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- Requires 50-70 PSI air
- Sanding belt size: 16" x 48"
- Sanding belt surface speed: 2050 FPM
- Max. board width: 15"
- Max. board thickness: 5½"
- Min. board length: 12"
- Conveyor speed: 13.1 & 16.4 FPM
- Approx. shipping weight: 908 lbs.



G9983 ONLY \$3595⁰⁰

\$179⁰⁰

18" WIDE-BELT SANDER

MADE IN TAIWAN

- Motor: 5 HP, 220V, single-phase, 60 Hz, 1725 RPM
- Conveyor feed motor: ½ HP
- Elevation motor: ½ HP
- Conveyor speed: 16.4, 23, 32.8 FPM
- Max. board width: 17½"
- Max. board thickness: 6"
- Min. board length: 9"
- Min. board thickness: ½"
- Drum surface speed: 3550 FPM
- Approx. shipping weight: 1008 lbs.



G0527 ONLY \$5150⁰⁰

\$255⁰⁰

24" PLANER/SANDER

MADE IN TAIWAN

- Motor: 15 HP, 220V/440V*, 3-phase, 60 Hz, 3450 RPM
- Conveyor speed: 14-60 FPM
- Max. board width: 24"
- Max. board thickness: 6"
- Min. board length: 12"
- Min. board thickness: ¼"
- Spiral cutterhead w/ 188 indexable carbide inserts
- Cutterhead speed: 4600 RPM
- Sanding drum speed: 3543 FPM
- Air requirement: 75 PSI
- Approx. shipping weight: 2626 lbs.



PLANES & SANDS!

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\$355⁰⁰

24" WIDE-BELT SANDERS

MADE IN TAIWAN

	G9962Z	G9962ZX	G0582	G0445 (TALL)
• Type:	Single Drum	Single Drum	Platen	Platen
• Sanding motor:	220V	220V/440V*	220V/440V*	220V/440V*
• Motor phase:	Single-phase	3-phase	3-phase	3-phase
• Conveyor motor HP:	1 HP	1 HP	1 HP	1 HP
• Table lift motor HP:	¼ HP	¼ HP	¼ HP	¼ HP
• Max. board thick.:	6"	6"	6"	6"
• Min. board length:	10"	10"	14"	9"
• Min. board thick.:	½"	½"	½"	½"
• Conveyor speed:	15-49 FPM	15-49 FPM	15-49 FPM	15-49 FPM
• Sanding belt size:	25"W x 60"	25"W x 60"	25"W x 60"	25"W x 75"
• Approx. shipping wt.:	1559 lbs.	1518 lbs.	1573 lbs.	1626 lbs.



MADE IN ISO 9001 FACTORY!

G9962Z ONLY \$855⁰⁰ **G9962ZX ONLY \$8395⁰⁰** **G0582 ONLY \$8195⁰⁰** **G0445 ONLY \$9750⁰⁰**

37" WIDE-BELT SANDERS

MADE IN TAIWAN

MADE IN ISO 9001 FACTORY!

	G0571	G0539	G0446 (TALL)
• Type:	Platen	Platen	Platen
• Sanding motor:	10 HP, 220V	15 HP, 220V/440V*	15 HP, 220V/440V*
• Motor phase:	Single-phase	3-phase	3-phase
• Conveyor motor HP:	1 HP	1 HP	1 HP
• Table lift motor HP:	¼ HP	¼ HP	¼ HP
• Max. board thick.:	6"	6"	6"
• Min. board length:	14"	14"	9"
• Min. board thick.:	½"	½"	½"
• Conveyor speed:	15-49 FPM	15-49 FPM	15-49 FPM
• Sanding belt size:	37"W x 60"	37"W x 60"	37"W x 75"
• Approx. shipping wt.:	1818 lbs.	1781 lbs.	1887 lbs.



G0571 ONLY \$9995⁰⁰ **G0539 ONLY \$10,895⁰⁰** **G0446 ONLY \$11,995⁰⁰**

SUPER INDUSTRIAL-DUTY 43" WIDE-BELT SANDER

MADE IN TAIWAN

- Sanding belt motor: 25 HP, 220V/440V*, 3-phase
- Belt feed motor: 2 HP
- Table elevation motor: ¼ HP
- Sanding belt size: 43" x 60"
- Max. material size: 43" W x 6"H
- Min. board length: 14"
- Conveyor speeds: variable, 14-60 FPM
- Drum speed: 2200 FPM
- Approx. shipping weight: 2490 lbs.



MADE IN ISO 9001 FACTORY!

G9979 ONLY \$15,750⁰⁰

\$355⁰⁰

SUPER INDUSTRIAL-DUTY 51" WIDE-BELT SANDER

MADE IN TAIWAN

- Sanding belt motor: 30 HP, 220V/440V*, 3-phase
- Belt feed motor: 2 HP
- Table elevation motor: ¼ HP
- Sanding belt size: 51" x 60"
- Max. material size: 51" W x 6" H
- Min. board length: 14"
- Conveyor speeds: variable, 14-60 FPM
- Drum speed: 2200 FPM
- Approx. shipping weight: 2731 lbs.



G9980 ONLY \$19,995⁰⁰

\$355⁰⁰

DOUBLE HEAD SANDERS

MADE IN TAIWAN

	24" H2933	37" H2934	37" (TALL) G0447	43" G0581	43" (TALL) G0486	51" (TALL) G0487
• Sanding motor HP:	15 HP, TEFC	20 HP, TEFC	20 HP, TEFC	25 HP, TEFC	25 HP, TEFC	30 HP, TEFC
• Sanding motor voltage:	220V/440V*	220V/440V*	220V/440V*	220V/440V*	220V/440V*	220V/440V*
• Sanding motor phase:	3-phase	3-phase	3-phase	3-phase	3-phase	3-phase
• Conveyor motor HP:	1 HP, TEFC	1 HP, TEFC	1 HP, TEFC	2 HP, TEFC	2 HP, TEFC	2 HP, TEFC
• Table lift motor HP:	¼ HP, TEFC	¼ HP, TEFC	¼ HP, TEFC	¼ HP, TEFC	¼ HP, TEFC	¼ HP, TEFC
• Max. board thickness:	6"	6"	6"	6"	6"	6"
• Min. board length:	14"	14"	11"	14"	11"	11"
• Min. board thickness:	¾"	¾"	¾"	¾"	¾"	¾"
• Front drum surface speed:	3543 FPM	3543 FPM	3543 FPM	3543 FPM	3543 FPM	3543 FPM
• Rear drum surface speed:	2565 FPM	2565 FPM	2565 FPM	2565 FPM	2565 FPM	2565 FPM
• Conveyor speed:	14-60 FPM	14-60 FPM	14-60 FPM	14-60 FPM	14-60 FPM	14-60 FPM
• Sanding belt size:	25"W x 60"	37"W x 60"	37"W x 75"	43" x 60"	43" x 75"	51" x 75"
• Overall height:	71½"H	71½"H	79"H	72½"H	79"H	79"H
• Approx. shipping wt.:	2227 lbs.	2641 lbs.	2924 lbs.	3384 lbs.	3545 lbs.	3880 lbs.

DUAL SANDING HEADS

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H2933 ONLY \$11,500⁰⁰ **H2934 ONLY \$12,995⁰⁰** **G0447 ONLY \$13,995⁰⁰** **G0581 ONLY \$15,995⁰⁰** **G0486 ONLY \$19,995⁰⁰** **G0487 ONLY \$23,995⁰⁰**

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SPECS FOR G0459 & G0459P

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- Conveyor motor: ¼ HP
- Variable speed: 5-35 FPM
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- Min. stock length: 8"
- Sanding drum size: 4"
- Sanding belt: 3" x 70" hook & loop
- Dust port: 2¼"
- Approx. shipping weight: 160 lbs.

