

WOODSHOP

Shaping the Successful Shop™

NEWS®

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May 2017

Specialty business

Hal Moore's shop caters to the odd and unique requests

New equipment for a better finish

Time to update: CNC software

Walnut continues to sell well

NEW TOOLS

- **Accuride slides**
- **DeWalt battery**
- **Festool Connectors**
- **MicroJig MatchFit**

\$3.95 (Canada, \$5.95)



TRACK SAW MASTER PACK

- Motor: 120V, 1.1 kW, 5500 RPM, 9A
- Blade rim speed: 9070 FPM
- Max. cutting depth at 45°: without rail 1 5/8", w/ rail 1 7/8"
- Max. cutting depth at 90°: without rail 2 5/32", w/ rail 1 31/32"
- Included saw blade:
 - 160mm x 20mm x 48T
 - Dust port dia.: 1 1/2"
 - Saw weight: 11 lbs.

W1835 Track Saw

Includes: Accessory Pack

W1832 Track Saw Master Pack

55" Guide Rail

7" 2 HP PLANER MOULDER W/ STAND

- Motor: 2 HP, 240V, single-phase, 10.8A
- Cutterhead speed: 7000 RPM • CPM: 14,000 • CPI: 64-300
- Feed rate: 0-18 FPM • Max. profile: 6 3/4"W x 3/4"D
- Planing width: 7" • Min. stock length: 9"
- Min. stock thickness: 1/4" • Max. stock thickness: 7 1/2"
- Overall dimensions: 36 1/4"L x 22"W x 34 1/2"H
- Approx. shipping weight: 324 lbs.



PATENT OWNED BY
WOODSTOCK
INTERNATIONAL INC.

W1812 7" 2 HP Planer Moulder w/ Stand

D3393 Elliptical Jig for W1812



10" 2 HP OPEN-STAND HYBRID TABLE SAW

- 2 HP, 120V/240V, single-phase (prewired for 120V)
- Motor Amps: 15A at 120V, 7.5A at 240V
- Enclosed cabinet bottom w/ 4" dust port
- Precision-ground cast-iron table w/ steel wings measures 40 1/4" x 27"
- Rip capacity: 30" to right, 15" to left
- Quick removal/replacement system for blade guard and riving knife
- Weight: 243 lbs.

Includes a 10" x 40-tooth carbide-tipped blade, standard and dado table inserts, miter gauge, push stick, and arbor wrenches



W1837 10" 2 HP Open-Stand Hybrid Table Saw

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

- Motor: 3/4 HP, 110V, 1725 RPM
- Overall height: 38"
- Spindle travel: 3/4"
- Swing: 13 1/4"
- Drill chuck: 5/8"
- Speeds: 12, 250-3050 RPM
- Table: 12 5/8" dia.
- Table swing: 360°
- Table tilt: 45° left & 45° right
- Approx. shipping weight: 123 lbs.



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W1668

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12" X 15" VARIABLE SPEED BENCH-TOP WOOD LATHE

- Motor: 3/4 HP, 110V, single-phase, universal motor
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- Approx. shipping weight: 87 lbs.



W1836 Bench-Top Wood Lathe

20" PLANER W/ MOBILE BASE AND SPIRAL CUTTERHEAD

- Motor: 5 HP, 240V, single-phase, 20A
- Max. width of cut: 20" • Max. height of cut: 8"
- Min. stock thickness: 3/16"
- Min. stock length: 8"
- Max. cutting depth: 1/8"
- Cutterhead dia.: 3 1/8"
- Cutterhead speed: 5000 RPM
- Cutterhead: Spiral 4 rows, 96 carbide inserts
- Precision-ground cast iron table size: 20" x 25 3/4" (20 7/8" x 56 1/2" w/ extension)
- Approx. shipping weight: 937 lbs.



W1754SW

20" Planer w/ Mobile Base and Spiral Cutterhead

8" JOINTER W/ ADJUSTABLE BEDS

- Motor: 3 HP, 240V, 12A, single-phase, TEFC, 3450 RPM
- Precision-ground cast iron table size: 8" x 76 1/2"
- Cutterhead dia.: 3"
- CPM: 21,400;
- Speed: 5350 RPM
- Max. width of cut: 8"
- Approx. shipping weight: 534 lbs.



W1741W 8" Jointer w/ Adjustable Beds

2 HP DUST COLLECTOR

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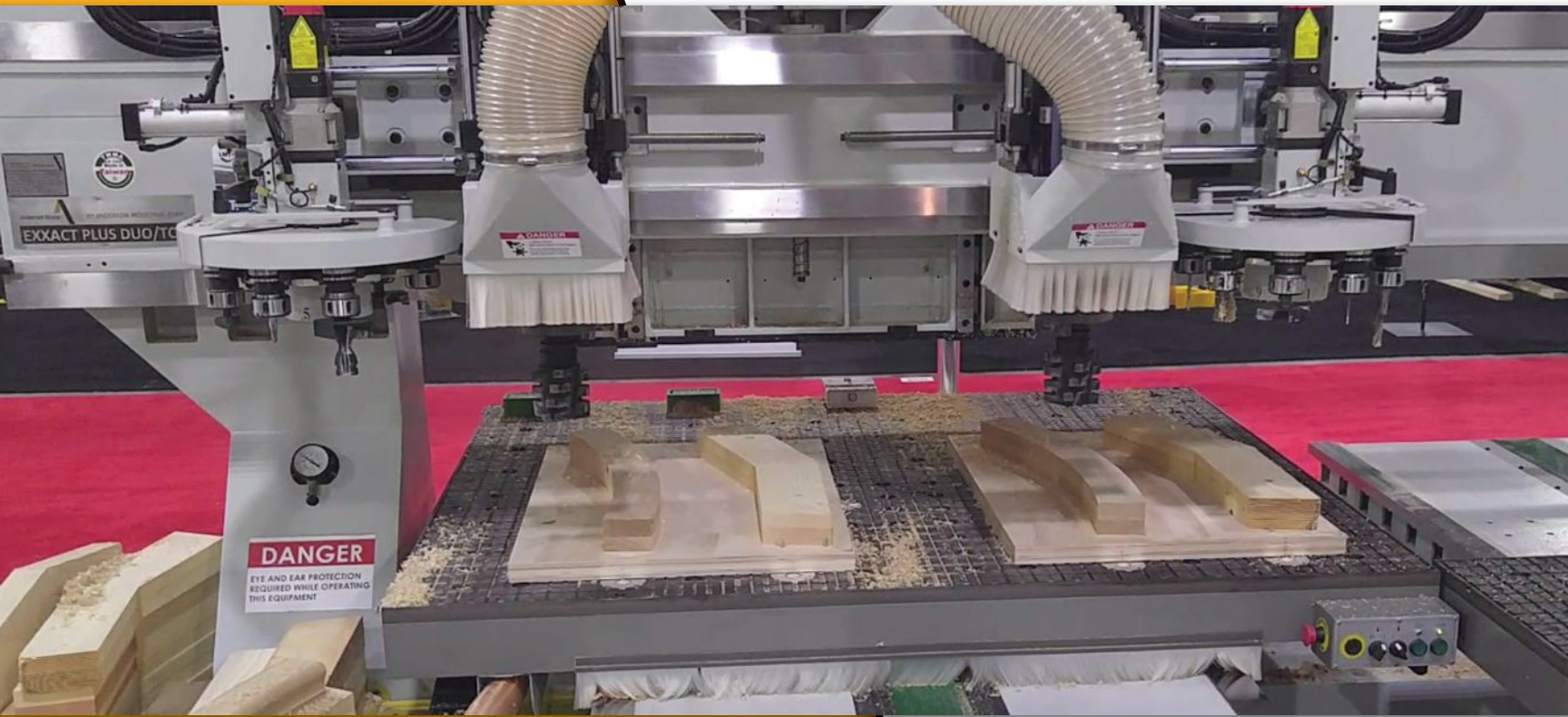


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GET YOUR GLIDE ON

SLIPIT. Sticky is out. Smooth is in.

Woodworking shops can be noisy, smelly, dirty and dusty – but it doesn't have to be that way. When your tools and machinery are working smoothly, there's less noise. When your lubricant is odorless and greaseless, there's no foul smell and the air is cleaner. And if you've ever ripped a board on a table saw, you already know the safety benefits of lessened resistance on the table surface.

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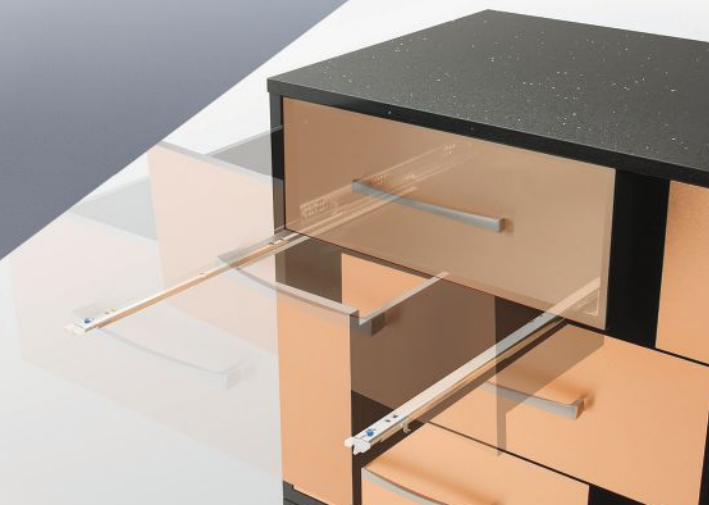
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BLOGS



Over the Workbench

Talkin' shop with former editor A.J. Hamler



This Business about Woodworking

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

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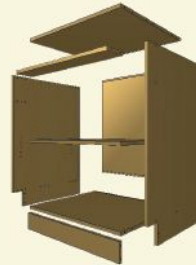
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TAKING STOCK

with TOD RIGGIO

Burgeoning shows are signs of a return to normalcy

“Welcome back, my friends, to the show that never ends. We’re so glad you could attend. Come inside, come inside.”

Those are the opening lyrics from Emerson, Lake and Palmer’s “Karn Evil 9,” which later implore that you’ve got to see the show (because) it’s a dynamo. The song is a staple of classic rock and one that I can’t get out of my head as the year’s industry trade shows draw near.

The AWFS fair, which runs July 19-22 at the Las Vegas Convention Center, is shaping up as one of the biggest in recent memory. As we reported last month, producers are expecting a sold-out show floor and more than 15,000 attendees.

To accommodate exhibitor demand, the show is expanding to three halls at the convention center.

Meanwhile, there’s plenty of hoopla surrounding Ligna, which runs May 22-26 in Hannover, Germany.

Organized by Deutsche Messe and the German Woodworking Machinery Manufacturers’ Association, Ligna is expected to draw 93,000 visitors, 1,500 exhibitors from 49 nations, and occupy 1,377,700 sq. ft. That’s about 24 football fields, with the end zones included, for comparison.

“Given the current business climate in the wood industry, the growing wave of digitalization and our revamped thematic layout, we are looking forward to a very successful Ligna this year,” show director Christian Pfeiffer said in a statement.

“The show has experienced the first significant rise in booked space in several years and we have already outstripped the final figures for the most recent stating of Ligna, in 2015.”

Both shows are promoting Industry 4.0, the current trend of automation and data exchange in manufacturing technologies. The idea is that computers and automation will come together in an entirely new way, with robotics connected remotely to computer systems equipped with machine-learning algorithms that can learn and control the robotics with very little input from human operators.

You’ll also learn about “smart” factories and the Internet of Things, a concept of connecting any device to the Internet.

Both shows are benefiting from a healthy economy. These very well be the good ol’ days that we yearned for during the Great Recession. Maybe that’s hard to believe for some, but there’s no surer sign of a growing industry than a robust trade show.

So while Germany might be farfetched given the calendar, I urge you to attend AWFS. Roll up, as the song goes, and see the show.

About the cover

Before the emails start pouring in, asking about the machine on the cover, I’ll tell you what we know.

Hal Moore, owner of Saranac Hollow Woodworking (featured on Page 34), is using an “American” band saw. Moore believes the saw was manufactured in the 1920s, though we couldn’t find a nameplate.

Safe to say it was before advancements in dust collection. **W**

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

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marketplace@woodshopnews.com



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Advertising E-mail: sales@woodshopnews.com

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Advertising Billing Questions: (310) 356-4121

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Sat. - Sun. - 9:00 AM to 6:00 PM EST.

WRITE: Woodshop News, PO Box 433212, Palm Coast, FL 32143-3212

Canada Post Return Address undeliverable to:

APC-PLI, P.O. Box 503, RPO West Beaver Creek,

Richmond Hill, ON L4B 4R6.

Canada Post Publication Mail Agreement No 40624074.

E-MAIL: circulation@woodshopnews.com.

Please include name, address, and phone number on any inquiries.

Woodshop News, (ISSN 0894-5403, U.S.P.S. 000-966).

Vol. XXXI, No. 6, 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.



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- Table size: 21 3/4" L x 16 1/8" W
- Table tilt: 5° L, 45° R
- Floor-to-table height: 37"
- Max. throat capacity: 13 1/2"
- Max. throat capacity w/fence: 12"
- Max. cutting height: 14"
- Blade size: 120" L (1/8" to 3/4" W)
- Blade speed: 2820 FPM
- Footprint: 24" L x 18" W
- Overall size: 29" W x 32 1/2" D x 76" H
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14" Resaw Height!



