects water-based finishes more than it does solvent finishes. For every 10-degree drop in temperature the viscosity increases by 10 percent. You might find that the best solution for your problems is just to raise the temperature in your spray area.

Other tricks you can use are to store your water-based finishes in a heated office overnight if you lower the shop temperature and to use heating pads, bucket heaters or inline material heaters.

BETTER PREP

I see instructions to sand to a finer grit (280–400) to reduce grain raising. I haven't experienced this and it's a lot of work to sand to that fine a grit.

I think it's more important to pay close attention to sanding the first coat smooth before applying the second. Once the first coat is smooth to the touch, the next coat of any finish will go on smooth as long as the finish is atomized well. It takes more work to get the first coat of water-based finish smooth, however, than it takes with solvent finishes.

Because of the grain-raising problem, some manufacturers promote their water-based stains and finishes for reduced grain raising. Be doubtful.

DRYING

Though improvements are being made, water-based finishes dry slower than lacquers. Moreover, you don't have solvents you can add to speed the drying as you do with lacquer. Adding acetone to a water-based finish only causes problems.

Visit booth





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SENCO has been widely known for its steel fasteners since 1947. The Company's philosophy has always been to listen and learn from customers, and constantly develop new products that enable professionals to get the best results without sacrificing efficiency or safety.

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The new line of composite fasteners is ideal for spoiler boards in CNC operations and joining smaller and larger boards for machining as they won't chip or damage bits, blades or abrasives.

Composite fasteners eliminate the need to glue, clamp or construct complicated jigs for set-up. They are also easy to sand down with the wood and accept stain unlike metal fasteners. This reduces the need to putty, saving time and providing a better color match making the appearance seamless.





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- 20 Gauge Staples (3 sizes)
- 1/2" crown x 1/4" length
- 1/2" crown x 3/8" length
- 1/2" crown x 9/16" length





So the best way to speed the drying of water-based finishes, especially in humid conditions, is with airflow or heat. Airflow can be from the draw of the spray booth or from fans. Be sure the air being circulated is clean or you'll introduce debris into the finish.

You can also use lamps to speed the drying or, of course, warm the air in the spray area.

CLEANING

One of the biggest differences switching from a lacquer to water-based finish is the increased difficulty of cleaning spray guns and equipment. Simply running water, warm water or soapy water through the gun and other equipment doesn't work well in my experience, especially with spray guns. There's

almost always some finish left in recesses and it will harden there and be difficult to remove.

There are three possible solutions to this: The first is to disassemble the spray gun at the end of each spraying session and scrub the finish from the parts with a stiff brush.

The second is to use a mixture of water and glycol-ether solvent to spray through the gun and/or to scrub the disassembled parts.

The third is to use a special gun-cleaning solvent supplied by the finish or spray-gun manufacturer.

Another difference from lacquer is that water-based finish tends to collect on the fluid nozzle right at the tip of the needle. This happens because the water-based finish isn't being redissolved by the thinner. You need to be aware of this buildup and clean it off

whenever it occurs or it could be blown onto the finish surface and leave a bump.

STAINING

Staining is more complicated with water-based finishes than with solvent finishes. If you use a water-based stain, you experience much faster drying than with oil stains. You might need two people — one applying and the other wiping off — to be successful on large surfaces.

Using an oil stain can present a bonding problem with the finish. You can let the stain dry longer or use heat to get it to dry faster. Some water-based finishes bond well over some oil stains depending on the formulations of each. Check with your supplier, then test well.

You can also use a water-based spray/no-wipe stain. The effect you get is different because of reduced pore definition, but it might work with your objectives. Spray/no-wipe stains (also called spray-to-color stains) are highly thinned so you don't get striping. They are meant to be sprayed in three or four passes.

TINT THE FINISH

The final tip concerns dealing with the cold appearance of most water-based finishes when compared to lacquers. Often a stain underneath takes care of this, but if you aren't staining, you might want to add a little water-soluble dye to the finish to warm it up.

Bob Flexner is author of "Understanding Wood Finishing" and "Wood Finishing 101."

Distributor groups extend partnership

The North American Association of Floor Covering Distributors and North American Building Material Distribution Association extended their partnership to host a combined annual convention, scheduled for Nov. 1-3, 2016 at the Hyatt Regency in Chicago.

"The joint event for NAFCD and NBMDA has proven to be successfully based on the growth we see each year and we are confident that 2016 will be no different," NAFCD and NBMDA executive director Kevin Gammonley said in a statement.

"The annual convention continues to bring together top distributors and manufacturers to establish new relationships, enhance their business strategy and access industry education, information and trends."

Attendee registration will open in July. For information, visit www.distributor-convention.org.



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- Max. depth of cut: 1/8" Max. rabbeting depth: 1/2"
- Cuts per minute: 21,400
- Deluxe cast-iron fence size: 36" L x 11/4" W x 5" H
- · Approx. shipping weight: 567 lbs.

WITH 4-KNIFE CUTTERHEAD

G0490W \$102500

WITH SPIRAL CUTTERHEAD

G0490XW

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PARALLELOGRAM TARI F **ADJUSTMENT** SYSTEM!



10" HYBRID TABLE SAW WITH RIVING KNIFE

- Motor: 2 HP, 110V/220V, prewired to 220V, single-phase, 16A/8A
- Precision-ground cast iron table with wings: 40" W x 27" D Arbor: 5/8"
- Arbor speed: 3850 RPM
- Capacity: 31/8" @ 90°, 23/16" @ 45°
- Rip capacity: 30" R, 12" L
- Approx. shipping weight: 416 lbs.



G0715P \$85000 SALE \$82500

10" CABINET TABLE SAWS

- Motor: 3 HP, 220V, single-phase, 12.8A
- Precision-ground cast iron table with extension: (G0690) 40" x 27"; (G0691) 743/4" x 27"
- Table height: 34" Max. dado width: 13/16"
- Arbor: 5/8" Arbor speed: 4300 RPM
- Capacity: 3½" @ 90°, 2½" @ 45°
 Max. rip capacity: 12" L, 29½" R (G0690); 12" L, 50" R (G0691)
- Approx. shipping weight: (G0690) 530 lbs; (G0691) 557 lbs.



G0691 \$1625° SALE \$1550°



MADE IN AN ISO

9001 FACTORY!

AUTOMATIC EDGEBANDER

- Required power supply: 30A, 220V, single-phase, 60 Hz
 Feed motor: 3/4 HP Glue and edge motor: 1/3 HP
- End trim motor: 1/4 HP
- . Flush trim motor: 3/4 HP
- · Buffing motor: 1/4 HP
- Heating element: 1455W Table size: 101/2" W x 783/4" L
- Min. panel dimensions: 43/4" W x 91/2" L
- Compressed air required: 100 PSI
- Glue pot capacity: 34 oz.
- Roller width: 33/4" Roller diameter: 13/16 Edgebanding coil capacity: 311/2"
- · Approx. shipping weight: 875 lbs.