FEATURES FOR G0459 & G0459P

- Steel dust hood
- 2 adjustable pressure rollers
- Thickness scale
- Industrial-duty conveyor belt
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**VARIABLE
SPEED
CONVEYOR**



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G0459



G0459P

G0459 ONLY \$595⁰⁰

G0459P ONLY \$595⁰⁰



16" DRUM SANDER

- Motor: 2 HP, 220V, single-phase
- Surface speed: 2100 FPM
- Drive motor: ¼ HP
- Conveyor feed rate: 11 FPM
- Max. stock size: 15¾" W x 3½" thick
- Min. board length: 9"
- 2 computer balanced drums
- Sanding drum size: 6"
- 3 pressure rollers
- 2 dust ports: 4"
- Approx. shipping weight: 304 lbs.

**INCLUDES A HEAVY-DUTY
RUBBER CONVEYOR BELT
SIMILAR TO WIDE-BELT SANDERS**

MADE IN TAIWAN



G1079R ONLY \$1095⁰⁰



18" OPEN END DRUM SANDER

- Sanding motor: 1½ HP, 110V, single-phase
- Conveyor feed rate: variable, 2-12 FPM
- Max. stock size: 36" W x 4½" thick
- Min. board length: 6"
- Sanding drum size: 4"
- Drum speed: 4000 FPM
- Dust port: 2¼"
- Cast iron platen
- Sandpaper: 3" W
- Approx. shipping weight: 328 lbs.

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UP & DOWN**

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WIDE!**

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COLLECTION
WITH DUST BAG**



G0458 ONLY \$925⁰⁰



24" DRUM SANDER WITH VARIABLE SPEED

- Motor: 5 HP, 220V, single-phase
- Conveyor motor: ¼ HP
- Conveyor feed rate: variable, 0-20 FPM
- Drum speed: 2300 FPM
- Max. stock size: 23½" W x 4¼" thick
- Min. board length: 9"
- Sanding drums: (2) 6" computer balanced aluminum
- 2 dust ports: 4"
- Approx. shipping weight: 489 lbs.

MADE IN TAIWAN

**INCLUDES A HEAVY-DUTY RUBBER
CONVEYOR BELT SIMILAR TO WIDE-BELT SANDERS**



G1066Z ONLY \$2150⁰⁰



24" DRUM SANDER

MADE IN TAIWAN

- Motor: 5 HP, 220V, single-phase
- Conveyor motor: ¼ HP
- Drum speed: 2300 FPM
- Conveyor feed rate: 11 FPM
- Max. stock size: 23½" W x 4¼" thick
- Min. board length: 9"
- Sanding drums: (2) 6" computer balanced aluminum
- 2 dust ports: 4"
- Approx. shipping weight: 442 lbs.

**INCLUDES A HEAVY-DUTY RUBBER
CONVEYOR BELT SIMILAR TO WIDE-BELT SANDERS**



**H5037
HOOK & LOOP
CONVERSION KIT
\$32.95**

G1066R ONLY \$1650⁰⁰



37" DRUM SANDERS

MADE IN TAIWAN

- Sanding drum motor: 10 HP, 220V, single-phase or 15 HP, 220V/440V*, 3-phase, TEFC
- Conveyor motor: ¼ HP, variable speed 6-18 FPM
- Max. board width: 36½"
- Min. board length: 9"
- Drum speed: 2800 FPM
- Sanding drum size: 6"
- 4 dust ports: 4"
- Sandpaper width: 6"
- Approx. shipping weight: 1400 lbs.

**VARIABLE
SPEED
CONVEYOR**



**INDUSTRIAL RUBBER CONVEYOR BELT
SIMILAR TO WIDE-BELT SANDERS**

10 HP, SINGLE-PHASE

G0449 ONLY \$3595⁰⁰

15 HP, 3-PHASE

G0450 ONLY \$3595⁰⁰



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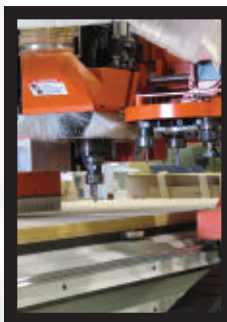




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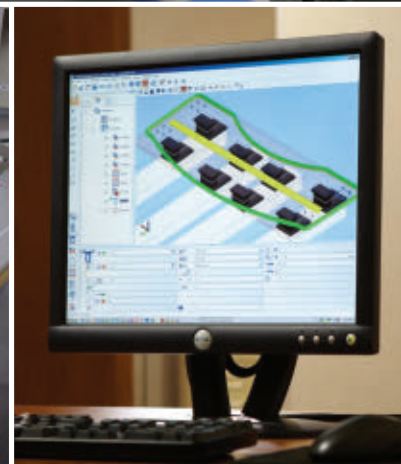
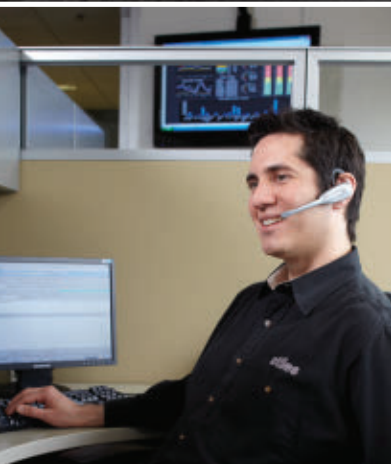
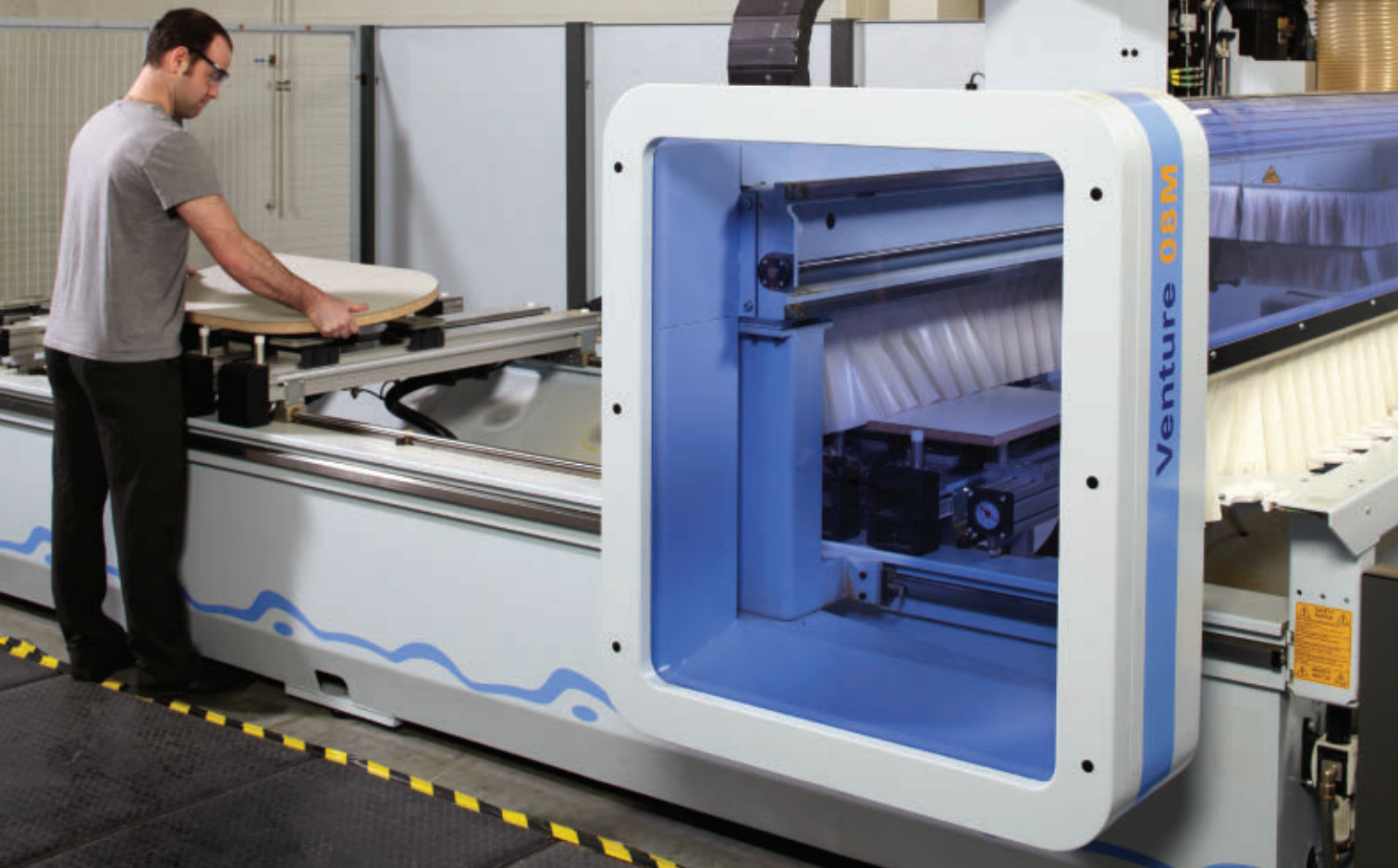
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+ Video: General Tool mortise and tenon jig
Will Sampson tests a new jig for cutting precise mortises and tenons with a plunge router.