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- Max. cutting height: 12"
- Blade size: 143" L (1/8" - 1 1/4" wide)
- Blade speeds: 1700 & 3500 FPM
- Approx. shipping weight: 512 lbs.



12" Resaw Height!

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10" HYBRID TABLE SAW W/RIVING KNIFE & IMPROVED FENCE

- Motor: 2 HP, 120V/240V, prewired 120V, single-phase
- Amps: 15A at 120V, 7.5A at 240V
- Precision-ground cast-iron table w/ wings measures: 40 1/2" W x 27" D
- Floor-to-table height: 35 3/8"
- Arbor: 5/8"
- Arbor speed: 3450 RPM
- Max. depth of cut: @ 90° 3 1/4", @ 45° 2 1/4"
- Rip capacity: 31" R, 16 3/4" L
- Overall size: 64" W x 40 1/4" D x 35 1/2" H
- Footprint: 21" L x 19 1/2" W
- Approx. shipping weight: 371 lbs.



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- Motor: 3 HP, 240V, single-phase, 3450 RPM, 14A
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- Capacity: 3" @ 90°, 2 1/8" @ 45°
- Rip capacity: 26" R, 8" L
- Footprint: 20 1/2" x 20 1/2"
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- Sliding table size: 63" x 12 3/8" • Scoring blade speed: 8000 RPM
- Max. rip capacity: 33" • Length of crosscut: 63"
- Max. capacity of crosscut fence: 68 1/2"
- Footprint: 45" x 35"
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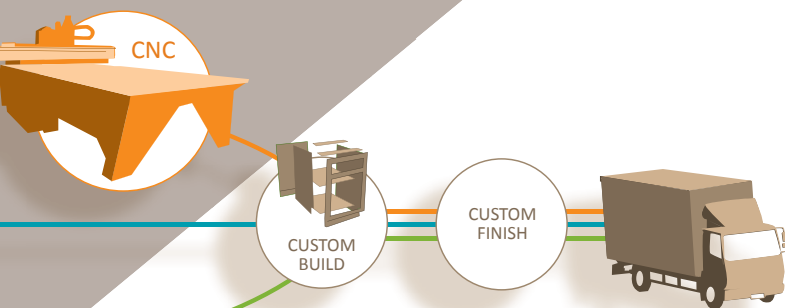
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LETTERS

Save money, but meet the proper air-quality standards first

I was distressed to see April's Pro Shop column ("Clearing the air doesn't cost a whole lot of cash" on Page 30) discuss improving ventilation by using the standards of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. The ASHRAE standards are clearly for the purposes stated in their name: heating, refrigerating and air-conditioning. These are not the standards needed for the industrial exhaust systems needed in a woodshop.

As an industrial hygienist who has been on

the architect's teams for more than 80 art and theater buildings, most of which included a woodshop, I am professionally required to follow the right standards, which are found in the American Conference of Governmental Industrial Hygienist's "Industrial Ventilation: A Manual of Recommended Practice." In fact, ASHRAE 62.1 "Ventilation for Acceptable Indoor Air Quality" refers to the ACGIH manual for systems designed to control air that is contaminated sufficiently to present a health hazard. The wood dust, solvent vapors and other shop contaminants require more than an ASHRAE air-conditioning system.

The ACGIH manual has all of the requirements for the configuration of the ductwork, the specifications for the fans and all of the other information needed to properly select and install both the local exhaust systems (spray booths and dust collection) and the dilution ventilation exhaust for the general air in the shop. HVAC engineers can design the conditioned air supply for the shop, but the general and local exhaust systems need a different set of skills.

The column's reference to the OSHA standards is more relevant. While the ASHRAE standards are not intended to meet OSHA standards, the ACGIH's Industrial Ventilation Manual of Recommended Practice is consistent with OSHA standards. For example, a properly permitted spray booth, under OSHA standards (see 29 CFR 1910.107(c)(6)) requires Class 1, Division 2 wiring and no ordinary electrical equipment in an area 20 feet around the face of the booth. In other words, the spray booth should not be in the shop, but in a separate room. And, if you want good finishes, keeping the booth separate from woodworking activities makes even more sense.

I agree that improving the air doesn't have to cost a great deal. But the money should be spent on fixes that meet the right standards.

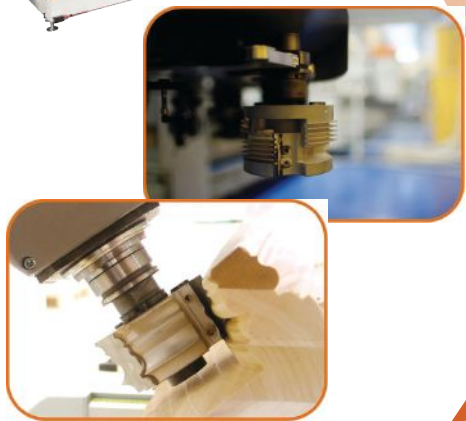
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NEWS DESK

Emerging artists honored at Philly furniture show

By Jennifer Hicks

Justin Seow from the Rhode Island School of Design and Harvard graduate Julia Michalski recently won the emerging artist competition at the 23rd annual Philadelphia Furniture Show.

The competition, co-hosted by The Furniture Society, began in 2105 to support the next generation of furniture artisans. Seow and Michalski tied for the award, which got them a free booth at the show and mentoring from Society members.

Seow is a junior at RISD majoring in furniture design. He works in wood, metal, LEDs, glass, faux fur, rubber and foam.

Michalski has an architecture degree from the University of Southern California and a master's degree from the Harvard Graduate School of Design. She operates Moosch Design in Newtown, Pa., a woodworking and prototyping workshop for small-scale architectural design, interiors, furniture and product design.

Clark Kellogg, a competition judge and owner of Kellogg Furniture in Houston, noted "Mr. Seow's 'Chair from a Third Perspective' is a wonderfully self-contained thesis on being a first-generation American. The chair makes a clear reference to a traditional Ming Dynasty chair, yet looks forward in a way that is entirely new. And Ms. Michalski's 'Library Bench' balances the natural, slab-edge detail of the material with the simple L-shape form. It is both timeless and brand new."

The other judges were David Short of Edgewood Made in Philadelphia and R. H. Lee of Offerman Woodshop in Los Angeles.

The competition is open to an apprentice, current student or graduate within three years of commencement.

For more, visit www.philadelphiafurnitureshow.com. 



Justin Seow



Julie Michalski

AWFS showcase will have a futuristic focus

By Jennifer Hicks

The 2017 AWFS fair, scheduled for July 19-22 in Las Vegas, will feature a new showcase billed as "Industry 4.0."

It will highlight some of the latest technology expected to influence the future of manufacturing, including artificial intelligence, augmented and virtual reality, robotics, 3-D printing, cloud computing, as well as the Internet

of Things (IOT) and Internet of Services (IOS).

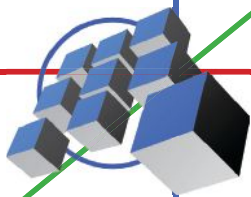
The showcase will be located on the show floor near the Visionary New Product Award showcases, grouping new product innovation into one central location. In addition, exhibitors participating in the showcase will also be highlighted on the show's website, in the official show directory and have designated markers for Industry 4.0 products in their booths.

"We really wanted to highlight Industry 4.0

and the technology that has had an impact on manufacturing for several years now, and let our attendees know how they can take advantage of this technology today, as well as what they can expect in the future," AWFS trade show chairman Rob Howell said in a statement.

There will also be a focus on Industry 4.0 topics in the fair's College of Woodworking Knowledge educational program.

For more, visit www.awfsfair.org. 



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SawStop wins a legal round in table saw dispute

U.S. International Trade Commission rules against the importation of Bosch's Reaxx job-site table saw

By Jennifer Hicks

As SawStop continues to press on with its battle to prevent the Robert Bosch Tool Corp. from importing its Reaxx job-site table saw into the U.S., it now has some legal backing with a cease-and-desist order issued by the U.S. International Trade Commission.

The March 27 order passed a 60-day presidential review period and directs the U.S. Customs and Border Protection agency to exclude Bosch Reaxx table saws and components of those saws, including cartridges, from entering the U.S. Additionally, Bosch is prevented from marketing, advertising and soliciting U.S. agents and distributors of the saws and their components.

The order follows SawStop's complaint that Bosch infringed on its safety technology and patents.

"We have defended our innovation, our hard work, and our investments in developing SawStop technology, and we will continue to protect our intellectual property. We are grateful for the U.S. patent system for encouraging and protecting innovations, and we look forward to continuing to supply the market with safer saws," SawStop president



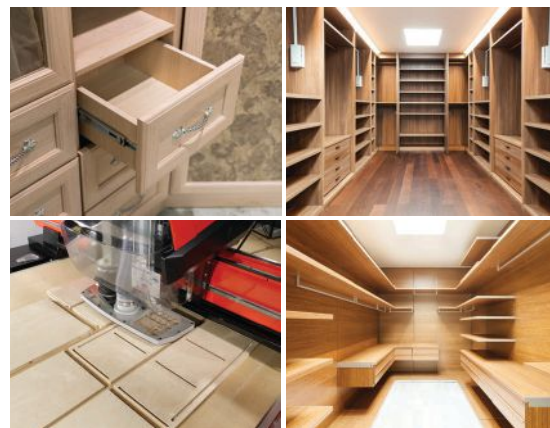
Stephen Gass said in a March 28 statement.

Bosch is maintaining that its Reaxx saw represents new safety technology and that its patents don't violate SawStop's product.

"Bosch will continue to provide distributors and end users with service, repair and support for Reaxx table saws previously purchased, including the availability of replacement cartridges manufactured in the U.S., which are not subject to the ITC import ban," according to the company's March 23 statement. "We will continue to fight for our ability to sell Reaxx in the future by appealing to the U.S. Court of Appeals for the Federal Circuit." **W**

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Walnut sales sees a sustained spike

By Jennifer Hicks

Stately wood tabletops are all the rage these days with many unique tree slabs available, especially those made of walnut, a thick and durable hardwood rich in color. Hardwood suppliers interviewed by Woodshop News report a strong consumer interest in walnut varieties as some favor it with a live edge to add flare to their projects.

Rob Lamoureaux of Parkerville Wood Products in Manchester, Conn., reports adequate supplies and stable prices. He says customers are mainly looking for clear grades of walnut, which is a notoriously knotty tree.

"In the past month, we've seen a spike in sales on walnut mostly for countertops and tabletops. Just in the past few weeks, we've had five orders to prepare slabs for tabletops with a live edge. We don't see it used so much for furniture, but for millwork like crown molding," Lamoureaux says.

"I see a lot of different things going on. I'm not sure if it's a design trend or not. People are more comfortable with their money and we always see that right after an election. But we've always had success with walnut."

Eastern black walnut, (*Juglans nigra*), is native to eastern North America. Claro walnut (*Juglans hindsii*), also known as Western walnut or California walnut, is very similar to Eastern black walnut, but still distinctive in



appearance. It grows in the Western U.S. from Northern California to southern Washington to western Idaho.

"With the claro, the trees get a lot larger and the growing conditions are different, which also translates into a different color in the wood," says Aaron Blumenkron of Goby Walnut Products in Portland, Ore.

"We sell more claro walnut than anything and we've constantly been sold out of material probably for the past year. So, as a whole, sales have picked up and continued to stay strong. Live-edge material is incredibly popular right now, especially for the big slabs."

Blumenkron has seen an uptick in the use of live-edge slabs for commercial interior spaces,

such as bars, coffee tables and bathroom vanities at hotels and restaurants. Regular slabs are often used for interior furnishings like trim, stair treads and railings.

Doug White, owner of Doug White Hardwoods in Marissa, Ill., says walnut's popularity has exceeded a one-year stretch, which is not the typical case with other hardwoods.

"It's been a pretty good mover of ours, more than the lighter-colored woods like the hickory or birch and maple, which have particularly fallen off for us. But we've seen a lot more walnut than normal," says White says.

"The dark color seems to be the trend. We sell a lot of flooring in walnut and other things and it seems like flooring has taken a turn for the dark, too. It's been doing that for over a year." **W**

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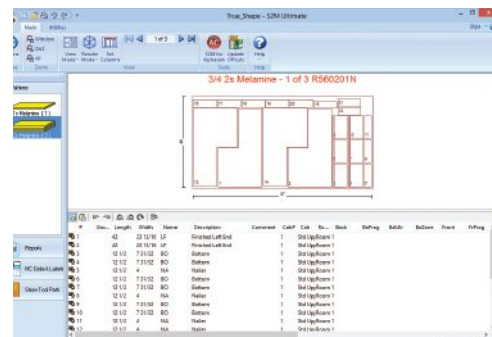


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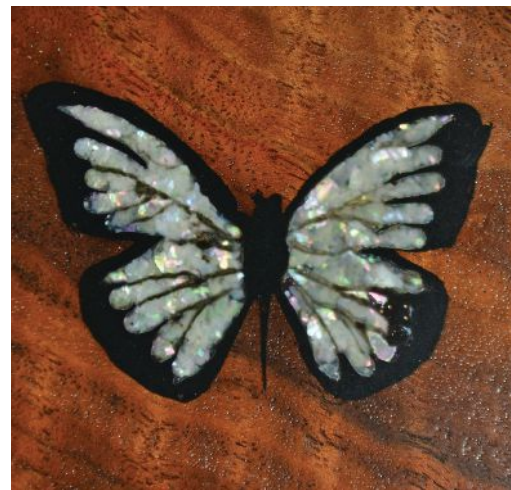
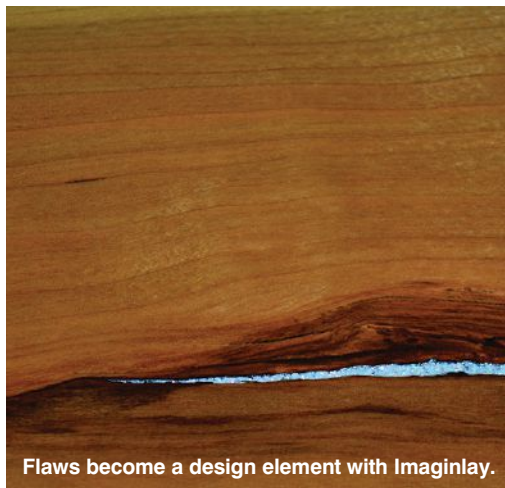
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TOOLS & TECHNIQUES



Furniture maker creates brand of mineral fillers

By Jennifer Hicks

Furniture maker Scott Grove recently developed the Imaginlay brand of mineral fillers as a creative option for woodworkers and turners.