G0774 \$11,500⁰⁰ SALE \$9695⁰⁰



THE ULTIMATE 8" JOINTER WITH EXCLUSIVE DIGITAL HEIGHT READOUT

· Motor: 3 HP, 220V, single-phase, TEFC, 3450 RPM, 15A

- Total table size: 81/8" x 821/2"
- Infeed table size: 81/8" x 42' Cutterhead: 4-row spiral with 36
- indexable, solid-carbide inserts Cutterhead speed: 7000 RPM
- Cutterhead diameter: 3½6
- · Floor to table height: 31" Fence stops: 45°, 90°, & 135°
- Deluxe cast-iron fence size:
- 38" long x 11/2" wide x 43/4" high Approx. shipping weight: 796 lbs.



G0495X \$2195^m SALE \$2150⁰⁰

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12" X 83½" PARALLELOGRAM JOINTER

- Motor: 3 HP, 230V, single-phase, 15A
- Precision-ground cast iron table size: 123/4" x 831/2"
- Floor to table height: 3111/16"
- Max. depth of cut: 1/8
- Rabbeting capacity: 3/4
- Cutterhead dia.: 3%
- Number of carbide inserts: 60, 14 x 14 x 2mm
- Cuts per minute: 19,800
- Cutterhead speed: 4300 RPM
- Fence stops at 45°, 90°, and 135°
- Footprint: 84" x 33"
- Approx. shipping weight: 1056 lbs.

WITH SPIRAL CUTTERHEAD

G0609X \$279500 SALE \$265000

PRECISION GROLIND **CAST IRON**

INFEED/

OUTFEED



20" PLANERS

- Motor: 5 HP, 240V, single-phase, 20A
- Table size: 20" x 253/4" (21" x 561/2" w/ wings)
- Max. cutting size: 20" W x 1/8" D
- Min. stock length: 71/2
- Feed rate: 16 & 20 FPM
- Number of carbide inserts: 96 (G0454ZW)
- Number of knives: 4 HSS, 20" x 1" x 1/8" (G0454W)
- Cutterhead speed: 5000 RPM
- Overall size: 44" W x 561/2" D x 431/2" H
- Approx. shipping weight: 877 lbs.

BUILT-IN MOBILE BASE

\$179500 SALE \$172500 G0454W WITH SPIRAL CUTTERHEAD

G0454ZW \$262500

SALE \$249500







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PUSH

BLOCKS

15" PLANERS

- Motor: 3 HP, 240V, single-phase, 15A
- Max. cutting size: 15" W x 1/8" D
- Max. stock thickness: 8"
- Min. stock thickness: 3/16
- Min. stock length: 8" (G0453W), 6" (G0453ZW)
- Feed rate: 16 & 20 FPM
- Cutterhead dia.: 3'
- Cutterhead speed: 5000 RPM
- Table size: 413/4" x 16"
- Overall size: 38" W x 42" D x 421/2" H
- · Approx. shipping weight: 602 lbs.

SALE \$112500 \$119500 G0453W

WITH SPIRAL CUTTERHEAD

· Feed motor: 1 HP

24" EXTREME-DUTY PLANERS

Cutterhead motor: 10 HP, 220V/440V*, 3-phase

G0453ZW \$189560 SALE \$179500



SERIES.

MADE IN ISO 9001 FACTORY

 Table elevation motor: 1/2 HP Precision-ground cast iron table size: 24" x 35½"

- Max. cutting size: 24" W x 5/16" D x 9" H
- Feed rate: 20–40 FPM Number of inserts: 162 (G9961) Number of knives: 4 HSS, 241/8" x 13/16" x 1/8" (G9741)
- · Cutterhead speed: 5000 RPM · Cutterhead dia.: 4%
- Overall size: 42%" W x 36" D x 58" H
- · Approx. shipping weight: 1980 lbs.)

\$799500 SALE \$765000 G9741

WITH SPIRAL CUTTERHEAD

SALE \$867500 \$925000 G9961



25" EXTREME-DUTY PLANER WITH SPIRAL CUTTERHEAD

- Cutterhead motor: 15 HP, 220V/440V*, prewired for 220V, 3-phase, 37A/18.5A
- Table elevation motor: 1/2 HP, 2.4/1.2A
- Precision-ground cast iron table size: 25" x 57
- Max. cutting size: 25" W x ¼" D x 9" H
- Min. stock size: 10" L x ½" D
- Feed rates: 20, 25, & 30 FPM
- Cutterhead speed: 4900 RPM
- Overall size with infeed/outfeed tables: 57%" W x 54%" D x 601/4" H
- · Approx. shipping weight: 2054 lbs.

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30[™] ANNIVERSARY 17" HEAVY-DUTY BANDSAW

\$999500 SALE \$919500



MADE IN AN ISO

9001 FACTORY

- Motor: 2 HP, 110V/220V, prewired 220V,
- single-phase, TEFC, 1725 RPM Amps: 20A at 110V, 10A at 220V
- Precision-ground cast iron table size: 17" x 17" x 11/2" thick
- Table tilt: 10° left, 45° right
- Floor-to-table height: 371/21
- Cutting capacity/throat: 161/4"
- Blade size: 1311/2" long
- Blade width range: 1/8"-1" wide Blade speeds: 1700 & 3500 FPM
- Overall size: 32" W x 32" D x 73" H · Approx. shipping weight: 342 lbs.

G0513ANV \$89560 SALE \$85000







HEAVY-DUTY TILTING ARBOR SHAPER

Motor: 7.5 HP, 220V/440V*, 3-phase, 3450 RPM, 20A/10A

- Precision-ground cast iron table size: 471/4" x 351/2"
- Spindle travel: 65%
- Spindle size: 11/4" W x 7" L
- Spindle tilt: -5° to +45°
- Spindle capacity: 6"
- Spindle speeds: 3900, 5000, 7200, & 9400 RPM
- Max. cutter dia.: 10"
- Approx. shipping weight: 1096 lbs.

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ASSEMBLIES & TABLE INSERTS

G0608X

ONLY \$429500 =



MADE IN AN ISO

9001 FACTORY!

19" BANDSAWS

- Motor: 3 HP, 220V, single-phase, TEFC, 12A, 60 Hz Precision-ground cast iron table size: 26%" x 19" x 11/2" thick
- Floor-to-table height: 371/2"
- Cutting capacity/throat: 181/4"
- Max. cutting height: 12"
- Blade size: 143" long Blade width range: 1/8"-11/4"
- Blade speeds: 1700 & 3500 FPM
- Overall size: 36" W x 32" D x 76" H
- Approximate shipping weight: (G0514X) 460 lbs; (G0514X2B) 512 lbs.

G0514X

WITH MOTOR BRAKE G0514X2B \$1755 SALE \$167500

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Getting a hand Language Allega Alleg

n old friend and woodworker (who currently feeds his pension to a herd of horses) once said that a pony is still a pony without a lead rope, but a cabinet is just a box without hardware. His concept isn't universal, but it's still a pretty good rule of thumb. Hardware can make or break a kitchen or bathroom and, while bad choices are hardly irreversible, good choices can add an awful lot of wallop to a custom job. Sometimes hardware just works in a certain situation: the light and colors and shapes in the room all contribute to the feel of it. And sometimes we simply follow trends and do what other designers are doing in an effort to capture the magic.

There are a couple of ways to look at trends. Some manufacturers sense a cultural shift and adjust to follow it. Others take a gamble and put innovative products on the market in hopes that they'll start a movement. The former are generally well-established larger suppliers

with long and successful marketing histories. The latter are most often art-based, smaller design houses that seek to share a vision.