www.CabinetMakerFDM.com/85820.html



+ SawdustSoup: How important is hand work?
Check out this discussion in the Custom Furniture section of Sawdust Soup.

www.sawdustsoup.com/group/customfurnituremakers/forum/topics/how-important-is-hand-work



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Fighting for the future

We have long been enthusiastic supporters of vocational education to train students for jobs in the woodworking industry. We support programs like WoodLINKS and the Woodworking Career Alliance. We feature successful school programs and student design competitions. I've even shown up at my local school board to try to save woodworking programs. But the sad fact is we are losing the battle.

More cutbacks

We hear far more news about programs being dropped or curtailed than we do of new programs or expansions. And many in the industry just shrug. Maybe the thinking is, "Heck, we've got to figure where the next job is coming from. We don't have time to worry about our future workforce."

When I battled to save my local school woodworking program a few years ago,

I contacted local cabinet shops and even another woodworking publisher in my New England town. But nobody showed up at the school board meeting. Nobody even wrote a letter. I was a lonely and easily ignored voice before a school board only too happy to abandon old-fashioned, dirty, dangerous, woodworking.

Support not enough

But even when there is good industry and community support, that might not be enough. Jim McGrew of McGrew Woodworking Inc. in Columbia, S.C., has been an unpaid adviser to a local high school cabinet making program and helped introduce students to CNC technology. But the teacher in the program told him the principal was dropping both the woodworking and auto shop programs in favor of culinary arts and health care vocational classes.

Unlike my experience, McGrew

garnered strong community support, receiving more than 5,000 communications, newspaper coverage, and achieving a good turnout for the school board. But none of that stopped the board from voting 7-0 to drop the wood and auto programs. The teacher of the cabinet program says the decision leaves the nearly 70 mostly male and minority students in the wood program without much choice.

The education establishment would rather try to force everyone into 4-year college programs or minimum wage service sector jobs than industry. Mike Rowe of "Dirty Jobs" fame says it well: "We're so focused on training kids for the corner office that we forgot how to build the corner office." ◀



+ You've got a bad reputation, mister

 by Karl D. Forth
 karl.forth@ccimedia.net

Who's watching your company's online reputation? Probably nobody. Who can post unsubstantiated complaints and untrue criticisms of your company? Almost anyone.

There may be dozens of online criticisms and comments about your business and you may not know they exist. This isn't an area we've spent a lot of time analyzing. I remember three or four years ago doing research on a story and discovering a website dedicated to consumer complaints. The two categories that seemed to draw the most fire from the general public at that time were airlines and furniture stores.

Some observers feel that reputation risk could be a bigger problem for businesses than regulatory risks, market risk, even physical security.

This issue is regularly discussed by Turner Harriot on his site, www.reputationsquawkbox.com.

Harriot also looks at some of the higher profile "complaint sites" (I can't think of a better way to describe them). I looked at one of the most aggressive, www.ripoffreport.com, and entered

"cabinets." A total of 130 specific items turned up.

On Harriot's site, he discusses ways to avoid a reputation crisis, getting the reputation you want, and whether to use an outside firm to help with your company's reputation.

Harriot suggests that companies don't treat employees or customers poorly, don't join in an angry online argument, and don't pretend that the negative damage didn't happen. You can't bury your head in the virtual sand. And sometimes you have to turn the other virtual cheek -- an online rebuttal may not repair the damage.

In addition, he looks at companies that claim to provide services that deal with reputation risk. Here, there are some individuals that aren't delivering what they're promising. It's almost as bad as airlines and furniture stores. ◀



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is seen as a big
problem for
companies.



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QUICK CUTS

Veneer Tech 2012 Craftsman's Challenge judge panel announced

The eighth annual Veneer Tech Craftsman's Challenge announced its three-person judging panel for this international design competition that highlights achievement in the use of natural wood veneer products.

Members of the 2012 judging panel are Michael Bell, Tim Fixmer and Alfred Sharp.

Michael Bell is director of estimating at Allegheny Millwork in Lawrence, Pa., and has 38 years experience in the industry. He started as a cabinetmaker after studying with Buckminster Fuller at Southern Illinois University, and since, has worked in every aspect of architectural woodwork—office, plant and installation. He was deeply involved in the AWI/AWMAC/WI project that resulted in the first edition of Architec-

tural Woodwork Standards (AWS).

Tim Fixmer's involvement in the industry started with a position in a hardwood plant in Wisconsin. After graduation from the University of Wisconsin, Whitewater, he joined Johnson Hill Press and was publisher of Furniture/Woodworking Product News that later became *Wood Digest*. He formed CCI Media, and acquired *CabinetMaker+FDM* in 2011.

Alfred Sharp is a native of Nashville, Tenn., who went from operating a 25-worker production shop to concentrating on museum-quality commissions including pieces made for The Hermitage and the Tennessee State Capital. He is an instructor at O'More College of Art and Design, Marc Adams School of Woodworking, and the Center for Furniture Crafts-

manship in Rockport, Maine.

The 2012 Craftsman's Challenge competition is co-sponsored by CabinetMaker+FDM. Competition entries are accepted through June 1, in categories including: Architectural Woodworking, Cabinetry, Furniture, Specialty Products, Store Fixtures and Student Design. Entry materials are available online through www.veneertech.com or by calling 800.593.5601.

A cash award of \$3000 will be made to the creator of the grand prize winning entry. The distributor of the veneer for the grand prize winning entry will receive \$2000 and the corresponding distributor salesman will receive \$1000. Category winners receive \$1000 each. Awards will be announced at IWF in Atlanta, August 22-25.

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Deadline for entry is June 1, 2012. There is no entry fee. Award winners will be notified prior to the official announcement to be made at IWF 2012 in Atlanta, GA. Entries are now being accepted. See www.veneertech.com for rules and entry forms.

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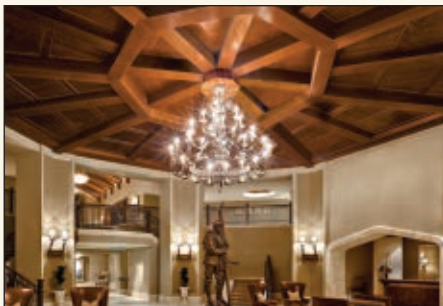
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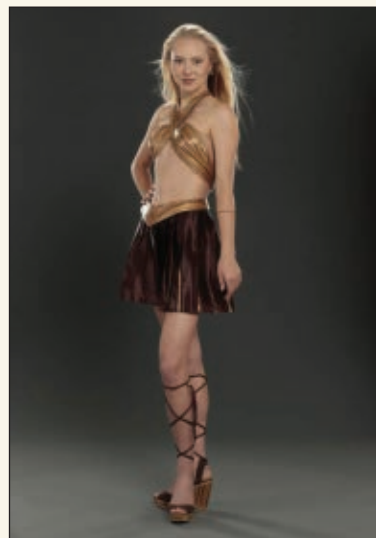
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QUICK CUTS

Roseburg earns Composite Panel Association ECC certification

Roseburg announced that all of its composite wood panel plants have been certified to be in compliance with the Composite Panels Association's Eco-Certified Composite certification program.