"Typically when you have a crack in wood, either you don't use that piece or, if you do, you try to fill it with a black or dark filler, but it's still a notch and still a blemish. This helps to add a little accent point to that area. It makes a knot into a design element," Grove says.

"Some turners and woodworkers will fill them with turquoise and, for what it's worth, that color is beautiful but a little '70s — and that's fine. It works in some places, but I began looking at other stones you can buy to fill with. I first started playing with crystal calcite and then Mother of Pearl, which is from oyster shells."

The Mother of Pearl mineral offers an iridescent, sparkly shine, while the crystal calcite has translucent properties and can be dyed to look like a ruby, sapphire or other gem.

Grove, who creates studio furniture and sculpture in Rochester, N.Y., says the fill-

ers are easy to use. They can be mixed with cyanoacrylate glues or any type of resin that will harden. Grove says the products are 100 percent natural.

Grove learned quickly that when filling wood with a natural mineral or shell, everything relates back to the Mohs Hardness Scale.

"Essentially, it's a scale ranging from 1.0 to 10 where talc is one and 10 is diamond. If the material is too soft, it will dent in and if it's too hard it will create a hump and be hard to

sand," Grove says.

Both the Mother of Pearl and calcite have a hardness of 3.5 and are easily sanded using silicon carbide or aluminum oxide sandpaper, which has a hardness of 9.0, according to Grove.

The Mother of Pearl is sold in fine and flake versions (1 ounce for \$12.95) and the calcite in fine and coarse (3 ounces for \$19.95).

For information, visit www.imaginlay.com or www.scottgrove.com. **W**



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Festool Connectors boost on-site capabilities

By Jennifer Hicks

Festool is introducing the next generation of Domino Connectors to build, set up and knock down large pieces by using only a hex wrench. Ultimately, it's a faster and simpler way to build furniture at a customer's site, according to the company.

The connectors fit into mortises made with Festool's Domino XL (DF 700) joiner.

"Festool Connectors make things nicer on the assembly end, so they're a natural extension of people using the Domino XL for furniture construction," product manager Rick Bush says.

"You can maximize your processes by building the furniture in the shop, but once you've got some kind of structure built, you have to figure out how to get it to the customer. So oftentimes you have to

compromise by building it on site. With this fastener, we're going to build the main project in the shop environment — the controlled environment — have it completely assembled and then take it apart in large sections, deliver to the customer and install it there."

The fasteners are sold for flat joints or panel joints and various components such as colored caps to cover mortise holes are available.

The Domino Connector Set, model 201353, sells for \$259.

For more, visit www.festoolusa.com. **W**





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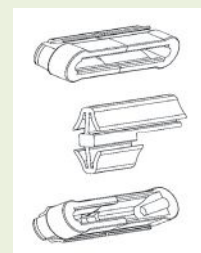
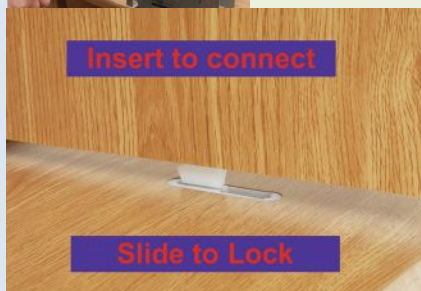


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MicroJig makes dados a done deal with MatchFit

By Jennifer Hicks

MicroJig, a creator of pushblocks, clamps and other woodworking accessories, added the MatchFit Dado Stop for making precise-fitting dados with any saw blade.

"The Dado Stop allows for setting up cross dado grooves when using a miter fence. It allows you to cut a groove that is exactly matched to whatever you're going to put into the groove," product manager Ralph Bagnall says. "So if you need to do an inlay, you can use the actual inlay to set the jig, and when you use the jig to gut the groove, it automatically fits that piece that you set up with, so there's no measuring, no marking and no test-cutting that you need to do."

Bagnall explains that the design of the Dado Stop is what makes creating tight-fitting joinery simple and easy. The woodworker starts by securing the Dado Stop to a table saw rip fence with a MatchFit Dovetail Clamp. Then the width of the dado cut is set through a three-step process of setting the kerf, setting the dado and then cutting the dado.

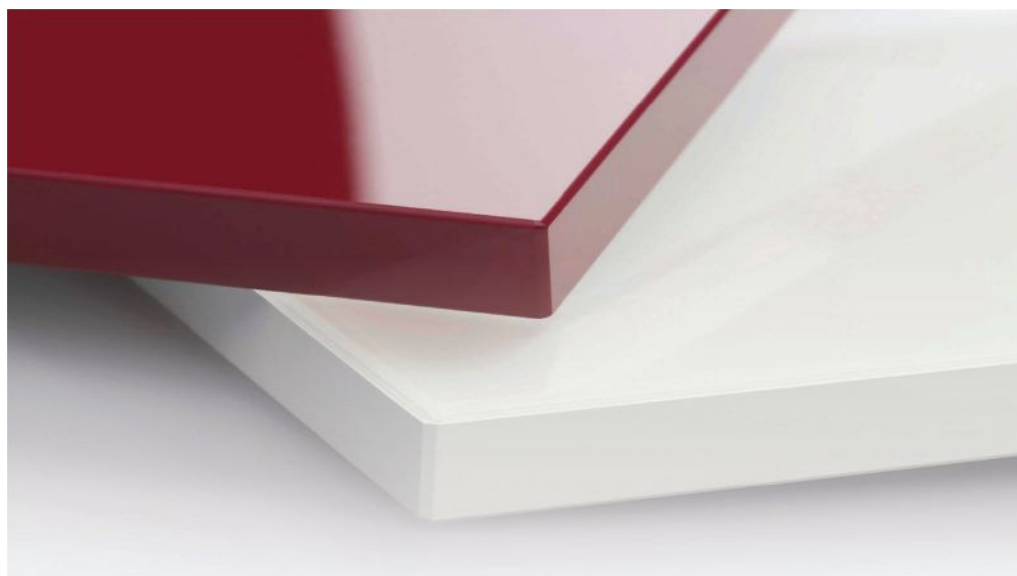
"This is especially good for doing joinery like half laps where you can take the piece that's being let into the other one, use that to set the jig and go ahead and process your half lap and get an exact fit without having to know exactly how thick the piece that you're letting in is."

Bagnall adds that the Dado Stop can be a real timesaver.

"You don't have to put the dado stack into the saw. If you're only doing one or two, you can just go ahead and set up the dado stop and cut the two shoulders referencing off the dado stop. This saves a lot of time because you don't have to set up the dado stack, you don't have to put shims in it, then make a cut and check the fit, then take it apart to add or subtract shims as needed."

The MatchFit Dado Stop sells for \$19.95. The MatchFit Dovetail Clamps sell separately for \$39.95 a pair.

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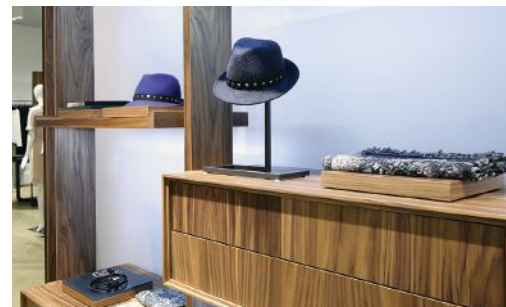
Accuride debuts new undermount slide

By Jennifer Hicks

Accuride unveiled the Eclipse undermount slide, model 3160EC, for drawers 31" to 60" wide, featuring the company's slam-resistant and Easy Close technologies.

The new slide also features a 100-pound load rating, according to Accuride marketing manager Claudia Tuttle.

"A lot of cabinetmakers who need a 60" wide drawer will cut the drawer in half and not attempt to make a drawer that wide. Now, with this product, they have the ability to go as wide as 60". With a bigger drawer you are going to have more waddle, so this specific slide is for drawers from 31 to 60" wide. For drawers smaller than that, we use our regular 3135 slide," Tuttle says.



There are two ways to install the slide to minimize racking, reduce side-to-side movement and enhance overall stability.

"For drawers ranging 31" to 40", the slides are used with a cable system that connects the slides when they open for stabilization. When the drawers are 41" to 60", you also add a stabilizer bar which helps with the racking and stabilization of the drawer," Tuttle says.

The slides are available in even lengths from 12" to 28" and odd lengths from 15" to 21".

For more, visit www.accuride.com. 

DeWalt adds power to Flexvolt line

By Jennifer Hicks

DeWalt added a 9.0-amp-hour lithium-ion battery to its Flexvolt line, a dual-voltage (20/60 volts) platform capable of powering the company's 20-, 60- and 120-volt cordless tools.

The battery, model DCB609, features upgraded cells to provide 9.0 Ah as a 20-volt battery or 3.0 Ah as a 60-volt battery, according to the company.

DeWalt debuted the Flexvolt line last summer with a 6.0 Ah battery.

"The biggest advantage to this system is for using tools like miter saws or table saws that you need a lot of power for," DeWalt director of product marketing Jeff Beck says. "You can't get that kind of power for a 12" miter saw out of a 20-volt battery system, so the beautiful thing for the user is they can use a 60-volt battery to power a table saw and miter saw and use that same battery in their drills, impacts drivers and circular saws without having to stock two different battery platforms."

The stand-alone battery sells for \$199. Two batteries and a charger costs \$299.

For more, visit www.dewalt.com. 



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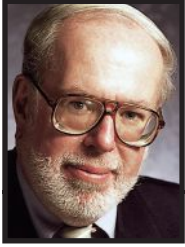
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Health care costs will keep dogging woodworkers

The complexities of the Affordable Care Act are not going away, so here's how to navigate the law

The attempt to repeal and replace the Affordable Care Act, commonly called Obamacare, recently failed. Since everyone must have basic health insurance that meets the government's standards and larger woodworking businesses are required to provide their workers with that coverage, that means — fortunately or unfortunately — the ACA remains, warts and all, the law of the land for the foreseeable future.

The ACA continues to offer professional woodworkers and their businesses a number of options — and an overwhelming amount of confusion and paperwork. What can a woodworking business owner and manager do to keep health care costs manageable while complying with the ACA's rules?

Individual mandate

Independent contractors, professional woodworkers and business owners classified as self-employed usually don't qualify for employer-provided health coverage. In the past, some received coverage through a spouse's employer, while others often went without any type of insurance. The ACA changed the playing field.

Today, the ACA's individual Mandate means that previously uninsured independent contractors and business owners are required to purchase insurance or face annual penalties. Of course, at the same time, insurers can't deny policies or charge more for a pre-existing condition.

Whether the penalty on individuals who fail to obtain health insurance is labeled a tax or not, it is equal to the larger of 2.5 percent of household income or \$695 per adult (\$347 per child under 18), up to a \$2,085 maximum.

Self-employed woodworking professionals and business owners can, of course, deduct the cost of health insurance for themselves and their spouses and dependents. Thus, if an S corporation pays accident and health insur-

ance premiums (under a plan established by the S corporation) on behalf of a more-than-2 percent shareholder who is also its employee and who must include the value of the premiums in his or her gross income, the shareholder is permitted to deduct the cost of the premiums paid on his or her behalf.

The employer mandate

Much of the ACA's negative impact stems from the so-called employer mandate that requires businesses with more than 50 full-time equivalent employees (FTE) provide health coverage to full-time workers. The penalty is generally equal to \$2,260 divided by 12 for each month an employer fails to provide coverage, multiplied by the number of eligible employees (minus the first 30 employees).

However, while many of the ACA's taxes and tax credits are based on the number of FTEs and their average annual wages, it's not solely based on the number of full-time employees. In simple terms FTE equals the total number of full-time employees plus the combined number of part-time employee' hours divided by 30. Seasonal employees, contractors and business owners generally don't count toward the total.

Net investment income tax

A net investment income tax (NIIT) of 3.8 percent applies to the net investment income of individuals, estates and trusts that have income above \$200,000 for single filers and \$250,000 for joint filers. Net investment income includes capital gains, dividends, interest and most investment earnings — and income from businesses that are considered passive activities to the taxpayer.