Both approaches are valid and both give cabinet and furniture builders some options. They both point down the road. It's up to you which fork you follow.

SLEEK AND SLIM

In March, Belwith's Hickory Hardware launched its new Velocity Collection — cabinet hardware that was "inspired by dynamic, graceful speed forms first developed in the automotive and aeronautical industries." The line lies comfortably in the mainstream of current trends — metallic, crisp, clean and minimalist with just a touch of industrial flavor. Hickory also added a bright nickel finish option to its popular Bungalow Collection, another line with a sleek rectangular design. The



Some cabinet fixture trends are evolving to become sleeker and more functional, while others cherish form and whimsy

By John English

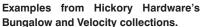
Velocity Collection is available in two finishes, brass and nickel, and reflects a mainstream trend toward basic, unencumbered metal hardware. This "new" style in a way harkens back to post-war European architecture that gave us Bauhaus buildings and the more streamlined designs of Charles and Ray Eames. Less form, more function. Hickory's hardware is both elegant and beautifully made, which is in line with a trend in the custom wood market toward higher quality — a reaction in part to the flood of mass cast imports we've seen hit the big-box stores in the last few years.

That glance over our shoulders to a time when life was less complicated (if we ignore social unrest, Southeast Asia and the Cold War) shows up again in Belwith's use of the word bungalow, an architectural style that we associate with a high degree of craftsmanship and comfort. Belwith was there: the company has been around for more than

120 years, so it knows how to identify, and sometimes instigate, cabinet hardware trends.

Most of the other major manufacturers are also riding the trend toward austerity. Factory after factory is turning to mere metal, straight lines, polished reflective finishes and simplicity served with elegance. The move in casework toward monochrome cabinetry, flat panels and stone countertops obviously influences hardware trends. As life becomes louder, homeowners, hotel chains and office buildings seem to be seeking a way to quell the ruckus. Our private spaces are becoming more streamlined, efficient, less decorative and perhaps more masculine. Cabinet hardware trends, at least in major markets, follow suit. But while the industry en masse seems to be pivoting toward unembellished metal as the norm, there are a few smaller companies that are endorsing a different trend.





WHIMSY

One notable collection here is the Enmeshment Series from Mrs. H's Handles - hardware that melds the feel of Tiffany, Art Deco and ultra-contemporary design into jewelry-like

handles and knobs that are simply stunning. The designer uses stainless steel or brass mesh to lend soft accents to hard metal. Enmeshment would be at home in Gatsby's mansion or the lobby of the Empire State Building. It's romantic, rugged and yet rocking, all at the same time.

Speaking of rocks, another collection that epitomizes the whimsical trend comes from Skipping Stones Studio (distributed in part through Spokane Hardware). It cuts stones to provide matching knobs

and pulls and even fullsize interior door hardstones are identical, al-

ware to match. No two though they are similar enough to lend cohesion to cabinetry. Spokane Hardware has also been

offering a very inexpensive collection of stone knobs, called Nature's Handles, since 2004.

Sticks and stones are trending across the board. For example, Rocky Mountain Hardware offers a number of quite lifelike branch and

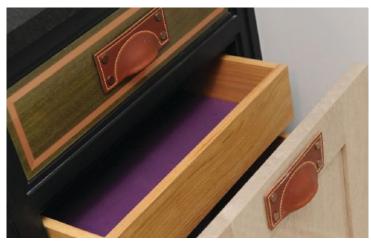
twig pulls, along with full-size door handles and even stair balusters. A similar offering comes from Wild West Hardware. In addition to twigs, the company's catalog includes a number of Old West motifs such as longhorns, five-point stars, spur rowels, barbed wire and hammered iron pulls. It also offers clavos, which are decorative, sturdy, handcut rustic nails. These pooling ripples in an ever-more-still pond give woodshops and their customers some choices that personalize a project. For designers who would eschew the sleek stainless option, whimsy offers hope, joy, playfulness, color and perhaps an organic need that is no longer being met by mainline manufacturing.



Moving far away from metal, Windborne Studios hand makes glass decorative hardware that it describes as running the gamut "from classic to quirky." There are seven collections, ranging from stripes

Turnstyle Design incorporates leather in its "furniture handles".







to shells and pebbles - and because they are handmade, some variations occur, so care must be taken when selecting matched pairs. The manufacturer also notes that one shouldn't use an electric drill to install the hardware, which might be a minor challenge for larger commercial jobs. But the effect of these dramatic and colorful pieces in a monotone kitchen or bath can be worth the extra effort. Seeing them in place is akin to watching spontaneous dancers do their thing at a classical concert. They



Stone pulls from Skipping Stones Studio.

bring more than bravado to a door: they wake and shake your senses.

Another glass handcrafter, Sietto, offers six distinct product lines with descriptive names such as Glacier, Reflective and New Vintage. The latter, Sietto claims, will "put the fun back in functional." In addition to white ceramic knobs with decorative faces that include typewriter keys and Victorian cameos, the line's artwork includes everything from the Eiffel Tower to farmyard animals and dog breeds.

Cari Jaye Sokoloff has designed several lines of hardware and one that definitively follows the trend toward artistic pulls is her Manhandles collection. Each handmade pull or handle is individually cast in bronze or stainless steel and celebrates the beauty of the human form. Her company, Jaye Design LLC, has wide distribution across the country and around the globe. The hardware is available in 10 standard finishes, plus custom coatings.

Another unusual line of products, manufactured by Sierra Lifestyles, is available through distributors such as My Knobs and features themes including coastal, wildlife and woodlands knobs. The coastal collection includes iconic castings ranging from dolphins and lighthouses to flamingoes, manatees, whales, pelicans and sailboats. And the wildlife menu includes lots of grizzly bears — heads and paw prints — plus moose, deer, elk and a host of antler and other images found in national parks. Sierra also finds inspiration in the comfort and familiarity of organic forms such as branches, leaves and pinecones. And the company produces its own Western collection that includes buffalo skulls, cowboy hats, boots, horseshoes, howling wolves and saddles.

Moving about as far as one can from Yellowstone, both physically and culturally, the British manufacturer Turnstyle Designs is a major producer of design-led architectural hardware. This family-owned company combines materials in a way that most American manufacturers have moved past. There's a strong presence of leather in Turnstyle's "furniture handles," which is perhaps a more apt term than cabinet hardware for what the company does.

Identifying trends in any industry is a tricky proposition. Usually by the time one notices them, they are already passé. The trend toward cleaner lines and less decorative pulls has been happening for a long time, so perhaps it's more of a shift than a trend. And the need for individuality and artistic flair has always been with us. Perhaps the splashes of color and drama we're seeing now are just more noticeable because they're superimposed on casework that exhibits less grain, color and figure than the red oak cabinets of our childhood homes.

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The same is true of Vortex. This family-owned cutting tool manufacturer has brought a lot of firsts to woodshops over the years, including the triple-flute compression spiral. Now they've added a smart little app that allows a shop manager to find the right bit for the perfect cut, and do it in a few seconds. It's all just part of Vortex's legendary customer service.

Tom Walz knows a thing or two about customer service too: his company, Carbide Processors, offers more than 24,000 tools online, including its own line of World's Best saw blades. Tipped with ceramic/carbide hybrid teeth, Tom's standard and thin kerf blades cut faster and last longer than the competition. Whether it's blades, bits or stops, these American manufacturers are all dedicated to helping you make perfect cuts every time.