ECC Certification is granted on an individual manufacturing plant basis, and requires an on-site qualification audit and subsequent annual audits. Composite panel products must comply

with the California Air Resources Board formaldehyde emissions regulation, and the manufacturing facility must meet at least 3 requirements relating to carbon footprint, local and renewable resource, recycled/recovered wood fiber, sustainability and wood sourcing.

"We are very proud of the fact that all of our plants, Taylorville, [Miss.]; Missoula, [Mont.]; Dillard, [Ore.]; and Simsboro, La., have exceeded the minimum certification standards by meeting all five of the requirements listed in the ECC certification program," said vice president of sales and marketing, Steve Killgore. "In addition, panels from all four plants are certified to contain 100 percent recycled and/or recovered wood fiber. This affirms our continued commitment to producing green wood products."

For more information on Roseburg's products, visit www.roseburg.com.



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AWFS 2013 exhibit space draw opens

The Association of Woodworking & Furnishings Suppliers recently opened its exhibit space draw for the 2013 AWFS Fair.

The 2013 AWFS Fair will be held July 24-27, 2013, at the Las Vegas Convention Center in Las Vegas. Those interested in exhibiting at the fair may go to log on to www.awfsfair.org to download and complete the Exhibit Space Rental Agreement, and submit it to sales@awfs.org or fax it to 323.201.8232. Contact Amy Bartz, AWFS Fair sales director, with questions by email to amy@awfs.org or by calling 800.946.2937.

To see a complete list of industry events go to:

www.CabinetMakerFDM.com





Questions about FDM 300

I appreciate your position as a cheerleader for the industry, which I am a part of, but I think your article relative to California's office/contract furniture numbers (February 2012 *CabinetMaker+FDM*) misses the point. I could frankly not give a damn what their sales are. My interest would be in

what their domestic manufacturing numbers are.

We know that Masco has shuttered and auctioned off vast amounts of manufacturing plants everywhere. Steelcase recently closed their Vecta plant here in Texas. Other plants we hear of around the country are eliminating their manufacturing and using their buildings as forwarding warehouses for Chinese goods. And so far as how these FDM 300 affect us small business types, the best I can see is that we provide a market to help liquidate their retired equipment. My attempts at providing them production services prove fruitless as we cannot begin to approach their cost needs. The best we can do is correct their Chinese screw-up's.

We need to know what is really happening, not hot air blown up our pant legs. Things are serious for all of us and to make it sound anything less is blatant hopium. Unless of course you would like to provide to all of us solid Chinese outsourcing contacts so we too can work our way onto your 300 list.

Small and mid size shops are closing every day, being squeezed out by your magnificent 300 who are pushing into offshore manufacturing at an ever greater pace. How many of Ashley's 18,000 employees are working in the US? I think that's a relevant question. Maybe I have missed the point of your article, but being on the top of that list is not necessarily a position of honor.

Phil Koch, PKI Ltd
Dallas, Texas

Karl Forth replies: Thanks for your comments. I would agree that much of the industry is still in a serious situation, and imports are affecting all market sectors. But there is still a lot of domestic manufacturing, especially in the office/contract and cabinet markets, and I believe there will be for the foreseeable future.

We've reported the large sales declines in this group of companies over the past five years, so I don't think we can be accused of cheerleading. The fact that the office/contract sector had a good year in 2011 and that more companies reported sales gains is significant. Amid all the bad news, I don't think it's out of line for us to report on the positive events.

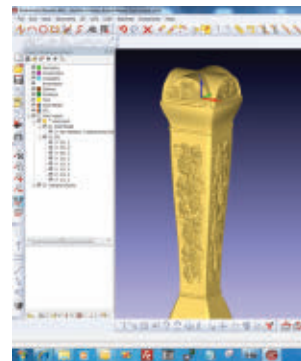
In the March issue we looked at the companies that have closed in some detail, so there's not much of a positive spin there.

You make a good point about Ashley. We estimated their manufacturing sales without their retail store segment sales for the first time, which drops them in the ranking. We try to present as accurate a picture as we can for each company, but sometimes we are not able to get all the manufacturing information. <

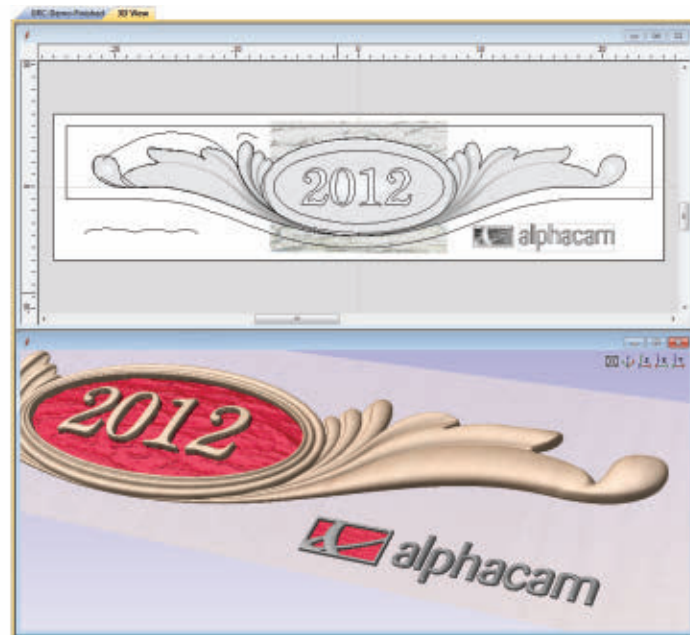


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Dealing with temperature's affect on adhesives



Considering hardwood grades and related yield; cleaning mold; tips to deal with grain raising.

Q. In hot weather, we are noticing that we are getting some poor gluing at times. We do keep our adhesive refrigerated slightly to avoid getting it too hot. We try to keep the plant cool too, but it is hard on hot days. What else should be look at doing?

A. Your implied thinking that the temperature of the adhesive will affect joint quality is correct. In fact, many glue companies make a wintertime and a summertime glue mix. The reason is that when adhesive is hot, it becomes thinner and more runny. Hence, it may run out of the joint before you get the pressure on. Also, heat makes the adhesive cure more quickly. So, the idea of keeping the adhesive cool before you use it is great.

However, what about the wood temperature? Is the wood quite hot, especially if it was recently from a storage area that is hot? Hot wood will quickly heat and thin the cool adhesive. You should be getting the pressure on within 20 to 30 seconds after the glue is spread to avoid thinning and also some precure of the adhesive. If the heat of the wood causes some precure, the adhesive will not be squeezed into the tiny nooks and crannies in the wood surface; the end result is a weaker joint.

Although our bodies tell us that it is hot and humid, you do need to check the humidity in storage and in the plant with an electronic instrument (get a small measuring unit costing \$30 from an

electronics store). It may surprise you to see that when the heat is over 100F, the humidity is often under 30 percent RH. If the wood is not also equally dry (about 6 to 7 percent MC), the wood can shrink a bit before you glue it, especially if you are gluing small pieces together. Small pieces change MC faster than large pieces as there is more surface area. This shrinkage will likely give you gaps in the glue joint over 0.006 inch which will give a weaker joint with most adhesives.

Q. With the price of FAS 1-Face just a bit above No.1 Common, our supplier is encouraging us to try FAS 1-Face instead of No.1 Common. We did a test run and found that our yields did not change much at all. So, we are not going to change grade. Does this make sense to you?

A. Hardwood lumber is normally graded from the worst side (also called the worst face). The worst side is the side with less clear regions, called cuttings.

When cutting lumber into cabinet parts, most operations will use the worst side to observe, especially with clear-2-face lumber. As the worst face on both FAS 1-Face and No.1 Common grades identically, when cutting from the worst side, you will not notice a yield difference. (Special note: Select grade lumber also grades No.1 Common on the poorer face.)