Fortunately, NIIT does not include operating income from a non-passive business or self-employment income, although gains from the sale of interests in partnerships and S cor-

porations (to the extent the partner or shareholder was a passive owner) are included.

Additional payroll tax

Under the ACA, a surtax on earnings above \$200,000 (or \$250,000 for joint-filing taxpayers) went into effect beginning in 2013. At that earnings threshold, the portion of the FICA health insurance tax paid by employees increases by 0.9 percentage points to a total of 2.35 percent. The surtax does not apply to the portion of the health insurance tax paid by employers, which remains at 1.45 percent of earnings, regardless of how much the worker earns.

An additional Medicare tax went into effect in 2013 that applies to wages, compensation and self-employment income above a threshold amount received in taxable years. The 0.9 percent Medicare Part A tax is paid by both employees and employers. Often overlooked, however, is the fact that a woodworking professional or business with profits of more than \$250,000 faces a 0.9 percent increase (from 2.9 to 3.8 percent), on the current Medicare Part A tax.

Since this tax is split between the employer and employee, they will both see a .45 percent increase. Small businesses making under \$250,000 are exempt from the tax. Employees making less than \$200,000 as an individual, or \$250,000 as a family, are also exempt.

The exchanges

The ACA continues to offer small woodworking businesses affordable insurance options, cost assistance and increased buying power via the Small Business Health Options Program (SHOP). Small businesses employing fewer than 50 can use SHOP to get better deals on employee insurance, but aren't mandated to do so.

The SHOP marketplace is for small employers who want to provide health and dental insurance to their employees — affordably, flexibly and conveniently. While it is not necessary to wait for an open enrollment period to use the SHOP marketplace, a woodworking business must have 50 or fewer FTEs, but at least one FTE other than owners, partners or family members.

The SHOP marketplace introduced new features that make it easier to choose, manage and get support when buying SHOP plans. Starting with 2017 plan-year coverage, a business using the SHOP marketplace can:

Offer employees more choices. In some states, the business can now select any insurance company offering SHOP marketplace plans in its area and allow employees choose any available plan from that company, in any category (bronze, silver, gold or platinum).

As was the case last year, employees can be offered a single health insurance plan or allowed to choose any available plan within a single coverage category selected by the business.

Every business can now see a breakdown of premium costs by employee and dependent (if applicable), instead of seeing only their total monthly premium.

Finding an agent or broker is easier. Employers, now have more SHOP-registered agents and brokers to choose from in their area.

Small-business tax credit

Plans offered by each state's exchange are classified in four primary tiers — bronze, silver, gold and platinum — with higher premiums, but better coverage as the levels ascend. The ACA offers a tax credit for so-called lower-wage small businesses that buy insurance coverage through SHOP. Small businesses that provide health care coverage can see up to a 50 percent reduction in their share of the cost.

Employers with fewer than 25 FTEs with salaries averaging \$50,000 or less per year, paying at least 50 percent of their full-time employees' premium costs on coverage obtained through the SHOP marketplace, qualify for tax credits to help pay employee healthcare premiums. Employers with 10 or fewer full-time employees, paying annual average wages of \$25,000 or less, qualify for the maximum credit of 50 percent. The amount employers pay is tax-deduct-

ible and can be carried forward or backward.

On the downside, many woodworking business owners have snubbed the exchanges because of the small size of the tax credits and administrative challenges in securing them. In fact, very few states have set up the promised small-business health insurance exchanges and the few existing exchanges offer arrangements that weren't available before the law.

While supporters of the ACA tout its success in providing insurance to millions of Americans, escalating insurance costs are impacting many businesses as well as those who do not qualify for subsidies and others who buy health insurance directly. Last year's bipartisan legislation allows small businesses to avoid fines for contributing to their employees' health insurance in the individual market.

DIY option

Despite the failure of the ACA repeal-and-replace legislation, tax-favored, flexible spending accounts such as health savings accounts (HSAs) remain a great way for the self-employed and small-business owners to cover health care costs. Health savings accounts are a tax-advantaged medical savings account available to taxpayers who are enrolled in a high-deductible health

plan offered by banks, insurance companies, brokers and credit unions.

In 2017, anyone (and his or her employer) can contribute up to \$3,400 to an HSA for individuals and \$6,750 for families. Account holders age 55 and older can contribute an extra \$1,000. Unfortunately, in 2017, only health plans with a deductible of at least \$1,300 for single people or at least \$2,600 for family coverage qualify.

Future of the ACA

Beginning in 2020, employers will be taxed on the so-called high-dollar plans that currently cover more than half of all employer-provided plans. When the cost of qualified employer-sponsored health insurance coverage (known as Cadillac plans) exceeds certain dollar amounts, the ACA will impose a 40 percent excise tax on premiums exceeding \$10,200 for individual policies and \$27,500 for family plans.

With talk of further attempts to repeal and/or replace the Affordable Care Act, keeping abreast of the many benefits and potential pitfalls of the ACA is more important today than ever. It is, however, the skyrocketing cost of health care that makes professional guidance a necessity for every woodworking business and its owners. **W**



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Auto history provides a ride down memory lane

**From the Model T to today, automotive coatings are intertwined with
the evolution of wood finishes**

It's likely that you've never finished a car or truck and you might not have any desire to do so. But knowing the history of the development of automotive coatings is instructive for understanding how wood finishes have changed through the decades. Much more research goes into automotive coatings than into wood finishes. We piggyback on this research.

You surely know the story of Henry Ford offering customers any color they wanted on their Model T as long as it was black. Well, there was a reason for this. In the early days of automobile finishing, there were no special paints or finishes for cars — just what was offered at regular hardware stores. This meant either shellac- or oil- and resin-based; varnish and oil-based paint in today's terminology.

Shellac wasn't durable enough for cars, so Ford used oil paint, which was plenty durable but took a long time to dry — even longer than modern oil paints. As it happened, black dried faster than other colors, so customers were limited to black for the sake of efficiency.

Even so, the finishing process took up to a month because of drying times. The finishers used brushes to apply the black paint and had to wait for each coat to dry before applying the next. So a bottleneck was created at the end of the assembly line.

As the Model T continued to be built, DuPont saw a market for faster drying finishes and developed the first commercial nitrocellulose lacquer by modifying the cellulose nitrate used for explosives and motion-picture film. This was the first coating developed specially for cars. Because it dries solely by solvent evaporation rather than by oxidation like varnish, the finishing

process was reduced to a few days.

Because of the fast drying, a spray gun had to be used for application. Spray guns had been invented and improved in the 1890s and first two decades of the 20th century by Joseph Binks and Allen and Tom DeVilbiss. So, by 1924, when General Motors introduced the Duco brand of nitrocellulose lacquer on almost its entire line of cars, the application tool was ready. In addition to faster drying, nitrocellulose lacquer made the use of other pigment colors possible.

In the furniture industry at the time, shellac was the common finish used because it dries fast and is durable enough. But nitrocellulose lacquer offered several advantages over shellac, including better control of drying in different temperature and humidity conditions by choosing different solvents and better cost prediction because lacquer is a synthetic while shellac is a commodity product.

So during the years from the late 1920s to the early 1930s the furniture industry changed over almost entirely from shellac to lacquer.

Back to cars, the downside of nitrocellulose lacquer was reduced gloss compared to the oil-based paint. To achieve the highest gloss, the finish had to be polished and this added to the labor cost. (Trucks were rarely polished.)

The change from brushing oil-based paint to spraying nitrocellulose-based paint is arguably the biggest and most important change in the history of automotive coatings. Spraying lacquer is still common today in many auto body shops and a great many wood finishers use clear nitrocellulose lacquer.

But there have been a number of additional significant advances in automotive coatings since then.

Alkyds and acrylics

The first came in the 1930s when synthetic alkyd resins were developed. Alkyd resins provide excellent film properties and coatings based on this resin received their greatest use as primers.

Notice that this began what continues today as a standard in the automobile industry of choosing different coatings for specific layers in the painting schedule.

Acrylic lacquers, which were very popular from the 1950s through the 1970s, produced a high gloss without rubbing. Just as important, they also made the use of metallic pigments possible. Most cars finished during this time made use of the metallic effect.

To achieve the maximum visual effect, the metallic pigments, which are flat plate-like pigments, have to align themselves parallel to the painted surface. They have to lie flat even though they are mixed at every angle when sprayed. The low viscosity (lots of solvent) of acrylic lacquers gave the pigments the freedom of movement to do this. Then the rapid evaporation rate of the solvents and rapid drying locked the pigments in place.

E-coats

Probably the second most important breakthrough made in automotive coatings was the development of electrodeposition primers, simply called e-coats. This technology largely solved the problem of corrosion.

An e-coat is applied by dipping the entire assembled body of the vehicle into a large tank filled with a waterborne epoxy and urethane that crosslink when baked. A voltage is applied to get the coating to penetrate into all the nooks and crannies. Currently, the coating is positively charged and the body is negatively charged.

The downside of e-coatings is poor appearance and poor UV resistance. To remedy these problems primer surfacers were developed to create a smoother surface for topcoating and better resistance to UV degradation.

Basecoat/clearcoat

Though the acrylic lacquer topcoats provided a high enough shine without polishing, this shine didn't last long. So people had to wax their cars often to maintain the new car appearance. In addition, by the 1980s, stricter VOC laws were coming into effect, forcing automobile factories to reduce the amount of

solvent emitted to the atmosphere.

Manufacturers solved both these problems by switching to a two-layer finish — basecoat plus a clearcoat enamel topcoat. The basecoat was water-based to reduce VOCs, while color appearance and metallic effects were also improved. The clearcoat provided UV protection to the basecoat. This coat is often based on melamine chemistry, the same that is used in catalyzed wood finishes.

Continuing advances are being made to improve efficiency by cutting out some of the oven-drying steps. Traditionally, the water-based primer and basecoat each had to be dried before the next coat was applied, followed by the solvent-based clearcoat.

By switching to solvent-based primer, basecoat and clearcoat, each could be applied wet over the previous one. This reduced the oven-drying steps, which lowered the energy requirement for drying each coating. Oven drying was required only after the final clearcoat.

Of course, switching back to solvent-based coatings required a redesign of the coatings to keep the VOC footprint low. **W**

Bob Flexner is the author of "Understanding Wood Finishing" and "Flexner on Finishing."



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When is buying a used CNC your best option?

Sticker shock is a predictable reaction from small shops looking to purchase their first CNC setups for cabinet parts production. New high-end American- or European-made machines are in the neighborhood of \$125,000 to \$250,000. Mid-range machines with fewer features and options range from \$75,000 to \$100,000.

There are alternatives to buying a new machine. One option is the used market, such as buying directly from another shop or a used dealer. You'll save money buying used, but there are risks. Even if the seller has documented and dutifully performed the necessary

preventive maintenance, there are consumable parts that might or might not be available, particularly with the controller and its electronics. It is highly unlikely that you will get a warranty buying shop to shop, while a dealer will probably only offer a limited warranty. After-purchase support from a dealer is often limited or non-existent.

Another drawback to buying an older machine is upgrades that could become necessary. One way to minimize this risk is to buy from a reputable dealer that performs service and repairs. These dealers often fix or replace parts that tend to wear with extended use,

such as linear guide systems, spindles and automatic tool changers, control boards and wiring, cooling fans and monitors.

The next option is to purchase a refurbished machine that has been torn down to the chassis and rebuilt. Not all used machines are candidates for refurbishing. Generally, high-quality routers with unique characteristics are selected.

In remanufacturing, after the router has been completely disassembled, the chassis and gantry are sand-blasted and repainted. Linear guides, propulsion systems, trucks and rails are closely inspected, then either repaired or replaced.

The control systems, including hardware and software, are always completely upgraded in a refurbishment. These systems have gotten more powerful, significantly smaller and less expensive in the last five to 10 years. Switches, sensors and servo motors are usually replaced, while the spindles and automatic tools changers are either rebuilt or replaced. Custom features can also be added to a refurbished machine, often at lower costs than on a new machine.

After the CNC router is reassembled, all the



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calibration and quality-control processes are performed just as if it was a new machine. The entire process takes about three months to complete.

Another option is to buy a refurbished machine from the original manufacturer. Again, you will get a machine that has been rebuilt from the ground up. If you are the owner of a machine that is getting tired, the manufacturer can rebuild the machine for

you. This means that CNC router that fits nicely into the workflow of a shop will not be interrupted. As well, a shop can acquire new and expanded capabilities at a fraction of the cost of a new machine.

The cost of a remanufactured CNC router is about half of a new machine.

Whether refurbished or remanufactured, the cost savings is something a shop should consider. **W**

'Industry 4.0' will be a hot topic at AWFS

The 2017 AWFS fair will feature a new showcase highlighting Industry 4.0 and the technology that will heavily influence the future of manufacturing including artificial intelligence; augmented and virtual reality; robotics; 3D printing; cloud computing; Internet of Things (IOT) and Internet of Services (IOS).

The 4.0 showcase will be located on the show floor near the Visionary New Product Award showcases. In addition, exhibitors participating in the Showcase will also be highlighted in the AWFS fair website, the official show directory and have designated markers for Industry 4.0 products in their booths.

"We really wanted to highlight Industry 4.0 and the technology that has had an impact on manufacturing for several years now, and let our attendees know how they can take advantage of this technology today, as well as what they can expect in the future," Rob Howell, AWFS trade show chair, said in a statement.

Industry 4.0 educational sessions will be featured as part of the fair's College of Woodworking Knowledge.