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Making MORE Perfect Cuts

When it comes to cutting MDF and hardwoods, not many people know more than Tom Walz about the way that blades behave. Walz is the CEO of Carbide Processors Inc., a Tacoma, Wash. manufacturer that builds The World's BestTM saw blades.

"In 1981," he says, "Weyerhaeuser wanted better saws for their mills and we got a contract to help. For twenty-five years, we supplied advanced technology to the top end of the saw and tool industry. When the recession hit in 2007, we decided to help our customers – and ourselves – by selling those companies' tools online. We used our long, successful relationship as a supplier to become their customer. Strangely enough it has worked well, and we now sell over 24,000 tools and offer custom tooling services."

In addition to a wide catalog, Carbide Processors also used its years of research to develop a ceramic/metal hybrid saw tooth (called Cermet II) that cuts faster and lasts longer than any production carbide blade on the market. When it comes to making the perfect cut, Cermet II tipped blades deliver a better edge than standard carbide, and are more resistant to tip fracture. They're also more heat resistant, allowing a woodworker to cut at faster feed rates without harming the blade or burning the wood. When it comes time to sharpen, they can be ground just like standard carbide blades: no special sharpening is needed.

Carbide Processors has been an independent manufacturing company since 1981, and has always maintained a strong commitment to research and development. Each of its World's Best™ saw blades is custom made to order. Current users include cabinet shops, lumber mills, trim carpenters, panel processing plants, furniture and fixture shops, and even some serious home hobbyists who simply cannot find a better performing saw blade anywhere



else. Among them is the 37419C, a 10'' crosscut blade with an ATB (alternate top bevel) and a 10-degree hook. With 60 teeth, a 1/8'' Kerf and 5/8'' arbor, it was developed for table and miter saws. Its super-finished teeth cleanly sever wood fibers, and its specially designed triple chip grind produces smooth, true surfaces for gluing. This is the ideal production blade for high-quality commercial crosscut applications.

Cermet II teeth are brazed to the steel saw plate with a high silver alloy that is about 50% silver. It's expensive, but really worth it. Unlike other attachment methods, good brazing forms both a mechanical and a chemical bond between the carbide and the steel. That makes it much stronger than either steel or carbide alone. The superior braze acts like the suspen-

sion on a car, cushioning the hard carbide tool tip to protect it from chipping, breaking and excess wear.

Carbide Processors also supplies thin kerf blades (seven 10" models, five 12" ones and two each at 14" and 15") and a good selection of combination and rip blades. The company's glue line rip saw blades, for example, include 250 mm and 305 mm options. There is also a 12", 36-tooth model that includes a keyway and has a triple chip grind and a 22° hook.

Designed for gang ripping, it's highly recommended for hardwoods.

Along with custom made saw blades, Carbide Processors Inc. offers a huge selection of precision cutting router bits made by Whiteside, Vortex and Southeast Tool. The company is so confident in the products it sells – and the custom blades and tools it makes – that every item is backed by a 100% satisfaction guarantee. And for a limited time the company is offering \$15 off your first order when you use coupon code "wood15". Visit the website (below) to take advantage of this special offer! And keep in mind that Cermet II technology makes the perfect cut, every time, for a long, long time.





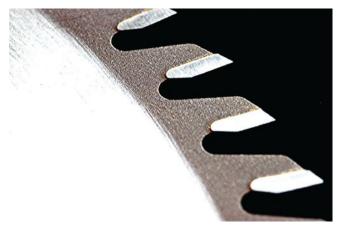
VIDEO



Carbide Processors

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An App for Choosing the Right Tooling

Vortex Tool Company Inc. is a family-owned and run manufacturer and distributor of high quality cutting tools for woodshops. It is the

largest American-owned and operated manufacturer of solid carbide router bits, and is known for both superior technical support and innovative engineering. Vortex works with more than 3,500 companies and is responsible for numerous 'firsts' in the woodworking industry. Over the years Vortex Tool has designed and manufactured the industry's first triple-flute compression spiral, the first solid carbide spiral profile tool, and the Vortex 'Tornado' rougher/finisher combination spiral.

Combining excellent customer service with intelligent engineering has become a bit of a habit for this Schofield, Wis. firm. So it's no

surprise that Vortex Tool Company has developed an app to simplify tool selection, based on a woodshop's cutting needs. It's very user-friendly: just type in the type of material be-

ing cut, the horsepower of the CNC machine, the tool diameter, the thickness of material and the type of cut desired, and the Tool Selection

> Guide App will recommend the best tool for the job. Convenient links are provided to the current Vortex Tool catalog and online ordering. The idea is that a shop manager can now spend a few very efficient minutes on his/ her phone to complete a task that used to take a lot longer and involved paging through catalogs or websites. Winner of the 'Visionary Award' at AWFS, the app doesn't stop there: it also includes calculators to determine chip-load, feed rate, RPM and even does metric conversions.

> Vortex offers superior customer service in the form of quick turnaround, custom tooling and

the kind of personal touch that every good manager looks for in a supplier. Now those traits are only as far away as your fingertips. The Vortex Tool Selection Guide App is avail-



able for iPhone, iPad, Android phones and tablets, and it can be downloaded for free from the Apple App Store, or through Google Play.





VIDEO



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No matter how large or small the job, TigerStop makes the Perfect Cut!

The perfect cut can mean different things in different circumstances.

On the jobsite when a woodworker is installing cabinets or trim, the fit and finish are paramount. After building a superb kitchen, one wouldn't want the customer to zone in on a slightly imprecise crown molding miter, or a tiny gap in the toe-kick. Being able to dial in and cut to precise lengths and angle measurements is critical, and that's where SawGear® comes in. Developed by Vancouver, Wash. based TigerStop, SawGear is a simple and intuitive automated stop that eliminates the need for a tape measure, or for setting manual stops. It allows an installer to produce parts faster, and do so with incredible accuracy. SawGear attaches quickly and easily to an existing miter saw or drill press, and it's incredibly easy to pop in the truck and take to the jobsite. Crown+MiterProTM software comes with SawGear, and will calculate angles and lengths so the user doesn't have to do complicated arithmetic.

In small shops, the perfect cut means bringing automation to what has always been a time-consuming and often inaccurate task setting up and moving manual stops. Simply dial a dimension into the SawGear pad, and even a rookie can turn out perfect-length stiles and rails all day long. The learning curve is minutes, not months, and the waste factor virtually disappears.

For medium-sized shops, the perfect cut means being able to choose the level of automation. Here, the original TigerStop® can increase speed and accuracy immediately, and then provide room to grow as the business does. Over time, the TigerStop system means a shop can add label printing, optimizing, the ability to download cut bills,

and even install a touchscreen interface called TigerTouchTM.

In larger environments, the perfect cut means dramatically reducing both time and materials costs, using a fully automated push-feed and defect optimizing system. This isn't add-on automation: the TigerSaw 1000 is a fully integrated, stand-alone, automated saw system that does scanning and defecting, plus inkjet printing on parts. TigerSaw 1000 works around defects using Dynamic Optimization software, which gives a production run the maximum possible yield while cutting only what is needed. The system scans and cuts defects using fluorescent crayon marks on the material. Or it can be configured to cut on the mark for applications such as flooring or finger jointing. The ability to optimize around defects lets a shop buy a less expensive grade of hardwood. That can mean big savings in material costs. And the ability to print on a part means that an operator can inventory, track and organize components, and also ensure they are oriented and/or assembled correctly down the line.