You would however notice a difference if you used FAS grade lumber, as with FAS the worst side must be clear enough to grade FAS.

The difference between a piece of No.1 Common and a piece of FAS 1-Face is that after the worst face of either grades No.1 Common, if the better face grades FAS, then the piece is potentially a FAS 1-Face piece.

+ Want more?

To search a full list of Wood Doctor's Rx question and answers, go to

www.CabinetMakerFDM.com

Q. We have some moldy furniture and cabinets. How can we treat and clean the wood to kill the mold? Is bleach okay?

A. First, clean the wood with a strong soap such as TSP to remove the surface mold as well as dirt.

Then, you can sanitize using bleach. Bleach is convenient, inexpensive and appropriate as a sanitizer for hard, non-porous, non-metallic and color-fast items after they have been cleaned, but it has two important limitations.

1) Bleach can eradicate mold, but if the surface is dirty, the bleach can get "spent" oxidizing the organics and not get a chance to penetrate the mold structure enough to kill it. As soon as dirt and moisture return, the mold can return. That is, bleach has no residual effect. In essence, it's gone in minutes.

2) Bleach will not remain to inhibit the growth of new mold colonies on damp materials.

So, if the moisture is likely to return, apply a mold resistant coating (broad-spectrum fungicide) to prevent the growth of mold on the surface. This coating minimizes dirt buildup that provides nutrients for mold growth in the future. Read label directions and be sure it can be safely applied to furniture and cabinets that will have human contact.

Q. We have some cabinets made from pine and I wonder what is the chance of grain raising. We work with an average EMC of 7 to 9 percent. The cabinets are then finished with water base coating. My question is what will this do to the grain (creating raised grain). I know dimensions change but what is the probability of the grain raising during this time of year.

A. First, we need to make sure that we have the same definition for grain raising. Some folks might call that appearance of wood fibers sticking up through a finish as grain raising. This would be most common with the hardwoods and not too common with the conifers like pine. I would call this fuzzing or grain fuzzing. I prefer to call grain raising the appearance of the annual growth rings through the finish. In other words a flat surface becomes bumpy and the bumps are related to the annual growth rings. This is usually seen only on pines and other softwoods that have very distinctive annual growth rings.

Raised grain is more likely when there is heavy pressure on the surface during machining, such as from feed rolls, dull knives, knives with too much land, and/or high stock removal per cut. Heavy sanding pressure can also make grain raising more likely. What happens is that the high pressure pushes some of the wood cells (the dense darker wood cells within a growth ring) down into the soft cells below the surface. After machining, the surface looks very flat. But, now when moisture is added, especially moisture from a water-base finish, the crushed cells will pop back to their original size, pushing upward and creating the uneven surface called grain raising. (Special note: I have seen a

few cases where heavy pressure from hand sanders can compress wood cells that then later pop back up when moisture is added creating a bumpy surface.)

The cure is not eliminating moisture, but rather fine tuning planing and sanding to eliminate excessive pres-

sure. Sometimes machines are set up based on machining or sanding dense hardwoods and then are not readjusted for the softer wood like pine. Note that heavy planing or machining followed by light sanding is not enough... the entire machining operation needs to have a light touch. ◀

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2020 TECHNOLOGIES

Gene Wengert, "The Wood Doctor," has been training people in efficient use of wood for 35 years. He is extension specialist emeritus at the University of Wisconsin-Madison.

Blackgum

Blackgum, also called black tupelo, tupelo gum, or just tupelo, is a tree that loves to grow in water and water-soaked soils. In fact, the genus *Nyssa* is the name of a water nymph. The tree grows throughout the eastern states, from Maine to Texas. Tupelo, Miss., (Elvis' birthplace) was named after this tree. A close relative is water tupelo (*Nyssa aquatica*) which has nearly the same characteristics. Honey from water tupelo is thought to be the best honey in the world. It is very high in fructose sugar.

The tree in the forest is often 3 feet in diameter and 80 feet tall. Some of the trees are over 400 years old. Unlike most trees, the tupelo trees are either male or female, with flowers being abundant on the female trees. It is not unusual for the larger, older tree to be hollow due to decay fungi; yet the tree can live with this condition for hundreds of years.

Also known as black
tupelo, tupelo
gum, or tupelo.

The wood itself is characterized by interlocked grain (the grain swirls every which way), which leads to warp when drying, warping in use when the MC changes, and difficulty when machining. In the past, blackgum was used for oxen yokes and chopping bowls due to the toughness resulting from the interlocked grain. Today, in spite of the fact that this is not an outstanding, beautiful appearing species, it still is widely used for furniture, cabinets, caskets, and railroad ties. Carvers of duck decoys also appreciate this wood. ◀



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+ Processing suggestions and characteristics

Weight. Blackgum has a dry specific gravity (SG) of 0.52 (which means it is roughly half as dense or heavy as water). The weight, when dry, is 32 pounds per cubic foot or about 2.6 pounds per board foot.

Strength. For dry wood, the ultimate strength (MOR) is 9,600 psi, stiffness (MOE) is 1.20 million psi and hardness is 810 pounds. Comparative oak values are 14,300 psi, 1.82 million psi, and 1290 pounds. Although oak is a little stronger, oak also weighs 30 percent more. Interlocked grain means that splitting is very difficult. Nailing is also difficult, as the interlocked grain wants to change the nail's direction. Pre-boring holes for nails and screws can be helpful.

Drying and stability. The wood dries with considerable difficulty

due to warp, especially twisting. End coating, even 4/4 stock, is suggested. Shrinkage in drying is moderate. Overall shrinkage from green to 6 percent MC is 6.2 percent tangentially (the width in flatsawn lumber) and 3.5 percent radially (the thickness of flatsawn lumber). Once dried, the wood does move slightly if there are large RH changes or if the MC is not matched to the environment's EMC conditions. A typical, desired, final moisture range is 6.0 to 7.5 percent MC. Once dry, it takes a 4.5 percent MC change to result in 1 percent size change tangentially and 8 percent MC change radially. It is prone to some warping in-use if the MC changes.

Machining and gluing. This wood machines moderately well, with some chipped grain due to the inter-

locked grain. If over-dried, the wood appears to be quite brittle. Sharp tools are essential. This wood glues without much difficulty if surfaces are perfectly flat. However, if the MC changes and the pieces warp in a small amount, it is difficult to obtain high strength joints.

Grain and color. The wood, which is mostly heartwood, is grayish brown to a light brown with hints of yellow at times. The finished surface is smooth, but without natural luster. If the lumber is quartersawn, blackgum exhibits a very attractive figure. The wood is odorless. However, when the tree is bacterially infected, the wood sawn from such a tree will have a putrid odor that can persist and is noticeable (and objectionable) in dry wood products especially when the humidity is high.

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*Besides fir, MPX panels may include other wood species under the Meinan-peeled poplar crossbands.

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Here comes Generation Z

Understanding the characteristics of different generational groups is a necessity for organizations and for marketing.

Welcome to Generation Z, those born between 1990 and 2010 and whose oldest members are beginning to enter the workplace and spend their own money. Now with Boomers, Gens X, Y, and Z in the adult population, you as a manager face the challenge of effectively integrating a broad range of people and their characteristics into your organization as well as selling your products and services to them. To do so, it's wise to understand their attributes, how they think and react.

The actions and traits of a similarly-aged group are broadly defined by two factors:

- ▶ The social and historical events experienced growing up. The impacts of wars, the economic cycles, and natural disasters on people obviously differ over time.
- ▶ Their stage of life. People's needs, wants, and dreams change with age. The young often become more like the old as they move from childhood through the various stages of adulthood.

While we should be careful to generalize about people, here's what the experts say about Gen Z that will affect their work and spending habits:

Z's are digitally competent and connected. Technology is part of their DNA – they simply don't remember the world before the Internet. They communicate information with friends incessantly through social media like Facebook and Twitter. They love to share

their knowledge and experiences online. The extraordinary speed with which information goes viral in our society and trends reach their tipping point reflects Gen Z's reliance on social media rather than other forms of promotion.