For more, visit www.awfsfair.org.

TigerStop opens new office in Mexico

Citing growth in sales and the potential for expanding into foreign markets, TigerStop has opened a new office in Mexico City and has hired Gregorio Aspeitia as the national sales manager for Mexico.

"We are gaining traction in Mexico, and to serve this promising market we have decided to open an office in one of the most cosmopolitan and bustling cities in the world, Mexico City," Jack Ragan, TigerStop's vice president of sales and service, said in a statement. "Building a dealer and support network in Mexico makes sense and will become a hub for expanding into South America."

Aspeitia is tasked with new business development and building a new dealer network that can sell and support TigerStop products throughout Mexico and South America.

For more, visit www.tigerstop.com.

IWF donates \$25,000 to learning lab

The International Woodworking Fair made a \$25,000 donation to the Manufacturing Industry Learning Lab on behalf of the Wood Machinery Manufacturers of America and the Woodworking Machinery Industry Association.

Based in Colorado, the lab educates the next generation of manufacturing leaders and pioneers to apply science to life's common purposes in transformative and world-changing ways.

"We are committed to investing in the future of our industry," IWF 2016 Chairman Tom Onsrud said in a statement. "We fully support the [Manufacturing Industry Learning Lab's] forward-looking manufacturing learning environment that leverages instructor expertise and state-of-the-art equipment."

"We are so grateful for the support of IWF, WMMA and WMIA. They are an anchor to our continued development of future leaders for the industry" added Dean Mattson, director of Peyton Woods Manufacturing and founder of the Manufacturing Industry Learning Lab.

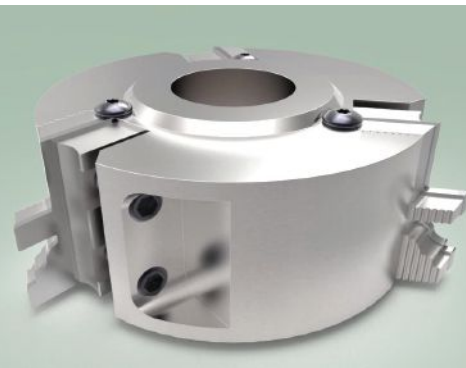
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- Rabbeting capacity: 3/4"
- Cutterhead dia.: 3 3/8"
- Cutterhead speed: 4300 RPM
- CPM: 19,800
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- Approx. shipping weight: 1056 lbs.



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- Cutterhead speed: 4800 RPM
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- Approx. shipping weight: 564 lbs.

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- Precision-ground cast iron table size: 16 1/4" x 99 1/4"
- Cutterhead speed: 5000 RPM
- Max. depth of cut: 5/16"
- Bevel jointing: 0–45° L/R
- Center mounted fence: 6 1/8" x 43 1/4"
- Approx. shipping weight: 1742 lbs.

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G9953ZXF \$6595⁰⁰ SALE \$6295⁰⁰

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G9953ZX \$6795⁰⁰ SALE \$6495⁰⁰



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- Precision-ground cast iron table size: 28" x 35 1/2"
- Spindle travel: 3/4" • Spindle tilt: 45°
- Spindle sizes: 3/4", 1", and 1 1/4"
- Spindle speeds: 3600 – 10,000 RPM
- Spindle capacity under nut: 5 1/8" (1 1/4" spindle)
- Approx. shipping weight: 710 lbs.

5 HP, Single-Phase

G5913Z \$3250⁰⁰ SALE \$2995⁰⁰

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- Secondary filter: HEPA rated 99.97% @ 0.3 microns
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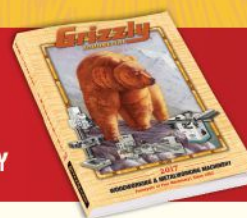
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- Cutterhead dia.: 2 $\frac{1}{8}$ "
- Cutterhead speed: 5400 RPM
- Max. planing height: 6"
- Planer feed rate: 11 & 22 FPM
- Planer table size: 19 $\frac{1}{4}$ " x 14 $\frac{1}{8}$ "
- Fence: 4 $\frac{3}{4}$ " x 41 $\frac{1}{2}$ "
- Approx. shipping weight: 418 lbs.



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- Motor: 5 HP, 220V, single-phase, 25A • Jointer table size: 14" x 59 $\frac{1}{2}$ "
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- Max. jointer depth of cut: $\frac{1}{8}$ "
- Max. jointer width of cut: 12"
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- Fence: 6" x 51 $\frac{1}{4}$ "
- Planer feed rate: 22 FPM
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- Motor: 3 HP, 240V, single-phase, 15A
- Max. stock thickness: 8"
- Max. cutting width: 15"
- Min. stock length: 8"
- Max. cutting depth: $\frac{1}{8}$ "
- Feed rate: 16 & 30 FPM
- Cutterhead dia.: 3"
- Cutterhead speed: 4800 RPM
- Cutterhead knives: 3 HSS, 15" x 1" x $\frac{1}{8}$ " (G0453); 74 inserts (G0453Z)
- Precision-ground table size: 15" x 20"
- Approx. shipping weight: 675 lbs.



G0453Z
shown

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- Motor: 5 HP, 240V, single-phase, 19A
- Max. cutting width: 20"
- Min. stock length: 8"
- Max. cutting depth: $\frac{1}{8}$ "
- Feed rate: 16 FPM & 20 FPM
- Cutterhead dia.: 3 $\frac{3}{8}$ "
- Cutterhead knives: 4 HSS, 20" x 1" x $\frac{1}{8}$ " (G0454); 98 carbide inserts (G0454Z)
- Cutterhead speed: 4800 RPM
- Table size: 20" x 25 $\frac{1}{4}$ " (20" x 55 $\frac{1}{2}$ " w/ extension)
- Approx. shipping weight: 932 lbs.



G0454Z
shown

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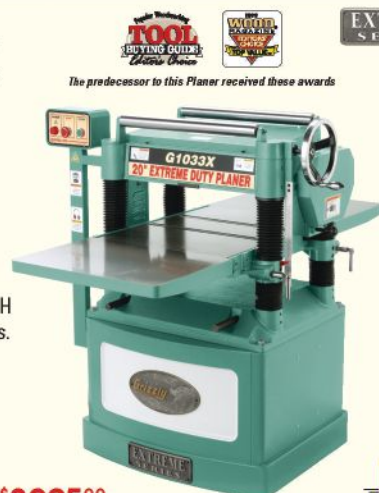
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20" PLANER WITH SPIRAL CUTTERHEAD

- Motor: 5 HP, 220V, single-phase
- Max. cutting width: 20"
- Min. stock length: 7"
- Max. cutting depth: $\frac{1}{8}$ "
- Feed rate: 16 & 20 FPM
- Cutterhead dia.: 3 $\frac{3}{8}$ "
- Cutterhead speed: 5000 RPM
- Table size: 25 $\frac{1}{4}$ " x 20" (56" x 20" w/ extensions)
- Overall size: 39" W x 56" D x 41" H
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- Feed motor: 1 HP • Feed rate: 20–40 FPM
- Precision-ground cast iron table size: 24" x 35 $\frac{1}{2}$ "
- Max. stock thickness: 9" • Min. stock thickness: $\frac{1}{4}$ "
- Max. cutting depth: $\frac{5}{16}$ " (G9741), $\frac{3}{16}$ " (G9961)
- Max. cutting width: 24" • Min. stock length: 10 $\frac{1}{2}$ "
- Cutterhead knives: 4 HSS, 24 $\frac{1}{8}$ " x 1 $\frac{1}{8}$ " x $\frac{1}{8}$ " (G9741); 162 carbide inserts, 14 x 14 x 2mm (G9961)
- Cutterhead dia.: 4 $\frac{1}{2}$ "
- Cutterhead speed: 5000 RPM
- CPM: 20,000 (G9741); 30,000 (G9961)
- Approx. shipping weight: 1935 lbs. (G9741); 1980 lbs. (G9961)



G9961
shown

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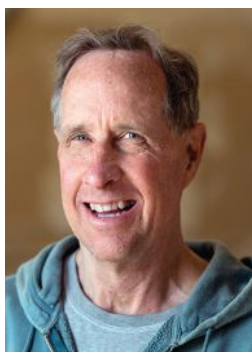
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UPSTATE, but always in touch

Hal Moore has built his Western New York shop into a diverse custom-build and lumber business

BY JENNIFER HICKS

SARANAC HOLLOW WOODWORKING has a 20-year history in upstate New York of offering custom cabinets, furniture and casework. Owner Hal Moore studied under Wendel Castle and got his start working at another shop that he eventually bought.

The town of Saranac is about halfway between Lake Placid and Plattsburgh, N.Y., and about a half-hour's drive from Saranac Lake, a popular summer vacation spot. In other words, it's off the beaten path. Moore says the shop's success has depended on making things that will last for years and having the skill to do whatever is asked.



Moore at the shop's
Mattison No. 131
stroke sander.



Moore (below) says his niche is producing anything you can't buy in a store.



A SPECIALTY BUSINESS

Moore grew up in Western New York near Rochester. His father was a production engineer who enjoyed woodworking as a hobby and was a tremendous influence on his impressionable son. Moore attended the State University of New York at Plattsburg in 1973 and enrolled in an environmental studies program.

"I went up here to go to college and did construction afterwards, mainly carpentry. At the time there was a guy, Carl Hathaway, who ran this program through North Country Community College in Saranac Lake where you could build a guideboat with him as a group. I signed up for it and that was my first introduction to fine woodworking after college."

Woodworking soon became Moore's new career focus as he appreciated the creativity and hands-on aspect of it all. His desire to learn more only increased from there. He moved back to Rochester and attended what was then called the Wendell Castle School in Scottsville, N.Y., that taught furniture design and traditional woodworking techniques. Named after its founder, Castle is an internationally acclaimed modern furniture designer. The experience had a lasting impact on the

PHOTO: MICHAEL GORDON (BOTTOM)



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importance of integrity.

"He taught me to keep my standards very high and not to fudge things," Moore says.

"That program doesn't exist anymore. It was absorbed by the Rochester Institute of Technology's School for American Crafts. But, at the time, it was a small woodworking school and I took a two-year associate program in arts and design and build. After I was done with that, I

moved to Burlington, Vt., in 1986 and worked at a cabinet shop, North River Woodworks, for three years."

The shop's owner decided to retire and offered the business to Moore who purchased it in 1989. Included with the sale were client lists and existing contracts, making it easy for him to carry out the existing business as his own.

"I stayed and worked in that shop for six months, but my wife is

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More of Moore's work, who also operates Adirondack Hardwoods.

from Plattsburg and she wanted to move back here. We found this building for sale, bought it and moved here. Most of the clients from that shop in Burlington were from New York City, so it didn't really matter where my shop was."

Moore's 4,000-sq.-ft. shop, formerly a cheese factory and Agway store, has undergone substantial renovations. He installed a second floor in 1991 and moved in with his wife and two sons. He devised a way to heat the entire building through a sawdust furnace system.

His clientele and product offerings haven't changed much through the years. The majority of his work is cabinets and casework. Stand-alone furniture has always accounted for about 10 percent of his orders.

"My niche is producing anything you can't buy in a store, the odd and unique things. We're a specialty business. We sell a lot of lumber and the specialty is we can do anything from selling the lumber rough to milling it to fabricating it and finishing it to a finished product that we install."

HARDWOOD DEALER, TOO

Moore started Adirondack Hardwoods in 1995, which operates out of a 2,000-sq.-ft. facility next to his shop.

"I developed that because it was so difficult to get good lumber," Moore says. "A guy started a small lumber sales business for hard-

woods and I ended up purchasing it from him. We were partners for a few months; then I took over. I was stocking this lumber mostly for myself, but now lumber sales are about half of my business.

"The lumber division also brings in a lot of work from people who are looking to have lumber planed or made into butcher-block tops. They may come in for the lumber and decide to have us make the project for them instead."

His shop serves a 100-mile radius, mainly in New York's Clinton, Essex and Franklin counties.

"It's a pretty sparse population where I'm at. I work a lot in the Lake Placid, Saranac Lake areas where there are a lot of vacation homes. I also work in a lot in Plattsburg, which is more residential.

"I stopped doing work in New York City when the economy went bad in 2009. Our customer base dried up and I started doing more work up here. When things got better I never bothered to go back."

Projects range from a single piece of custom molding to a \$75,000 kitchen.

"We do lots of high-end work, but we do everything — absolutely everything — from small to high-end jobs. Last year we did three large jobs interspersed with a lot of smaller projects, including a sleek modern white kitchen with flat-panel doors and high-end hardware; a walnut job in a rural farmhouse to match the time period it was built; and cabinets and elaborate vanities for a large home."

REWARDING WORK

Moore has two employees, Bob Palmer and Justin Green, plus a chocolate-lab shop dog named Cocoa. He's had more help in the past, but that just made it more difficult to organize projects. Moore also prefers working in the shop to having only management duties.

Though most of the shop's work is generated through word-of-mouth referrals, Moore markets through Facebook, public radio announcements and the shop's website.

Moore says he has more than enough work to stay busy and doesn't foresee making any major changes.