Crosscutting in larger shops is only half the defecting solution. When processing large volumes of raw product, a shop also needs to be able to rip efficiently. Adding a TigerRip 1000 automated ripping station lets a shop cut all the lineal footage it needs in-house, including square footage for panels. Yield soars because there are no more over-cuts and wasted materials. TigerRip 1000 brings unprecedented precision and lean manufacturing practices to a shop's rough mill needs. Using TigerStop's Dynamic Optimization algorithms, TigerRip 1000 mathematically finds the best use of raw stock and keeps track of all the material ripped. This allows a shop to build to order without having to keep a buffer inventory - and that saves inventory costs, physical space and wasted labor.

With large output and multiple machines, woodshops need superior quality control and for this TigerStop has developed TigerSPC calipers to easily make critical measurements. Once attached to the TigerStop table system, the calipers can measure material up to 16 feet long and is accurate to +/-006 in (.15mm).

No matter how small or large the shop or the job, TigerStop has an accurate and efficient solution for getting the perfect cut every time.





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BRIGHT LIGHTS, BUSINESS

Volz, Clarke & Associates might be based in Massachusetts, but their variety of services sells big in New York City

By Jennifer Hicks



olz, Clarke & Associates — known as VCA Inc. — is a multidisciplined shop offering high-end residential millwork and studio furniture projects. Co-owners Bruce Volz and Tony Clarke operate a 20,000-sq.-ft. facility with around 30 employees in Northampton, Mass., selling mostly to the New York City metropolitan market through architectural firms.

Business has been really good during the last couple of years. The addition of an inhouse metal brazing department has helped, along with collaborations from local artists working in a variety of media. The owners have a passion for art furniture and guess what? It sells.

FOLLOWING LEEDS

Volz is originally from Minnesota and moved to Massachusetts in 1978 to attend Leeds Design Workshop, a former woodworking school in Easthampton, Mass.

"After two years I went off and worked for Wendell Castle for two-and-a-half years," Volz says. "It was pretty interesting time to be there because [Castle] was at that point where he was transitioning out of the stacked lamination. He started getting into Art Deco types of things and did all of the carved trompe l'oeil style pieces. He's an amazing guy."

The young and idealistic Volz was intrigued by the designer/maker concept and there was a strong market for art furniture in the 1980s. After learning what he needed from Castle, he returned to teach at Leeds and met Clarke.

"I was a student," Clarke says. "Bruce was teaching and, when I was in my second year at the school, he started his own full-time furniture studio. When I finished the program, I went to work as a carpenter and rented a small shop trying to make art furniture. But then I got married, had kids and got scared. I needed real income, so I started doing more millwork and cabinetry through an architectural connection."

In 1988, Volz, Clarke and a third woodworker formed a cooperative shop at the former Leeds school building. Clarke was producing architectural work, while Volz continued with his furniture. But when the economy weakened in 1989, they needed a new plan.

This is where fate comes in. At a birthday

party, Volz met an architect from Robert A.M. Stern Architects, a large firm in the heart of Manhattan.

"He was designing furniture for a big house on Long Island and asked if I was interested in doing it," says Volz, who leaped at the chance. "I wound up making eight or so pieces for that house in a style I was really unfamiliar with. We somehow made it happen and one of the pieces was published in Architectural Digest.

"From that article, somebody called up out of the blue who was building a house in Brooklyn. They said it was a Robert Stern design and wanted me to do all of the custom furniture. I was a little bit skeptical, but I met with him and he was serious. At that point, Tony's business had slowed down so we talked about joining up together."

VCA started in the co-op space. Employees were added until they ran out of room. They moved to their current shop in 2008.

SERVICE EXPANSION

While work from Stern and other firms kept the shop busy, there was a shift to also make designs from outside sources.



Tony Clarke, left, and Bruce Volz.

"We had moved in a more commercial direction at this point, meaning we were building other people's designs more than our designs through architectural firms. The business grew into servicing the design community in New York with either architectural millwork or with furniture," Clarke says.

The only hitch was having most of their eggs in one basket. In 2001, they were ready to start a large job at an apartment in New York. The contract was supposed to be signed on Sept. 12. After the terrorist attacks on Sept. 11, the client backed out.

"That was just a reminder we needed to build our client base a little more. We had other clients who were architects and design-



Bruton Strange installs drawer glides in a cabinet.

ers, but after 9/11 we were suddenly left with no work for a few months. We were basically shell-shocked and wanted to expand our client base," Clarke says.

"At that point, we had always wanted to get a furniture line together," Volz continues. "So we put a line together and showed it at the International Contemporary Furniture Fair. We got some interest, but it didn't really generate much for sales. The main benefit was it kind of got that out of idea out of our system."

Since they didn't have the resources to properly promote the line, they decided to target architects and designers with a "can-do-anything" approach.

"One of the unusual things about our busi-

ness is it's really a mix of furniture and architectural millwork, which I don't think a lot of shops do. The diversity alone is unusual," Clarke says.

"The different challenges are what's exciting about this. We are working with amazing designers and architects. They continually present us with new challenges. They want to push us with their ideas of what they want to do."

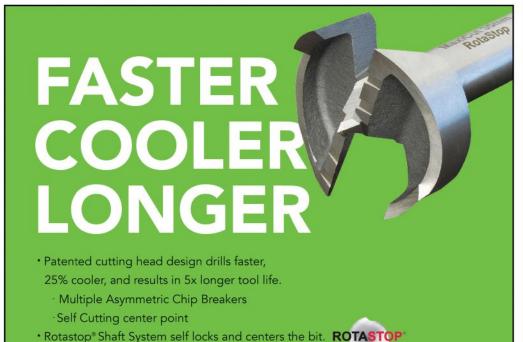
In New York, contemporary trumps traditional, according to Volz.

"The majority of what we do and respond to are 21st century-style designs. There are certain trends we see in architectural work that will become popular. Grainy woods are popular or something that's wire brushed and painted gray, for example. Two years from now, there will be something different and it's been that way all along. We always try to accommodate."

Millwork, already half of the shop's work, is a growth area. "The millwork jobs have gotten bigger," Clarke says. "We used to get a halfmillion-dollar job and think that was huge. But over the last year-and-a-half we've done a few that are \$1 million or \$1.5 million."

Tom Rodriguez assembling a media cabinet.





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Jesse Morrisey uses an orbital sander to prep a sheet of brass.

The shop does about \$5 million in annual sales.

The challenge in the shop is to find woodworkers with the talent to build furniture and millwork.

"Some people have a better headset for millwork and others with furniture. Some are good at both. Because everything we do is custom, nobody is just doing one thing," Clarke says.

"When we moved here in 2008, we had about 18 employees. We had that nasty bump in the recession, but we were lucky because we had some large projects that carried us through and didn't get crunched until 2010.

Then we had to do some layoffs, but now we're bigger than we were before."

MOVING FORWARD

The owners feel the shop is operating at near-capacity. The volume of work justifies an expansion, but they are cautious of another downturn.