Their technology bent, however, has come with a price. Teachers are reporting that their skill to identify answers quickly in a morass of data is offset somewhat by an inability to communicate them clearly in writing.

To sell to this generation you must reach them online through social media and other tools.

Z's prefer to multi-task. Along with their technology focus comes the habit of tackling multiple connections and tasks at once. Unfortunately research shows that thinking and work quality suffer as people grapple with more than one job simultaneously. The brain simply doesn't handle multiple tasks well especially as we grow older. Errors increase exponentially, and the time to complete a job often doubles versus when tasks are handling sequentially. As one expert says, "You can't talk to yourself about two things at once."

Multi-tasking mirrors Gen Z's preference for speed over accuracy. They seek fast, simple answers and struggle with complex situations where facts are not black or white.

Z's are socially responsible. Gen Z's are growing up in an environmentally conscious world. They are fully aware of climate change and carbon footprints and aim to leave the world a better place than the one they found.

Z's like flexibility. First and foremost they abhor fixed work schedules.



And they will find working at a number of jobs and even careers during their working life to their liking.

Z's are impatient. Eager to contribute from day one, this generation is reportedly less willing to wait their turn in an org chart. They are generally better educated than previous generations and confident in their native intelligence.

Z's are less trusting of large organizations. The recent economic bust has shown them that many institutions are less stable and supportive than originally assumed. The delayed recovery has also convinced them that they will be less well-off than their parents.

Z's are optimistic. They are confident in their future success.

Z's are not brand loyal. Carefully crafted marketing campaigns are less important to them. It's the product and what they hear about it on social media. Z's evaluate products and services incessantly, share the results willingly, and depend on one-to-one contacts to guide their buying decisions.

Implications for managers

What are the implications of these traits to you as a manager?

Online Marketing and Sales. To sell this generation, you must reach them online through social media and other tools. Interactive online media portals containing detailed product information are a must for any company aiming at their wallets. You cannot count on more conventional channels like bricks and mortar to deliver orders for your products from Z's. And don't forget to keep your online presence up to date and easy to use.

Green Products. To sell this generation, you must consider offering

green products. Supporting and promoting your internal efforts at sustainability are also musts. And you must be sincere about this effort.

Life Beyond Technology. Gen Z can teach those of older generations what technology can do. As their employer however, your job is to show them there's more to life and work than what can be found on a computer screen and to succeed there are rules and structures that must be observed. To maximize their productivity, you must convince them to fit relaxation time into their work day.

Focus on Task. As an employer, you must design processes that ensure their concentration on the one task at hand and demand accuracy over speed. After all, to succeed you must perform at least as well as your competitors. The best solutions usually involve the input of everyone, young and old, in their design.

Work Organization. To deal with Gen Z's impatience, companies should develop flatter organizations with less bureaucracy.

In general, with the broad age diversity found in today's workplace, sound communications are a must. And the delivery of your messages should employ all available tools. Email is fast becoming an obsolete form of contact with members of Gen Z.

Remember too that the youngest employees at your company have limited experience in a business environment. Your network of suppliers and customers most likely covers the entire range of ages and cultures. Your company's brand is impacted by the behavior and actions of all of your employees. You are right to enforce rules of etiquette and dress that reinforce your company's reputation.

Your goal should be creating a work-

ing environment that considers the generational differences and balances their strengths and weaknesses. Intelligent change is a clear necessity in building a company that is attractive to all of its employees and its customers. And being open to change is a sure-fired way of attracting Gen Z employees.

Bottom Line: If you are not paying attention to generational differences in age groups, you risk missing the next important trends affecting your business. Get on board – learn about and prepare for Generation Z. But don't forget the other three generations populating your workforce and marketplace. ◀

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QUICK CUTS

Blum adds hinge manufacturing lines in North Carolina

Blum added two new hinge manufacturing lines to its North Carolina production location to manufacture its new Compact Blumotion hinges.

The added manufacturing lines allowed the company to add six new employees to its 450,000-square-foot North Carolina plant. The company plans to add another assembly line here for a new Tandem plus Blumotion runner set, expected to be launched in summer of 2012. For more on Blum products, please visit www.blum.com.

Cabinet Makers Association accepting 2012 awards program entries

The Cabinet Makers Association is now accepting entries through May 31 to its 2012 CMA awards program.

The program recognizes shops with "Wooden Diamond" awards for excellence in their respective categories and also awards custom certificates for placing within their category.

All CMA members in good standing may enter the competition in as many categories as they see fit. The awards will be presented at IWF Atlanta, which will take place Aug. 22-25. Volunteers for judging the awards will be sought in June, the association says.

To enter, go to www.cabinetmakers.org and click on the "Wooden Diamond" icon.

Xylexpo woodworking exhibition opens pre-registration

Xylexpo, the biennial international exhibition of woodworking technology and furniture industry supplies, recently launched its visitor campaign and opened pre-registration for the event.

The visitors campaign includes social networking efforts, newsletters and mailings to those interested in attending the woodworking industry event.

Xylexpo's preregistration service is also now open. Industry professionals interested in visiting Xylexpo may go online to www.xylexpo.com to receive an email and coupon that can be scanned at the event's gate.

Xylexpo will take place May 8-12, in the Milan, Italy, exhibition center Fieramilano-Rho.



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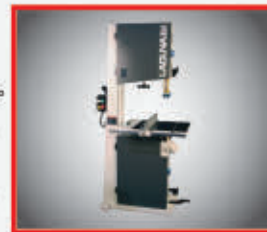
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More cases for lean change

Examining three shops with a flawed perception of what lean manufacturing should be.

I recently had the opportunity to visit three shops in the United States and one in Australia. Management at each of the shops considers their operation to be lean, but by the accepted definition of lean, only one of them is headed down the right path. I will tell you about the three with the flawed perception of lean in this article. The next article will illustrate the difference between lean perception and lean reality and the course you can take to arrive at the right destination.

Executives at each of these three facilities wouldn't allow me to take pictures of their processes, so I will have to use a thousand words to describe them. One of the shops is in Melbourne and the other two are in the Los Angeles area. One lesson that I learned during my visits was that although the shops are separated by hundreds or thousands of miles and are in different hemispheres, the old-school task-management style of leadership has no boundaries.

Lean down under

The Melbourne shop has 30 employees and the output is a mix of standard and custom product. The facility is modern with some state-of-the-art equipment and staffed by mostly long-term employees with limited exposure to processes in other shops. On-time delivery is better than 95 percent, which is commendable, but there is a lot of rework along the way and customer satisfaction with product quality is less than 80 percent.

Lead time is measured in weeks instead of days. One of the main contributors to long lead time and poor customer satisfac-

tion is inventory accuracy, which is a dismal 70 percent. That means that 30 percent of the time an employee needs something to complete a process the item is not available and the order has to be set aside while the purchasing manager scrambles to get the needed part. In Australia that can be quite a challenge. As you might imagine, margin is being eroded, productivity is poor, and profitability is tenuous.

Workplace organization

During the shop tour the manager was pleased to point out the areas where he had implemented Workplace Organization, and he was quick to offer reasons why things were missing from shadow boards and why toolboxes were in a state of disarray. His reasons all pointed to uncooperative employees who were not supporting his lean initiative.

Lean is not about tools, it is a process for creating an environment that encourages continuous improvement in every area of a business.

Midway through the tour I asked him who had developed the shadow boards and who determined where they should be located. His response was predictable. He had designed the shadow boards, determined what should be on them, and defined their locations with only minimal input from the people who would be charged with maintaining them.

Lean in Los Angeles

The shops in L.A. are distinctly different. One has about 20 employees and has



a standard product offering while the other shop is much larger with 60 employees and offers both standard and custom product. The smaller shop is very good at maintaining high marks in the typical Key Performance Indicators (KPI) and could be considered a model that shops of any size would like to emulate. On the surface there were wonderful examples of organization and control through Workplace Organization and Kanban, but it didn't take long to see how thin the line was between managed organization and chaos. Control was being maintained by the senior manager who had implemented the lean tools and strictly enforced compliance. The senior manager has been at the shop for many years and is technically savvy in all of the process steps.