"I'm 63, so in five years I don't know if I'll be doing it or not. Everything I do is so custom that I don't do a lot of repetitive work. The most rewarding part is sitting and designing something and seeing it come to life. I still enjoy doing it." **W**

Contact: Saranac Hollow Woodworking, 31 Chazy Lake Road, Saranac, NY 12981. Tel: 518-293-8424. www.saranachollow.com



PHOTO: MICHAEL GORDON (RIGHT)

THROUGH THICK *AND* THIN

Powder coating and other finishing techniques offer long-lasting solutions against scratches, dents and fading

By John English

Powder coating equipment is moving into more and more woodshops because MDF's density and uniform surface are so well-suited to the technology. The move is also ramping up because powder coating is a one-step process that can save a great deal of time. And it allows woodshops to offer an endless array of colors in a tough, durable surface.

The process makes it easier to work around corners, follow shapes and curves, and deliver a seamless and full-color finish on complex surfaces where laminates and other solutions might fall short. As new technologies such as 3-D prototyping open up the world of design, flat panels and edgework can't always keep up with the innovative component shapes and contours that are being created.

Powder coating is relatively simple, at least in theory. An MDF part is sprayed with a conductive substrate to enhance its electrostatic properties and then heated to the optimum temperature for converting the sprayed powder to a liquid state for adhesion. The spray gun is also charged electrically. Then the coating is cured with heat (infrared, convection or both) or else with exposure to UV waves or to a combination of heat and UV light. The heat causes the powder to melt and flow evenly as it films across the board and the UV light can set, harden and cure it quickly. Some applications then run the final product through a cooling process to speed up handling so that parts can be physically moved out of the way.

The Eco-5 system from Apollo Sprayers.



Powder coating has been used to protect cars and machines for a long time, so converting it for use on MDF hasn't been a big leap. The surface is inherently resistant to scratches, dings, dents, fading and delamination, so the applications for this hardwearing finish in office, retail, school and hospitality markets are obvious. Powder-coated MDF is also making strong headway in medical case-work and furniture because of the impervious and thereby potentially sterile nature of the surface.

During the last few years, manufacturers have transferred the ability to deliver not just colors, but also patterns from the world of metal to MDF. Companies such as Decoral System USA (decoralamerica.com) provide advanced sublimation technologies that let woodshops powder coat and decorate MDF products with countless textures and designs. The company's coatings simulate wood grain, marble and stone.

OTHER TRENDS

Of course, UV curing is by no means restricted to powder coating. One of the other advantages to the technology is that it can be used to dial up a specific gloss level in a finish.



Graco's Ultra Max airless hand-held sprayer.

Miltec UV (miltec.com) has developed an HPI UV system for manufacturers to achieve low-, medium- and high-gloss levels with a single UV coating. The system stores recipes for repeatable results, while cost savings are achieved through reduced downtime for changeovers and maintenance, less energy and parts consumption, fewer coating formu-



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An example of the HPI UV system from Miltec UV.

las and improved quality and consistency, according to the company.

Airless spraying is also enjoying something of a revival in finishing booths and especially so in small shops or for smaller projects. Among the advances in the newest airless equipment are lighter weight, more control over patterns and pressure and the ability to spray in any orientation so that these small guns can now reach into tricky corners a lot more easily than they used to. Cordless spraying is also gaining ground because new battery technologies can deliver a lot more power, and do so for longer periods of time.

Airless spraying has really come into its own when all of these advances are combined, and that's essentially what has happened with products such as the new Graco (graco.com) Ultra and Ultra Max airless hand-held sprayers. These were launched in March in both corded and cordless models and new onboard controls allow the operator to make motor speed adjustments very easily. They also feature the FlexLiner



Fuji's Mini-Mite 3 Platinum model.

bag system for spraying at any angle, even upside down.

As woodworkers well know, it's a challenge for finishing equipment manufacturers to combine the high productivity of an airless spray gun with the low overspray and higher quality finish of an atomizing gun. That's changing, as controls become more sophisticated.

For example, Sata introduced the new SataJet 4800 K in January, a high-pressure, air-assisted gun with a material flow regulator and round/flat fan control. It uses a softer (and shorter) trigger and a ball-

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**The SataJet
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bearing swivel to reduce fatigue, even though the gun is still connected to a pair of high-pressure hoses.

SMALLER EQUIPMENT

One trend at the lower end of professional finishing equipment is to make delivery systems a little more affordable without sacrificing quality. A good example is from Apollo Sprayers (hvlp.com). The company has introduced its new Eco series, which includes several performance levels to fit various budgets. The 5.5-psi Eco-Mini was designed for a smaller workshop using solvent- or water-based clearcoats on wood projects (or other low to medium viscosity coatings) and it works with one of two spray guns — the A6000 Bleeder and A7200 Non-Bleeder. The other elements in this series are the 7-psi Eco-3, the 9-psi Eco-4, and the 9.5-psi Eco-5. This latter can spray clear or pigmented, solvent- or water-base, and easy or hard-to-atomize coatings including latex (emulsion) paints.

Another affordable option, Fuji's Mini-Mite 3 T-Series, follows the more-performance-for-less-money trend. It runs on a three-stage turbine motor and delivers the coating through a no-bleed gun on the end of a 25-foot hose. Fuji recently added a heat dissipation box to its Mini-Mite Platinum model, which removes any heat build-up from the turbine case. Excess heat is channeled to the box (located at the rear of the case) where it is dissipated evenly and quietly through 60 holes so it doesn't blow dust around. The bottom line here is longer life for the turbine motor.

Two new finishing equipment products from FastRack Equipment (fastrackequipment.com) are also in this vein, delivering enhanced performance on a budget. Both make life a bit easier for millwork shops that spray doors in-house.

The first is an adjustable slider that attaches to the company's standard drying rack. It can accommodate anything from drawer fronts to large entry doors and allows a finisher to stack wet parts on both sides of the rack, and then wheel them out of the way while they cure. The second is a new accessory that allows the rack to hold up to 11 full-size entry or passage doors in a vertical orientation as they dry.

Speaking of drying, woodshops that need to separate the finishing zone from dustier areas will like the new high-speed roll-up door from Goff Curtain Walls (goffcurtainwalls.com). Looking like a standard garage door, it travels up and down at more than four feet per second. But instead of standard garage door pan-

els, the G2 5400 Series uses replaceable vinyl panels that a woodworker can swap out in a few minutes if they ever get damaged or the shop wants to switch from a see-through door to an opaque one.

Here's a final thought about finishing equipment: proper cleaning will avoid damaging or reshaping those delicate orifices and also help prevent having to replace either guns or tips. A small company named Spray Gun Solutions (sgskits.com) offers a couple of kits for the task. There's even a video on the site that tells you how. [W](#)

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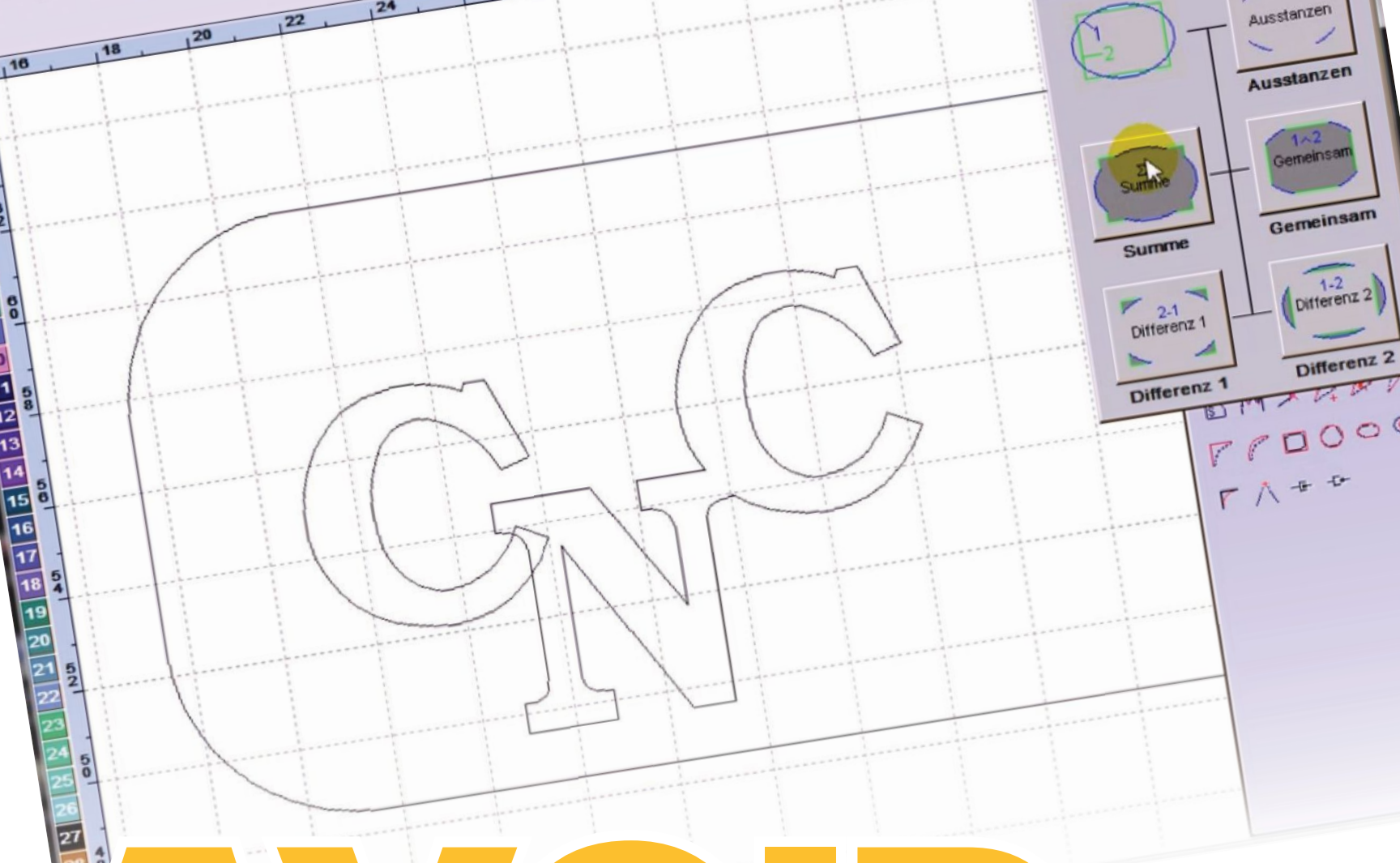
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AVOID UPGRADE ANXIETY

CNC technology is always advancing,
but it can be to your benefit even if it feels tough to keep up

By John English

The biggest problem with software is that it's constantly changing. Of course, that's also the attraction. The second biggest problem is that software engineers and management gurus arbitrarily invent new terminology — and then expect that the rest of us will intuitively “get” it.

For example, how many woodworkers who haven't

been to business school know about ERP? It means “enterprise resource planning,” and refers to software that lets a shop integrate several applications in its overall management plan. To get an idea of the concept, stop by OmegaCube's website (omegacube.com) or visit innergy.com or globalshopsolutions.com. If you're looking at upgrading existing CAD/CAM or project management software, you'll probably come across the acronym quite often as several of the larger CNC software companies

seem to be leaning toward packaging programs in the ERP envelope.

Regarding those constant version upgrades, it can be very frustrating to learn that your software publisher has released a new product just as you finally feel a bit more comfortable using the "latest" one. But most new releases or version upgrades are at least partially responses to user demands, so they're designed to solve problems that we all share. That makes it difficult to ignore the shiniest new toy on the shelf.

GETTING YOUR FEET WET

If you're new to CNC software, the process begins with a design that is created in a CAD drawing program, many of which are very intuitive nowadays and use libraries and dialog boxes that help walk you through the process. You'll usually save your drawings as DXF files and most programs can do that fairly automatically, too. The files are then nested (the computer figures out the most efficient way to cut all the parts) and then G Code is written for your router. That's a computer language that tells the tool where to go, how quickly to travel, how deep to cut, how fast to rotate the cutter, when to introduce coolant and so on.

Buying software has become a lot easier, too. Most developers have switched from selling programs to renting them on an annual license. That makes it more affordable and also means that we're always using the absolutely latest version. Of course, the new one is often just a minor tweak that addresses a bug, but every now and then it's a complete overhaul that can even require an operating system update, too. When that happens, the best way to deal with the accompanying surge in blood pressure is to keep remembering that a couple of days lost transitioning to the new package usually means many months of enhanced efficiency on the shop floor.

Companies such as KCD Software (kcdsoftware.com) have long understood the need to deliver a comprehensive system, rather than a single program. The company's cabinet suite includes three design packages and CNC Commander, which takes your designs from drawings all the way through the manufacturing process. As of early April, KCD was still allowing woodshops to either buy the package outright or rent it by the month. The company points out that the renting option includes technical support and customer service, so it's an economical way to access all the benefits while keeping an eye on your bottom line. Being able to purchase both design and manufacturing software from the same developer means that processes on the shop floor can be more streamlined and integrated.

NEW AND IMPROVED

In that spirit of making our lives easier, the latest edition of Alphacam from Vero Software (verosoftware.com) has lots of new features. They include improvements in the user interface, a new 3-D command, updates to machining cycles, sawing enhancements, simulation updates, tweaks in the Automation Manager and even some new CAD files. Reworked dialogs provide a more intuitive layout and include images and tool tips.