"This past year we had two sizeable millwork jobs going on at the same time as well as quite a bit of furniture work, so we explored the idea of adding on. There is space to add on, but we're trying to figure out which way to go. Our sales went up significantly in the past yearand-a-half, but we don't know whether that



Michael Chermesino matches and tapes veneer.







will continue or not. Unless we feel a little more confident about sustaining our volume, we're staying how we are," Volz says.

Clarke and Volz recently wrote a five-year business plan as they think about retirement. They enjoy a three- to five-month backlog on furniture orders and have millwork jobs that can last five months or more. But customer service, they say, is key to whatever they hope to accomplish in the future.

"Relationships are important to us, not only for in the shop, but with clients, and we work hard to maintain them. The most important part of being successful is being available. We just answer the phone, respond and deliver on time," Clarke says. W

Contact: VCA Inc., 209 Earle St., Northampton, MA 01060. Tel: 413-587-2750. www.vca-inc.com

A few examples from the shop's extensive portfolio.











IT'S A FINE LINE

YOUR TOPCOATING SELECTION CAN COME DOWN TO SOME ESSENTIAL ISSUES, SUCH AS LOOK, DURABILITY AND COST

BY JOHN ENGLISH

Topcoating is a balancing act.

Applying a clear finish over bare wood or stain is a big part of the budget on most jobs and a misstep here can be significant. More than one shop has had to strip and refinish an entire kitchen because of poor choices or questionable application practices.

Choosing the right topcoat is crucial. There are a number of questions that need answering, beginning with the most pivotal: how will it look? Or last? Some finishes yellow over time. Others crack in sunlight or scratch easily or grow white rings every time a drink is placed on them. Some coatings stay on the surface and protect the wood, but look a little plastic, while others soak into the wood and create a warm, natural and deep finish that isn't quite as protective.

Some wood species simply don't like or accept all finishes and tend to behave badly when coated. Light-colored woods usually don't like dark (or darkening over time) finishes such as orange shellac or phenolic varnish. For them, or for highly colored and decorative species, you might want to consider water-based finish or catalyzed lacquer. And coarsegrained species like a thinned finish that can penetrate or they begin to look like a bowling lane.

Some topcoats require routine maintenance. Will your customer bother to do that?

What level of sheen does the client want — matte, satin, semigloss or high gloss? That has as much to do with scratches, spills and heat as it does looks. And will it stretch? For example, wooden articles that are left outdoors or in many commercial situations (such as poolside in hotels) need to be able to handle direct sunlight and temperature swings, as well as water and snow. All of those climatic factors encourage the wood to move across the grain. Will the finish accommodate that?

Then there are the non-aesthetic concerns. How expensive is the coating? How many coats need to be applied? And how easy is it to apply? Spraying is fast, but wasteful. Some finishes, especially varnishes, prefer brushing. Others need to be wiped on, which is labor-intensive, but doesn't waste much finish. And what about seasonal humidity and temperature changes during the application? Shellac and lacquer are easier to manage in damper or cooler weather, while long-oil varnish can take forever to dry. Dust becomes a bigger problem the longer it takes a top-coat to dry because the dust particles land on the surface and slowly sink in until they either get to the wood or the finish dries.

Another budget concern is whether the finish you choose can easily be repaired. That's a bigger issue if the job is under warranty.

It's a balancing act, but there are some basics that can help a woodshop choose the right cabinet topcoat. And those begin with understanding how different finishes dry and what that means over time.

CURING CATEGORIES

Topcoats are grouped into three main categories based on how they harden. In evaporative coatings, a liquid carrier evaporates into the air and the solids that remain form a film — sometimes below the surface, but usually on top.

Evaporative topcoats generally dry quickly, but they are not always as tough as they need to be. And one major drawback (although in the repair business it's often a blessing) is that these coatings will always dissolve in the same solvent that they came from. That sometimes makes them vulnerable to failure if the solvent shows up in their environment.

Reactive topcoats actually go through a chemical reaction or change as their solvent dries in contact with air. These coatings won't dissolve in the original solvent and they are generally more durable and scratch-resistant than evaporative finishes.

Water is actually not a solvent. Water-based polyurethane is a good example: it coalesces as it cures. That is, the solvent is something other than water, such as glycol ether, and the solids in a coalescing finish just mix together without chemically reacting.

WAX

Not really a protective coating, wax (evaporative) is often used over shellac or lacquer to develop a sheen when buffed and also provide routine upkeep. It's an old-fashioned finish, usually reserved for single pieces such as small boxes or even lathe-turned objects. Waxes come in myriad colors and media: they can be liquid, sticks, pastes and anywhere from white to amber or clear in color. Their sources are minerals, animal fats — even plants such as Brazilian Carnauba fan palm, which exudes a yellow wax prized by many woodworkers. Commercially available liquid and paste waxes are solvent-based and cure as the carrier evaporates.

The best way to apply a wax topcoat is with very fine steel wool, followed by buffing with a lint-free soft rag. Let it sit for a while before buff-

ing if you want a bit of a shine. Wax is not a hard or durable finish and needs to be renewed on a regular schedule. It usually won't retain a sheen and needs to be buffed to reveal any gloss, which eventually fades. Wax is fairly water-repellant as a finish, but has no resistance to heat. Most wax will dissolve in mineral spirits or naphtha.

OILS (REACTIVE)

Oils come either as a true oil or a blend. Danish and teak oil are blends that are primarily oil, but they have a little varnish added. That lets them build up a finish a bit faster than a simple penetrating oil, because the larger varnish molecules lie on the surface while the smaller oil molecules enter the pores. Blends are also a bit tougher and the finish they impart is a mixture of the deep, rich look of oil and the sheen of varnish. Danish oil's base is tung oil.

Drying oils such as tung and linseed react with the air (actually with oxygen) to solidify and change their chemical status from liquid to solid. That process is called polymerizing. Raw linseed, by itself, dries too slowly to be a viable cabinet finish, so through the centuries woodworkers figured out that if you boil it first, it will dry in a reasonable time. Nowadays, the boiling process is more chemical than physical: the manufacturers just add drying agents that react upon exposure. Linseed is also known as flaxseed oil because it is extracted from the ripe, dried seeds of flax, a crop plant that also yields both food and fiber (linens) for humans.

Tung oil is lighter in tone than linseed and comes from the nuts of the tung tree, which is native to southern China and the surrounding countries. Because of that, it has historically been known as China wood oil. Also found in artist's oil paints and some printer inks, it's a little more water-resistant than linseed oil. It is available as both pure (raw), which dries to a wrinkled, checked finish or as a commercially thinned version, which cures to a satin finish after several applications. It doesn't darken noticeably over time.

Mineral oil is a non-drying oil, usually made from a distilled byproduct





of petroleum, and is not a viable cabinet finish. It can be used to refresh butcher-block, cutting boards and turned wood bowls that are used to serve or store food.

VARNISH

Oil-based (reactive) and water-based (coalescent) varnishes are both viable options for topcoating cabinets.