The second example, which is about 120 miles away, struggles with achieving KPI goals, but, unlike the smaller shop, it doesn't have the luxury of low volume, low product mix. The senior manager is relatively new to the business, but has good lean experience. He understands what needs to be done and is working with mid-level managers to establish a culture that will encourage active participation across the organization in the lean transformation process.

In the meantime, the shop shows signs that the previous manager was knowledgeable of lean tools and techniques, but like the shops described above, he lacked an understanding of how to effectively manage in a lean environment. There was evidence of an attempt to implement Workplace Organization and Kanban, but neither tool was being maintained successfully. The new manager is faced with two challenges. He has to change the culture of the organization through his leadership team while gaining the trust, respect, and confidence of the shop staff

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so they will be willing participants as the change process moves forward.

Common threads

What are the common threads that bind all of these shops together? One is

the managers' understanding of lean tools and techniques and their desire to reap the benefits of a lean transformation. Another is their lack of understanding of how to effectively deploy lean tools and techniques. Finally, each manager started the process by trying to build a foundation for change through Workplace Organization.



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What is missing? If you have been following my articles over the last decade you know that lean cannot succeed without the 6 Es:

- Enlist the assistance and cooperation of all staff;
- Enable the staff by instilling them with the knowledge to act;
- Engage the staff through active involvement;
- Excite the staff and stir them to activities that lead to change;
- Empower the staff by authorizing them to make change happen in their area of control;
- Encourage the staff by celebrating success and spur them on to further change.

My articles use Workplace Organization as the central theme because, as is evident by the above examples, many managers believe if they implement the 5Ss great things will happen. Don't let them lull you into thinking Workplace Organization is the beginning and end of the lean journey. Lean is not about tools, it is a process for creating an environment that encourages continuous improvement in every area of a business. The 5Ss – Sort, Set-in-Order, Shine, Standardize, and Sustain – ensure consistency and continuity in achieving positive change. ◀

Jim Lewis has worked in the furniture industry for more than 30 years with a special emphasis on facilitating the transformation to the Lean Business Philosophy. He is an independent lean business consultant, author, and writer. Jim's most recent book, "Story of a Lean Journey," chronicles the journey of one company through the lean transformation process. The book is available through the Society of Manufacturing Engineers (SME.org), and amazon.com

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Nine lessons for better CNC use

Successful CNC users share tips for safer and more efficient use of CNC technology.

CNC automation has increasingly become a routine part of the most successful cabinet and furniture operations. But most companies still have lots to learn to get the most out of CNC machining. Here are some lessons from successful CNC operations.

1 Clean power is important

When Joni and Charlie Van Dusartz automated their cabinet shop in Hammond, Wis., the first challenge they faced was how to power the machine. The Van Dusartz's shop is a single-phase shop with a number of three-phase converters for the machines that need it. Their Biesse Rover CNC router needed smooth, uninterrupted three-phase power to run, so the two decided the time was right to have three-phase power run into the shop. They balked, however, when they heard about the \$30,000-per-mile charge to run three-phase power to their shop, which was two and a half miles from the power supply.

In the end, a power expert from Schneider Electric Motors, Menominee, Wis., custom built a three-phase converter for them, which contains a filter to provide a steady power band.

Lesson: *Check power requirements before new installations.*

2 Not just cabinets

When Classic Woodcraft Inc. in Chatsworth, Calif., adopted CNC manufacturing, owners Jim Clark and Kevin Ontiveros found there were more benefits besides increased production capacity for cabinets. They had



1

Charlie Van Dusartz, above, had a custom three-phase converter built to ensure his CNC machine had the clean power supply it needed.



2

Having a CNC router has not only increased efficiency but made some curved work, left, more practical and profitable, such as these lamp bases.

been designing in Cabinet Vision and became attracted to the CNC possibilities of Thermwood's routers and nested based manufacturing. "It just seemed to make more sense," says Ontiveros, referring to the material handling advantages of the system. Since nested based manufacturing uses a CNC router to cut and machine all cabinet parts from sheets, there's no handling of parts between a saw and joinery-related equipment.

Most of their work is residential kitchens, but Classic also does cabinetry and built-ins for whole houses, as well as some commercial work. "If somebody wants one shelf, I'll do one shelf," says Clark. The CNC has also opened up opportunities in more unusual projects such as display fixtures and lamp bases.

Lesson: *One-off projects can be profitable and diversify your business.*

3 V-grooving creates new product

Decorative Concepts of Boise, Idaho, was born out of a desire to diversify and the purchase of a Northwood CNC router that was meant for another business. Owners of Decorative Concepts, Dale Wilson and Brett Hatfield, purchased the router to cut cabinet parts for their cabinet shop, Western Idaho Cabinets, but they eventually set up the machine in a separate shop and diversified into a whole new product line: mantels and fireplace surrounds.

Besides product diversity, the CNC router opened the door to more innovation. For example, in the forms that make up the sides of the mantels, a small change in the way the pieces were cut on the router made it possible to have a perfect mitered corner with no hassle. When making the groove for the mitered



CNC precision makes possible miter-folded corners in these mantel surrounds. The groove for the mitered corner is done by stopping just short of cutting through the material. Tape is put over the front of the grooved MDF piece. The remaining material is thin enough to fold over and with glue and a rubber band that acts as a temporary clamp a perfect mitered edge results, quickly and easily.

corner the router is set up to stop just short of cutting through the material. Instead of two pieces that have to be lined up and joined together, the remaining material is thin enough to just fold over. With glue and a couple of rubber bands to act as temporary clamps a perfect mitered edge results, quickly and easily.

This innovation made possible one of the most popular product lines developed by Decorative Concepts -- the homeowner kit. The kit consists of the surround in three sections, the two sides, the mantel and fairly simple installation instructions. The builders' kit, on the

other hand, is in more pieces, although it is less expensive, and is meant for an individual more familiar with construction, such as a handyman or carpenter. It requires more assembling and will take slightly longer to install.

Lesson: *CNC precision changes joinery options.*

4 Manual and CNC processes can work together

Many cabinet shops treat automation as a one-way trip from which there is no turning back, but for some CNC shops the solution is a successful marriage of automated and conventional processes.

Mark Shelley, owner of Wooden It Be Nice, South Yarmouth, Mass., has integrated computers in the front office and a CNC point-to-point machining center in the shop with a host of conventional sawing and boring equipment. The result is less down time, and faster production as automated and conventional equipment are used constantly in a leap-frog fashion to get jobs done in the most efficient manner available.

For Shelley efficient production means no waiting for a machine. Typically, while Shelley is running parts on the Busellato Jet 4000 CNC point-to-point machining center, someone else is machining other parts elsewhere in the shop, including even doing operations that could be done on the CNC machine. For example, he might be drilling holes

Sometimes pairing CNC automation with manual production is more efficient, as in using a manual boring machine for short run or horizontal boring chores while the CNC does more complex work.

in cabinet panels with a Blum boring machine. Why use a conventional manual borer, when you've got a CNC machine?

Here's an example. If the parts required only three holes, it's fast, simple work for the Blum machine, and there's no wait for the CNC to be free. The big machine can be used for more complex chores.

Similarly, the shop also has a Busellato horizontal boring machine in regular use. The CNC is capable of doing horizontal boring, but Shelley says it is faster, and less complicated to simply use an offline borer. Again, it's likely that the boring machine will be in use simultaneously while the CNC machine is handling other parts.

Lesson: *Don't abandon manual processes if they can coordinate with the CNC.*

+ BETTER CNC USE**5**

David Hall unloads machined parts from his Thermwood CNC router by pulling the spoilboard and all the parts in one motion onto a shop-built rolling cart. He keeps a second calibrated spoilboard so he can instantly reload the machine and get it running again.