In April, Mozaik Software (mozaiksoftware.com) launched Version 5.3 of its core package and also introduced a new Closet Library. The software is available in three versions — Design, Manufacturing, and CNC. The newest CNC Operator lets a woodshop nest on the fly and also remake parts as needed right from the machine. It also includes post processors for most leading flat table CNC routers. Then there's the exclusive Combination Joinery that allows a woodshop to choose

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an ideal construction method, or quickly change from one method to another. One can combine dadoes, qualified tenons, KD fasteners, screws, Confirmats or dowels.

In September, CabMaster Software (cabmastersoftware.com) began to include an updated version of PhotoView in which the renderings are much cleaner and more realistic. Users will need to update to Version 9 for this and will also require an nVidia video card to improve performance.

Vectric's Aspire 8.5 includes two completely new tools: Create Texture Area to produce a repeating pattern or texture, and Moulding Toolpath to cut 3-D shapes such as moldings, arches and frames that have a constant cross-section. Vectric (vec tric.com) has also updated the Pro and Desktop versions of Cut2D to v8.5.

Microvellum (microvellum.com) has a new version of Fluid Designer. "We created a tool that is not only a superior front-end design tool, it's an amazing total solution for businesses that need a quick design-to-quote tool, as well as a complete manufacturing solution," director of operations David Fairbanks said in a statement.

MODELING AND INTEGRATION

Missler Software's latest version of TopSolid'Wood (topsolid.com) combines design and manufacturing solutions specifically for the wood industry. It employs easy-to-use constrained blocks that permit rapid modeling and assembly of panels. It also manages and automates the cutting of curved parts within standard components and then documents the dimensions in the bill of materials for final assembly. And there's a new interface called Maestro that establishes a direct link between the program and the new generation of

CNC machining centers from the SCM Group.

In March, SigmaNest (sigmanest.com) released its newest way for woodshops to move operations into the cloud, leaving more space on in-house computers and in many cases increasing their operating speed. Cloud-based means that a shop is always using the latest version of the company's software and recovery of files in the event of a glitch is available without any downtime. The program offers complete shop integration on any and all devices and is accessible remotely so a shop manager can tweak workflow from anywhere, including right next to a machine.

EnRoute Software (enroutesoftware.com) has released Version 6, which incorporates a number of major changes including the ability to automatically create masking contours for relief slices that can be used to apply toolpaths only where they are necessary for milling the 3-D surface of the relief. There's also a new set of parametric textures that are automatically symmetric at any size.

Mastercam (mastercam.com) has opened its 2018 beta version to comments from its current customers. Shops all over the world are being invited to test drive the product before it is released, and provide feedback to help shape the final product. Some of the tools they're exploring include a new 2-D/3-D milling feature, some improvements that simplify CAD for CAM, improved model creation tools, streamlined editing of models and assemblies, and expanded Undo support. The new package also incorporates a tool named Expanded Multiaxis that makes it easier to program complex parts and one called Lathe that focuses on efficiency with new toolpath and chip control features, as well as adding tool inspection and part transfer stock model enhancements.

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Pytha Lab (pytha.com) will shortly release Version 23 of its design program Pytha 3-D CAD for commercial joinery, contract furniture and highly detailed bespoke joinery.

Timber framers and stairbuilders are sure to like the new component labeling tool from Sema (sema-soft.de/en). This lets the CNC operator create separate labels for components such as purlins, rafters, cleats, planks and so on, and decide which components receive a label for assembly.

SINGLE SOLUTIONS

Eurosoft (eurosoftinc.com) recently released DataLink, a universal data conversion software tool that overcomes the common problem of incompatible data formats being used between engineering software and cutting equipment. Every machine speaks its own language (DXF, MPR, CIX, NC, XML, PTX and so on) and, since there is no true universal standard in the industry, data format incompatibilities can become a huge headache. The new program converts an input file format into an equivalent output format.

Cabinet Pro (cabinetpro.com) offers a unified approach to CNC machining with a single software program that produces G code, 3-D renderings, shop drawings, bids, cut lists and panel optimization.

ArtCam Standard (artcam.com) is a single solution for designing and making. One can design directly in the software, choose from the clip art library, or import images. A woodworker can also import 3-D files to make more complex 3-D reliefs.

Cim-Tech (cim-tech.com) has developed computer integrated manufacturing (CIM) to bridge the gap between CAD and CAM, adding two new versions this spring. Router-CIM 2017 offers a fa-

miliar Windows-style interface, but its enhanced capability supports a variety of third-party software to control other equipment. And CAM Companion 2017 powers Router-CIM with Autodesk technology and has the power of AutoCAD 2017 for users that require CAD functionality.

Small shops using SketchUp Pro should take a look at the Make program from Skooter (skooter.com). This is an engineering extension that works inside SketchUp Pro and lets woodworkers easily attach machining operations to components for CNC program generation. And if you're building stairs, you may also want to take a look at Staircon (staircon.com), which covers the gamut from shop drawings to sales tools. Plus, Compass Software (compass-software.de) has now integrated virtual reality previews into its stair building and timber-framing CNC software.

A shop that isn't quite ready to invest in in-house drafting can contact companies such as ZDraft (zdraft.com) and AutoCAD Conversion (autocadconversion.com). These companies turn ideas into shop drawings or CAD files.

For smaller shops that are looking at software before they invest in hardware, it's a good idea to visit with other shop owners who have purchased machines a while ago and have gone through a few upgrades to their CNC software. They will be able to let you know how the supplier was to work with, whether there was adequate support and if the upgrades delivered what they promised. They might also have some opinions on whether to buy or rent. [W](#)

For more, visit the Woodshop News online Resource Guide at www.woodshopnews.com.



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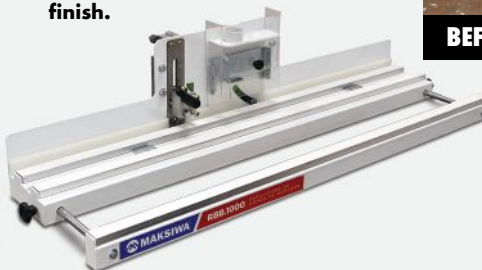


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EDGEBANDING

IS ANYTHING BUT ORDINARY

Some methods and materials can save time and money and others vary in quality and composition



By John English

As with most woodshop techniques, edgebanding can be discussed in terms of scale. It runs the gamut from a hands-on, one-cabinet-door-at-a-time benchtop activity to a fully automated industrial process where machines do all the work. The banding itself comes in a variety of formats from wood veneer to acrylics, melamine, metals and plastics such as PVC and ABS.

THE NATURE OF PVC

Correctly written as poly(vinyl chloride), this is one of the most widely produced and inexpensive plastics on the planet. It's technically a synthetic plastic polymer: synthetic because it's man-made as opposed to existing in nature (at least in large volumes), plastic because it can be shaped and polymer because it's a big molecule with lots of mass.

PVC's composition is rendered flexible enough to be rolled onto spools for automatic machine feeding, or handling curved edges, by the addition of plasticizing compounds that increase its viscosity and thus its stretching abilities. The most used additives are phthalate esters. An ester is just a compound with an acid-based source and phthalic acid is an inexpensive solution that has attracted some attention during the last few years from both U.S. and European Union regulatory bodies on environmental and health-related issues. There is a move away from low-carbon to high-carbon phthalates and even toward plasticizers that use no phthalates at all. One reason is that these plasticizers don't chemically bond with the plastics, so theoretically they can migrate to the surrounding air over time if ambient temperatures change or airborne solvents are present.

We will, no doubt, read a lot more about the effects of PVC use in manufacturing and also in our food chain in the next few years. For example, the National Institute for Occupational Safety and Health published a paper in July 2012 that stated there is increasing concern about human exposure to phthalates and, in fact, most humans who have been tested have

had benign but still existent levels of these chemicals in their urine. Bottom line: at this time PVC seems to be a safe, extremely viable option for edgebanding and the way in which it is plasticized will probably change for the better over time.

It's a white, powdery substance before it's processed into edgebanding. Once manufactured, it can deliver a massive array of colors and patterns that can perfectly match — or contrast with — plastic laminate sheets and Melamine. Rolls come in a variety of widths, the most common being just under an inch and up to about 0.02" (5mm) thickness. Many manufacturers offer more flexible 1mm to 3mm thicknesses for radius work and tighter spooling. PVC tape is usually applied by a machine that heats an adhesive and also applies it, seats the tape using pressured rollers and then trims the excess. PVC can be harder on trimming blades than most other banding. Some tapes are available pre-glued and most manufacturers will recommend hot air rather than a hot iron as the material is plastic.

Disposing of PVC waste in a responsible way can be challenging. It can be recycled if it's ground and remanufactured, but it shouldn't be burned because that releases dangerous gas compounds into the environment. It's actually pretty resistant to fire, but once the conflagration gains enough heat, the gas released is toxic. Hence, it's not an option for laser trimming. In a landfill, it takes a long time to decompose and resists naturally occurring solvents in soil or the UV in daylight if it becomes exposed.

THE ABS OPTION

Acrylonitrile butadiene styrene (ABS), a thermoplastic polymer, is far more popular than PVC in European shops (North American woodworkers are still using both). Another large molecule, ABS is very reactive to heat (hence the "thermo"). At higher temperatures, it becomes quite pliable and at lower ones it regains rigidity. As such, it's ideal for injection molding and extrusion processes. It changes from a solid to, well, almost a liquid at about 220 F (105 C). This is known as its "glass transition temperature," and it's the point at which it becomes malleable and rubbery in texture. That's not surprising, as it is made by chemically combining acrylonitrile and styrene, using a man-made rubber called polybutadiene.

Acrylonitrile is an organic compound (vinyl and nitrile) that has been made in labs since the 19th century, so we know a lot about it. Today, scientists are exploring green ways to harvest it as a byproduct from biomass and especially biodiesel manufacturing. ABS is tough, durable and impact-resistant at normal planetary temperatures (about 0 to 150 F). Chemists can change its properties by changing the volume of various components

and also by changing the temperatures at which it is manufactured. For example, banding baked at very hot temperatures will end up having a high-gloss surface, but won't be quite as impact-resistant and will be a bit more brittle.

According to the Swiss edgebanding manufacturer Rehau (rehau.com), ABS "is chlorine-free both during manufacturing and in the final product. Unlike PVC, ABS may be incinerated with general waste, is lighter in weight and highly heat resistant." However, it is susceptible to strong solvents and/or light sources, and it also costs a bit more on average. Some of that can be recouped when knives last longer and in time when lasers can be used in trimming thicker ABS banding (and also in some design/engraving applications) because of the lack of toxic gases when the tape is burned.

MELAMINE

Melamine edgebanding can be ordered to match the color or grain of melamine-surfaced panels and it comes in a variety of common widths from 5/8" to 2" in pre-glued versions. Unbacked rolls are generally 7/8" wide and about 500' long.

When woodworkers talk about melamine edgebanding, they're actually calling a compound by just one of its ingredients. The basic building block here is melamine-formaldehyde resin, which is a pretty safe product according to the U.S. Food and Drug Administration. In a report (UCM 199525) that was updated in June 2014, the FDA discussed the use of this formula in tableware and concluded that there was virtually no health risk involved. In fact, the results of testing concluded that migration of melamine from the dishes was actually 250 times lower than the level that the agency has concluded is acceptable in most foods.

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NATURAL WOOD BANDING

Wood veneer banding can be purchased as either raw wood or pre-finished with a sealer and topcoat. Many species are available with a thin fleece or fabric backing that stops them from splitting along the grain. Wood banding is available in both pre-glued (iron-on) and glue-less versions and there are some peel-and-stick options, too.

Wood edgebanding can sometimes be ordered in very wide widths for applications such as mantles or other architectural details where continuous grain patterns are important. The tape is often a bit thicker than plastic banding too and this can be important with raw, unfinished wood when one considers how the completed panels will be sanded. If the banding is too thin, that can be a challenge as it's easy to sand right through it either on a machine or by hand.

GLUE TYPES

In the search for the elusive "zero bond" (where the line between tape and panel is essentially invisible), some thicker edgebanding needs to be applied slightly concave to hide the glue. That's because most edgebanding tape is applied using a relatively thick layer of hot-melt adhesive that can be difficult to compress and can lose its effectiveness if spread too thin. Hot-melt glues come in a variety of formulations. They can be water- or solvent-based and will have one (or a combination of) these acronyms: EVA, PUR, PA, APOA, and PO.

EVA (ethylene-vinyl acetate) can be melted many times without losing its stickiness, so there isn't a lot of waste. It also cures quickly and is relatively inexpensive.

PUR (polyurethane reactive glue) sets quickly, but is a bit slower to fully harden as it is more of a chemical reaction than a mechanical one. It uses moisture in the wood and the air to initiate that reaction, so it's actually a pretty good choice for some veneering jobs. The

resulting bond, which can take days to reach full strength, is exceptionally reliable. While PUR glues cost a little more, they have some environmental advantages, plus they can be easier to clean up and can adhere better to oily woods.

PA (polyamide) hot-melt adhesives are designed for high performance in severe environments. They are made with organic bases such as seed oils and they are noted for high heat tolerance. They deliver an exceptional bond, but can be a little more susceptible to moisture (and slight foaming, which can leave some spots without glue) than other options.

APOA (amorphous polyalphaolefin) hot-melt glue is popular in the automotive world: it resists fuel and acid better than most adhesives. It also has a longer open time and slower set time than EVA glue. And PO (polyolefin) has a high melting point and thus higher heat resistance, plus a longer open time than EVA.

The future could lie with adhesives developed for high-tech applications, such as silicone-based versions that retain more flexibility.