Made by combining a drying oil and a resin with a carrier (thinner/ solvent), oil-based varnishes cure by polymerizing — a chemical reaction that forms polymer (small molecule) chains. Compared to water-based varnishes, they are flammable, more polluting and also cause health issues because of organic solvents. During the last few decades, the wood finishing world has struggled to create an alternative to oil-based sprayed finishes that is less toxic, yet still delivers the same hard and durable protective coating. Most cabinetmakers would say that the manufacturers have come very close. The most common resins in oil-based varnish are urethane, alkyds and phenolic. Urethane perhaps delivers the toughest, most durable finish that is very resistant to heat, moisture and scratching. Alkyd resins are generally found in interior (furniture) varnishes, while phenolic-based resins are used in tung, linseed or even soybean oil-based exterior coatings, along with driers and hardeners. The more oil in the mix (called long oil in the trade), the more flexible and softer the finish. That makes it ideal for exterior applications such as marine or spar varnishes, which need to flex a lot as both they and the wood respond to sun, rain and temperature changes. Short oil varnish, used on cabinets, is

Polyurethane varnishes substitute urethane polymers (such as impactresistant polyether or oil-resistant polyester) for unpleasant urethane and are ideal for floors, but some finishers disdain them when it comes to cabinets. They sit on the surface, rather than penetrating the wood, unless primed with oil varnish, wax-free shellac or a clear epoxy-based sealer. Polyurethane varnish (and there are water-based versions) builds up quickly and oil-modified hybrid polyurethanes are the most widely used in floor finishing. They usually don't work well outdoors.

Not seen as being quite as tough or rugged as its oil-based cousins — although many manufacturers would disagree — water-based or "waterborne" varnish is made with acrylic resin or acrylic urethane. It is less toxic, has a smaller environmental impact and is safer to use in terms of fire and explosion. In many ways, water-based varnish shares the characteristics and handling of oil-based varnish.

Conversion varnish is a catalyzed, alkyd-based compound. Catalyzing simply means adding a catalyst — a chemical that speeds up a reaction. Wood finishes undergo a chemical bonding known as cross-linking, which results in the molecules bonding together in chains to form the topcoat. These chains add durability and even some water resistance to many finishes. Catalyzing can be done up to several months before use in the manufacturer's factory (there is a limit to the "pot life" or length of time a finish remains usable) and that's called precatalyzing. Or the catalyst can be added in the woodshop just before the product is applied (and that's post-catalyzed). The latter are much stronger mixes with a pot life that is usually just minutes and an hour or so at most. Some catalysts also require an induction period, which gives the chemicals time to start working before they are sprayed.

Before choosing any cabinet topcoat, one should take the time to read through the manufacturer's technical data sheet (TDS) to discover how to use it and the material safety data sheet (MSDS) or product safety data sheet (PSDS) to discover how you — and your employees — can use it safely. The latter isn't just legal boilerplate: you might need to make some changes to protect people from fumes, fire, allergies and skin problems.

Pay particular attention to any notes on formaldehyde or isocyanate emissions.

One of the rules that the TDS will spell out is how thick a coating you can spray. That ranges from maybe 3 or 4 mils for vinyl to perhaps 12 to 14 mils for polyesters: read the sheet and don't use these numbers as a



guide, because every product is different. Pay attention to the total thickness recommendation, too: individual coatings can only be built up so far with some products before they start to show signs of cracking. You also need to be aware of the recoating window — how long you must wait before spraying the next coat and sometimes how quickly you must do it. These are usually temperature-sensitive: finishes dry at different rates at different room temperatures and humidity levels. Some shops post a simple chart of drying times on the wall beside a large thermometer that displays approximate rates, just as a reminder.

The color of conversion varnish can be somewhat controlled: there are yellowing and non-yellowing varieties.

Conversion varnish is post-catalyzed and is quite similar in character to conversion lacquer. The varnish takes a little longer to cure and is a bit tougher and more resistant. Both generally need to be used within hours (and definitely the same day) as the catalyst is added or they will begin to solidify. That happens faster on warmer days. And if you're spraying over oil-based stains or oily woods, read the TDS to see if the manufacturer recommends using a vinyl sanding sealer to aid adhesion. Catalyzed varnishes lie on top of the previous coat (unlike shellac or lacquers, which "melt" into the previous layer). So they require light, fine sanding between coats for a smooth finish.

Polyester isn't a great cabinet finish. It's difficult to work with and dents easily. Some shops use it to attain a very high, wet-looking gloss on projects such as signage.

Catalyzed polyurethane is either acrylic or polyester resin-based and come in either yellowing or clear versions. It takes a bit longer than catalyzed varnish to dry, gets a bit harder and more durable and can often be laid down thicker.

SHELLAC AND LACQUER (EVAPORATIVE)

Shellac is a natural finish made from lac bug secretions that are dried and flaked and then dissolved in denatured alcohol (usually ethyl, which is produced from corn — yes, the same family as the gasoline additive ethanol). Shellac is available as bags of flakes or in pre-mixed cans. Sometimes the mixes have wax added and that can render the shellac coating a little less resistant to abrasion and also difficult to use with other stains or coatings. Naturally yellow or amber, some shellac is bleached to make it more neutral. The technique of French polishing involves applying lots and lots of thin coats of shellac and then rubbing them to a glossy shine with a pad.

Lacquer is probably the best commercial finish for cabinets. It dries fast, so jobs keep moving through the shop and dust isn't such a big problem. It has a rich, deep sheen that brings out the natural beauty of grain, color and figure. Lacquer is relatively tough and is ideal for doors, vertical panels and face-frames. Nitrocellulose lacquer, which yellows over time, is the most common variant. It has an alkyd base with a partially nitrated cellulose resin and solvents. (Nitrocellulose is also known as guncotton and in some more intense formulations once was used as an explosive.) The acrylic-based version, also know as CAB (cellulose acetate butyrate) resin lacquer, won't yellow. Catalyzed lacquer occupies the land between lacquer and varnish — it dries harder than regular lacquer and is a bit easier to apply. Post-catalyzed versions (mixed in the woodshop) tend to have a very short open time.

FINAL THOUGHTS

There's a direct relationship between hardness and gloss in most finishes. Matte and satin finishes don't reflect light as much, so they can help hide minor defects, but they are often less resistant to impact. Semigloss and full-gloss coatings are more durable, but ambient light reflects off the surface and doesn't penetrate, so there is less depth to them. It's a balancing act.

Don't rely on a salesperson alone when choosing a finish. Visit trade shows or drive to other shops around the city, shake some hands and ask what they're using. You'll discover the best suppliers that way.





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BOSCH introduces two oscillating multitools compatible with the Starlock family of accessories, developed in partnership with Fein. The tools include model GOP40-30 with a 4.0-amp motor that accepts Starlock and StarPlus accessories, and model GOP55-36 with a 5.5-amp motor that also accepts StarlockMax accessories. For information, visit www.boschtools.com.

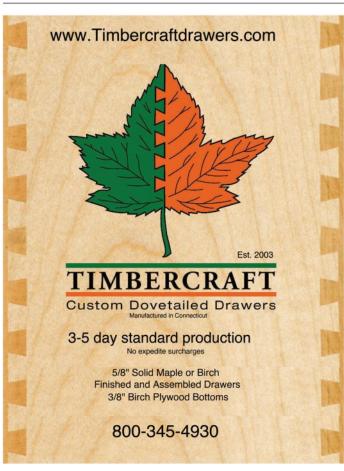








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'Rocking' exhibit in North Carolina features chair collection

By Jennifer Hicks

he Grovewood Gallery in Asheville, N.C., is featuring a collection of rocking chairs through Aug. 28. The pieces, made primarily in North Carolina, range from traditional to contemporary.

"We chose to do this exhibit because the rocking chair is such an iconic piece of furniture," exhibit curator and gallery manager Russell Gale says. "Whether they are used to take in a sunset from a porch or to rock a child to sleep, they hold such a special place in the hearts and minds of many people. The participating woodworkers, most of whom are regular Grovewood artists, were chosen because I thought each one would bring a unique and fresh perspective to the form."

Participating artists include Fatie Atkinson, Curtis Buchanan, Alan Daigre, Brian Fireman, Joe Godfrey, Andy McFate, Libby Schrum, Leslie Webb, Seth Weizenecker, and Mark Whitley.

SETH ROLLAND SOLO SHOW

Woodworking artist Seth Rolland is featured at the Bellevue Arts Museum in Bellevue, Wash.

The exhibition, "Balance and tension: The furniture of Seth Rolland," opened in May and runs through Aug. 14. It features 25 pieces by Rolland, winner of the museum's John and Joyce Price Award of Excellence in 2014.

Rolland has been making custom furniture for 25 years, first in Taos, N.M., and now in Port Townsend, Wash. Inspired by forms in nature, his functional furniture is sculptural, emphasizing structure, form and motion, according to the museum.

"It's been an incredible opportunity to focus



"Linda Lou Rocker" in oak by Leslie Webb.

this long on one body of work for this show. I usually make a piece or two at a time for clients. This show has large pieces, small pieces and sculptural pieces and it was a good chunk of my year," Rolland says.

"Nature is a huge inspiration for my work and a lot of focuses on expanded pieces where I do kerf cuts which the curator (Stefano Catalini) wanted to focus on. It was interesting working with the curator. I was making the

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"From the Trees," a rocking chair from Alan Daigre Design and Michael Bauermeister.

pieces, but he selected what went together in coherent method." $\ensuremath{\mathbf{W}}$

Contacts:

Grovewood Gallery, 111 Grovewood Road, Asheville, NC 28804. Tel: 828-253-7651. www. grovewood.com

Bellevue Arts Museum, 510 Bellevue Way N.E., Bellevue, WA 988004. Tel:425-519-0770. www.bellevuearts.org





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A coffee table by Seth Rolland and the Bellevue Arts Museum exhibit.



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CALENDAR

rganizations 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

Sept. 12-16 — Joinery Advanced with Raul Ramirez. Learn joint and drawer layout through dovetails, half-blind dovetails, fullblind mitered dovetails and angled dovetails. Fee: \$680 plus \$60 for materials. 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.

GEORGIA

Aug. 24-27 — IWF, the largest showcase of machinery, materials, supplies and services in the Western Hemisphere for woodworking and related industries. Location: Georgia World Congress Center in Atlanta. For more, vsit www.iwfatlanta.com.

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

Aug. 22-26, Sept. 14-18, Oct. 12-16, Nov. 9-13 — Five-Day Bare Bones of Wood Carving Workshops. Location: Calvo Studio in Gloucester. www.davidcalvo.com

Aug. 23-24, Oct. 28-30 — Two- and threeday wood carving classes. Location: Calvo Studio in Gloucester. *www.davidcalvo.com*

Aug. 23, Sept. 17, Oct. 15 — One-day introductory wood carving classes. Location: Calvo Studio in Gloucester. For more, visit *www.davidcalvo.com*.

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MISSOURI

Oct. 23-25 — The 64th annual convention of the Architectural Woodwork Institute. Trade show features educational program, 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 Baldwinsville. 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.finefurnishingsshows.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. For more, visit www.kacckerrville.com

WISCONSIN

Sept. 16-18 — Fine Furnishings Show featuring furniture and other handcrafted items for the home. Location: Muellner Building at Hart Park in Wauwatosa. For more information, visit www.finefurnishingsshows.com.

WYOMING

Sept. 8-11 — Western Design Conference. Annual craft show featuring handmade furniture and other woodworking items, leather, home accents, jewelry and apparel with a western-style flare. Location: Snow King Center in Jackson. For more information, visit www.westerndesignconference.com.

Biesse opens new showroom

Manufacturers got their first look at Biesse's new 23,000-sq.-ft. showroom in Charlotte, N.C., during a demonstration event held May 12-13.

"We are honored to share the new Biesse Group Charlotte Campus with our customers" Federico Broccoli, president and CEO of Biesse America and Biesse Canada, said in a statement.

"This new state-of-the-art, fully equipped showroom is designed to host custom demonstrations, in-house events like our popular Inside Event as well as educational events."

For information, visit www.biesseam-erica.com.



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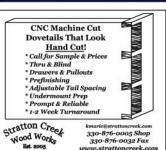




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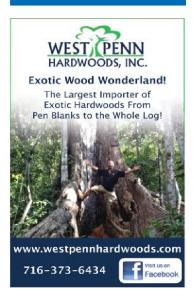
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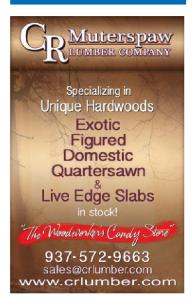


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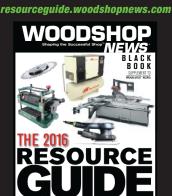
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OUT OF THE WOODWORK



Puzzle maker crafts corporate gift line

ermont Woodshop, a puzzle maker

in Rutland, Vt., recently launched a corporate gift line branded with company logos or business cards.

Shop owner Randy Crossman has been making puzzles for more than 20 years. He offers puzzles with up to 4,000 pieces, hand-cut on a scroll saw with interlocking patterns. The shop also makes trail signs and custom wood-working projects, such as decerative sledge.

shop also makes trail signs and custom woodworking projects, such as decorative sleds and home accessories. The corporate puzzles can be made quickly and are used as a way to show appreciation for a client employee or co-worker.

"The unique thing about these corporate puzzles is they come in a plastic CD-style case with a stand for people to display in their of-



60 Grit





fice or be given as a gift. I've had several companies purchase them for different executives in their offices for something special because it becomes very personal when it's your own business card," Crossman says.

The business card puzzles have approximately 24 pieces, hand-scrolled from quarter-inch cherry plywood. The puzzles can be one-or two-sided and there's the option of adding a custom silhouette, such as a cutout of a company logo or the recipient's favorite pet. The

puzzles start at \$32 and can be ordered online.

There are about 50 pieces in the company logo puzzles. The logo can appear as a straight reproduction or recreated using multiple tones of wood. They start at \$50.

The shop also makes custom cutting boards that can be personally engraved.

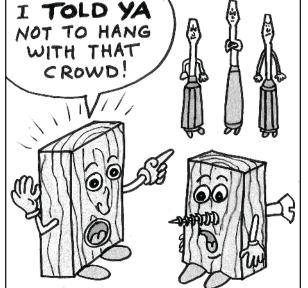
For more information, visit www.vermont-woodshop.com.

- Jennifer Hicks

Rough humor by Steve Spiro



Randy Crossman, a master puzzle-cutter, infuses the corporate gift industry through hand-cut wooden business card and corporate logo puzzles.







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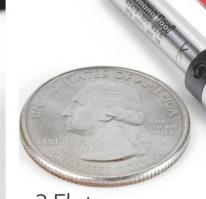






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