MACHINERY SUPPLIERS

A number of manufacturers supply larger edgebanding machinery, including but not limited to Biesse Group NA (biesse.com), CNC Factory (cnc-factory.com), Felder Group USA (feldergroupusa.com), Grizzly Industrial (grizzly.com), Holz-Her (holzherusa.com), Laguna Tools (lagunatools.com), Martin Woodworking (martin-usa.com), NexTech Machinery (nextechmachinery.com), Oliver Machinery (olivermachinery.net), Safety Speed (safetyspeed.com), SCM Group NA (scmgrouppna.com), SNX Technologies (snxtechnologies.com), Stiles Machinery (stilesmachinery.com) and Virutex (virutex.com).

Many companies also offer portable solutions such as Adamik, Co-Matic, Festool USA, LeMatic, Maksiwa and ShopGear.

For more, visit the Woodshop News online Resource Guide at www.woodshopnews.com. [W](#)

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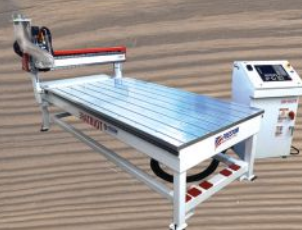
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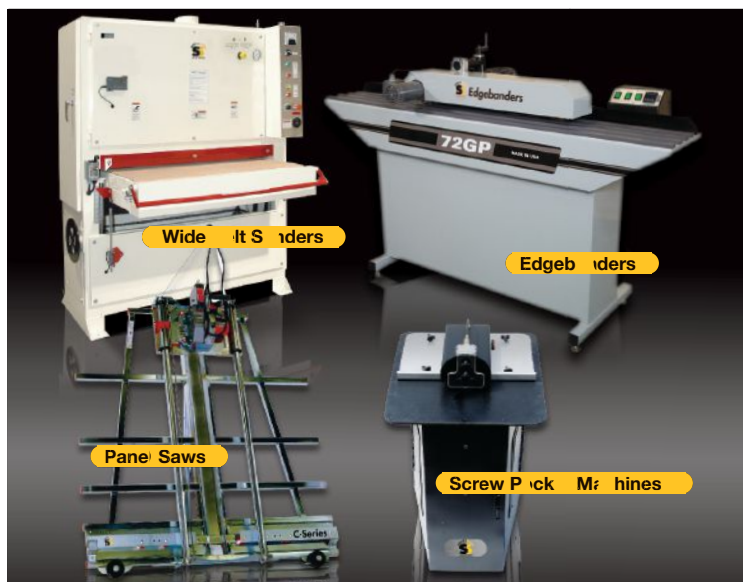
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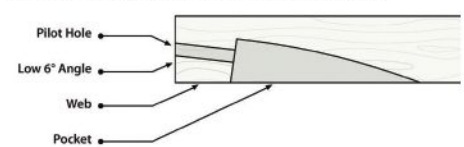
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THE PROFESSIONAL POCKET

Rich furniture history on display in New Hampshire

Four centuries of varying styles take center stage through June in Portsmouth

By Jennifer Hicks

A new spring exhibit, "Four Centuries of Furniture in Portsmouth" with the New Hampshire Furniture Masters, opened April 7 and runs through June 18 at the Discover Portsmouth Center in Portsmouth, N.H.

Organized by Gerald W.R. Ward and Lainey McCartney of the Portsmouth Historical Society, the gallery celebrates the history of furniture in Portsmouth during the last four centuries.

The gallery's first floor will feature a loan exhibition of about 50 objects to interpret furniture made and used in Portsmouth as both art and history, starting with the joined furniture of the 17th century, through the Colonial and Federal periods of Portsmouth's most notable eras of cabinetmaking and finishing with the revival styles of the 19th century.

The exhibition concludes with examples from the Arts & Crafts and studio movements, furniture used at the Treaty of Portsmouth in

PHOTOS: RALPH MORANG



The Portsmouth exhibit features (clockwise from top left) this sideboard (Portsmouth, circa 1815); side chair (New York, New England, possibly Portsmouth, 1815-30), and high chest of drawers (Joseph Davis, Portsmouth, 1735-45).

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1905 and a few modern examples.

Featured objects have been drawn from private and public collections, including several works from the Portsmouth Historical Society's holdings.

The upstairs gallery includes a display of works made by 15 to 20 members of the New Hampshire Furniture Masters.

For information, visit www.portsmouthhistory.org.

Sergio Rodrigues exhibit

R & Company, a gallery in New York City, hosted a solo exhibition of Brazilian modern designer Sergio Rodrigues from March 7 through April 13. The first exhibition of Rodrigues' work since his death in 2014 featured some of the most significant furniture built during his long career.

Rodrigues started experimenting with furniture in the early 1950s and he became identified as one of the pioneers of the modern architecture and design movement in Brazil, according to the gallery.

"The exhibition illustrates Rodrigues' extraordinary use of indigenous Brazilian materials, as he often worked with specific woods like jacaranda, imbuia and peroba. His extensive



knowledge of craft and woodworking carried through each design and resulted in polished and modern shapes. Many of his pieces (above)

combined these hardwoods with soft woven leathers," the gallery said in a statement. [W](http://www.r-and-company.com)

For more, visit www.r-and-company.com.

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Aug. 21-Sept. 7 — Fundamentals of Traditional Woodworking I. The first in a three-part series, this hands-on course for the beginner or anyone who wishes to review fundamental skills of fine craftsmanship. Fee: \$519, includes materials. Location: Southwest School of Woodworking in Phoenix. www.swcfc.org

Sept. 11-Oct. 5 — Fundamentals of Traditional Woodworking II. Students will practice several types of joints and apply their skills by building a small bench. Edge jointing, shaping with spoke shaves, and surface preparation for finishing are also covered. Fee: \$672, includes materials. 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. www.tampawoodcrafters.org

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

May 10-14, June 26-30, July 24-28, Aug. 21-25, Sept. 13-17, Oct. 25-29 — David Calvo's five-day Bare Bones of Woodcarving workshops. Location: Calvo Studio in Gloucester. www.calvostudio.com

May 13-14, Sept. 16-17, Nov. 11-12 — David Calvo's two-day woodcarving class. Location: Calvo Studio in Gloucester. www.calvostudio.com

May 13, June 29, July 29, Aug. 24, Sept. 16 — David Calvo's one-day introductory woodcarving class. Location: Calvo Studio in Gloucester. www.calvostudio.com

May 27-29 — Paradise City Arts Festival Northampton. Spring show featuring contemporary furniture and other fine crafts by more than 240 selected artisans and makers from throughout the country. Location: Three County Fairgrounds in Northampton. www.paradisecityarts.com

Oct. 7-9 — Paradise City Arts Festival Northampton featuring contemporary furniture and other fine crafts by selected artisans and makers from throughout the country. Location: Three County Fairgrounds in Northampton. www.paradisecityarts.com

Nov. 17-19 — Paradise City Arts Festival Marlborough featuring more than 175 contemporary furniture and other fine crafts by selected artisans and makers from throughout the country. Location: Royal Plaza Trade Center in Marlborough. www.paradisecityarts.com

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NEVADA

July 19-22 — AWFS fair. A biennial show featuring new products and machinery with some of the latest technology, educational seminars and panel discussions addressing business-related topics, networking opportunities, a student design competition and much more. Location: Las Vegas Convention Center. www.awfsfair.org

NEW YORK

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

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

May 21-24 — International Contemporary Furniture Fair, featuring 800 exhibitors of contemporary furniture, seating, home accesso-

ries and more. Location: Javits Center in New York. www.icff.com

NORTH CAROLINA

June 22-26 — Society of American Period Furniture Makers' mid-year conference. Annual member gathering that features training seminars, museum tours, networking, and discussion of American period furniture. Location: Old Salem historic district and Museum of Early Southern Decorative Arts in Winston-Salem. www.sapfm.org

RHODE ISLAND

Nov. 3-5 — Fine Furnishings Show offering handmade furniture, accessories and fine art. Location: Pawtucket Armory Arts Center in Pawtucket. www.finefurnishingshows.com

SOUTH CAROLINA

Oct. 29-31 — Architectural Woodwork Institute Convention featuring panel discussions and networking opportunities for industry professionals. Location: Charleston (venue TBA). www.awinet.org

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. 5-6 — Closet & Storage Summit featuring independent closet companies. Location: Doubletree by Hilton in Austin. www.closetsummit.com

Nov. 12-14 — Specialty Tools & Fasteners Distributors Association 41st annual convention and trade show. Manufacturers, distributors and other industry professionals will convene and take part in educational programs, seminars and new product debuts. Location: Austin Convention Center. www.staftda.org

WISCONSIN

Sept. 15-17 — Fine Furnishings Show, featuring handcrafted furniture and accessories. Location: Muellner Building in Hart Park, Wauwatosa. www.finefurnishingshows.com

WYOMING

Sept. 7-10 — Western Design Conference, an exhibit and sale of handmade furniture, fashion and home accessories in a Western theme featuring more than 130 artists. Location: Snow King Center in Jackson Hole. www.westerndesignconference.com **W**

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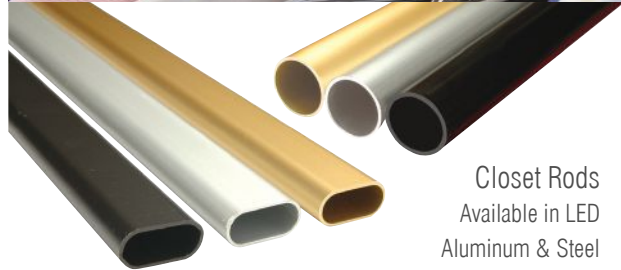
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The entrance to Häfele's showroom.



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Bright lights and hardware

Häfele America Co., an international supplier of furniture and architectural hardware components, celebrated the opening of its new showroom March 17 in Manhattan.

The goal of the new showroom is to bring Häfele's product portfolio to life with real-world application, according to the company. The 4,000-sq.-ft. space features the latest in LED lighting, decorative and functional hardware, and architectural components for residential and commercial projects.

The European inspired space, located in the lower end of Manhattan (20 West 22nd St.), is a collaborative effort between Perkins+Will's New York Interior Design and Chicago-based Branded Environments.

"Our goal in building this showroom was to create a hardware destination for

people all over the world to admire, appreciate and experience all that Häfele uniquely has to offer," Häfele America Co. president Paul K. Smith said in a statement. "The result is a powerful presentation of how our company's global reach and brand directly supports projects large and small."

The modular design of Häfele's showroom allows the space to accommodate daily visitors and then easily transform to host a variety of industry educational seminars, training programs, cocktail receptions, open-house events and more in support of architects, designers and architectural millworkers.

A key feature is the Kitchen Everyone Wants display, created with Häfele's vendor partners Bright Wood Works of St. Petersburg, Fla., and Handmade Furniture Co. of West Creek, N.J.

For more, visit www.hafele.com.

— Jennifer Hicks

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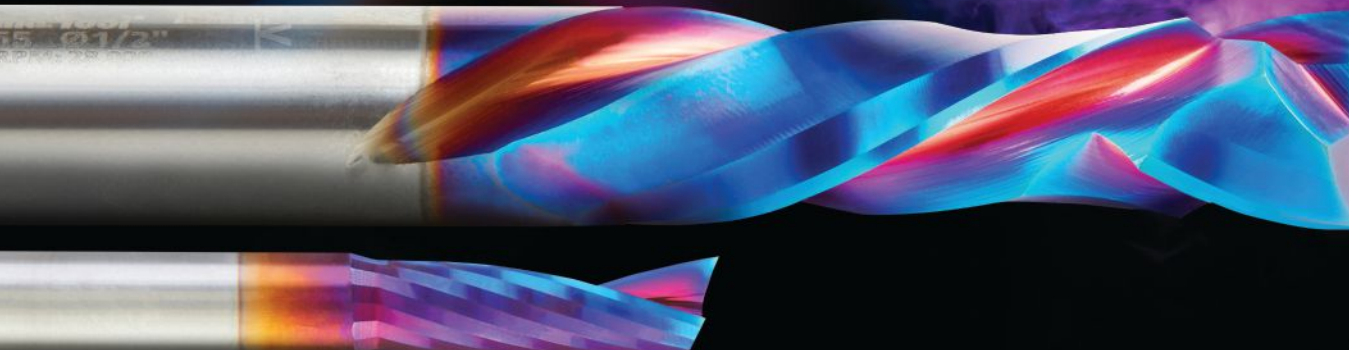
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46161	3/8"	1"	1/2"	2	3"
46166	3/8"	1-1/8"	3/8"	3	3"
46162	3/8"	1-1/4"	3/8"	②	3"
46163	1/2"	1-1/4"	1/2"	2	3"
46168	1/2"	1-1/4"	1/2"	3	3"
46165	1/2"	1-5/8"	1/2"	2	3-1/2"

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51404-K	1/4"	3/4"	1/4"	2"

For complete tool specifications please see website.



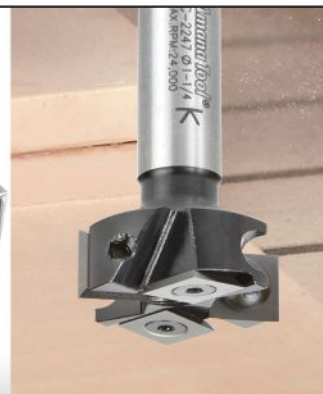
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