5 Making offloading easier

Hall's Edge in Stamford, Conn., uses its CNC router to cut cabinet and furniture parts for other shops. Owner David Hall, as a one-man operation, wanted a more efficient way to offload nested parts. He built a plywood rolling cart that slides up to the Thermwood router's work table to help unload parts. He uses two identically calibrated spoilboards. When one sheet is machined, he simply pulls the parts and spoilboard off onto his cart in one piece. Then he slides the spare spoilboard onto the router, adds a new sheet of material, and the machine can keep on working while he sorts and process the parts from the previous sheet. And, of course, he built the cart from parts machined on the CNC router.

Lesson: Use the CNC router to make shop jigs and fixtures for more efficiency.

**6**

Adding a vacuum lift makes it faster and safer for workers to move sheet materials onto the CNC router or beam saw.

6 Safer panel processing

David Wilhoite operates a California Closets franchise in Reno, Nev. Like many shops, he got into CNC manufacturing for increased efficiency, but he discovered other advantages, such as an improvement in safety.

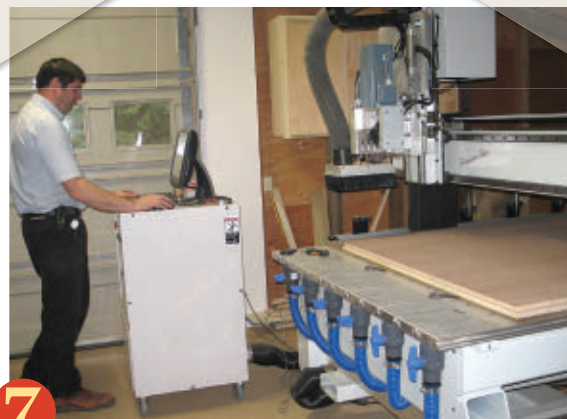
Machine operators are less likely to come in direct contact with cutting tools. But CNC also typically means processing more heavy panel products, which means more heavy lifting. To make that both safer and more efficient, Wilhoite added a Schmalz vacuum lift.

"Now one operator can lift the 80- to 90-pound panels with the vacuum lift," he says. "Before, it took two guys to hoist the sheets."

Lesson: Consider automating material handling as well as machining.

7 Don't watch

Steve Ferguson of JDG Inc. in Eugene, Ore., jokes that he didn't immediately reap the full efficien-

**7**

Steve Ferguson of JDG Inc. in Eugene, Ore., says the Techno CNC router didn't save as much time as they had hoped in the beginning because shop workers would stop what they were doing to admire the machine as it worked.

cy benefits of his Techno CNC router when he first got it because he and the other guys in the shop spent too much time admiring it. "It was supposed to be a time-saving device, but for the first two months there wasn't any time savings because everybody just watched it," he says.

Lesson: Trust your machine and get on with other work.

8 See how Desco Professional Builders optimizes panel production with a vacuum lift and a sweeper program. Watch our video on your smart phone or www.CabinetMakerFDM.com/5458.html. If your phone has a Web browser and camera, download the free app at <http://qrcode.kaywa.com/> and scan over this barcode.



Snap it!



9



A student uses a Techno CNC router to make slots for a DVD tower holder as part of the cabinetmaking program at Mahoning County Career and Technical Center.

8 Nested base production flow with sweeper and vacuum lift

When Desco Professional Builders Inc., a general contractor in Ellington, Conn., brought cabinet production in house, they were after maximum efficiency. That goal eventually led to fully automating the cabinet shop. Robert Anderson, president, says, "Our retail customers require quick turnaround and short lead times. Our first cabinet shop was three guys with table saws and a 35-year-old edgebander. Today, we couldn't compete without automating."

Art Foote, who is in charge of the in-house manufacturing operation, says the company chose Delmac Machinery Group as their primary automation vendor because they offered a versatile system to fit the needs of custom work. That system includes a Busellato Jet 400 RT CNC router and an Omal HBD boring and doweling machine. Another important investment, Foote says, was the Schmalz vacuum lift that allows one man to easily process heavy panels. A Holz-Her Sprint 1310 edgebander rounds out the production. Microvellum software drives the front end of the process with shop foreman and engineer Shane Bruscoe at the controls.

One way they make the operation even more efficient is by optimizing it for single operator use. That means employing the vacuum lift for loading and a sweep program for offloading. When done with machining a sheet, the sweep function

slides the entire sheet of nested parts to an offload table. There the operator can safely label, unload, and sort parts while the machine continues to machine the next sheet.

Lesson: Optimize CNC production for safe single-operator use.

9 Teaching the next generation of CNC users

Mahoning County Career and Technical Center, Canfield, Ohio, has integrated CNC training into the school's regular carpentry and cabinetmaking curriculum.

John Panella, who teaches this program, set up the CNC section as an option that is not for all students, partly because it demands high computer skills combined with reading comprehension. "We teach the students to program the machine using a software package that is popular among cabinet shops," he said. "The most difficult task is defining the geometry of the part." It is necessary to think through every detail of the part in order to fully understand its geometry. Then the students can use the software to construct the geometry on the computer, first in the form of lines, then surfaces, and finally as 3D volumes."

For example, Panella often gives his students the assignment of producing a 12 inch deep, 8 foot high cabinet starting with 60 inch wide and 108 inch long melamine panel. Students learn how to create a program and download it to the machine, clamp the board to the

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877.824.3773 www.biesseamerica.com

Delmac Machinery Group, CNC router
336.854.1211 www.delmac.com

Microvellum, software
541.664.1625 www.microvellum.com

Schmalz Inc., vacuum lift
919.713.0880 www.schmalz.com

Techno Inc., CNC router
800.819.3366 www.technocnc.com

Thermwood Corp., CNC router
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machine table, hit the start button, and cut out their first cabinet.

Later in the course, the students get the opportunity to program more complicated designs such as curved cabinets. "The cabinetmaking professional is in the midst of a revolution because there is no limit to the designs that you can produce with a CNC machine," Panella says. "It's amazing what our graduates can do after they have had a year or two of on-the-job experience."

Lesson: Encourage young people to learn CNC skills. ◀

QUICK CUTS

NKBA releases 2012 Design Trends Survey findings

The National Kitchen & Bath Association released findings from its 2012 NKBA Design Trends Survey, which found new trends in cabinetry wood types and finishes, and a growing popularity in LED lighting use.

Cherry wood, which has consistently been the first or second most popular wood type for kitchen cabinetry, was specified by 69 percent of designers in 2012, down from 72 percent in 2011

and 80 percent in 2010. Maple also fell, specified by 70 percent of designers in 2012 compared to 77 percent in 2011. The survey found that instead of one or two woods capturing the majority of market share, lesser-used woods are being specified more often, including oak (22 percent), walnut (13 percent), birch (15 percent) and bamboo (10 percent).

According to NKBA, natural kitchen cabinetry is trending toward darker finishes, which were specified by 58 percent of kitchen designers. Light natural finishes were recently specified by 30 percent of kitchen designers, while medium natural finishes were specified by 55 percent.

For the first time since NKBA began its design trends survey, traditional was not the most popular design style in kitchens and bathrooms, replaced by transitional style in 2012. Traditional style was specified in 58 percent of kitchens and 59 percent of baths, down from nearly 75 percent in both rooms previously. Contemporary was next, specified in 52 percent of kitchens and 53 percent of bathrooms.

Another trend identified in the survey is the returning popularity of medicine cabinets, which were specified by 43 percent of designers in 2010 and 36 percent in 2011, but were requested by 66 percent of designers in 2012.

For more findings of the 2012 NKBA Design Trends Survey, visit http://www.nkba.org/press/releases/pressreleases2012/12-02-16/NKBA_Reveals_Top_Kitchen_Bath_Trends_for_2012.aspx.



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See Lincolnton Furniture's comeback on video

NBC recently featured the comeback of Lincolnton Furniture on a televised report. The video on the Lincolnton, N.C., company is available on the WoodLinks website.

See www.woodlinksusa.org/index.php/2012/02/18/made-in-america-again/ to view the video.

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Efficient operation allows batch sizes of one

Ontario kitchen cabinet producer focuses on one custom project at a time.

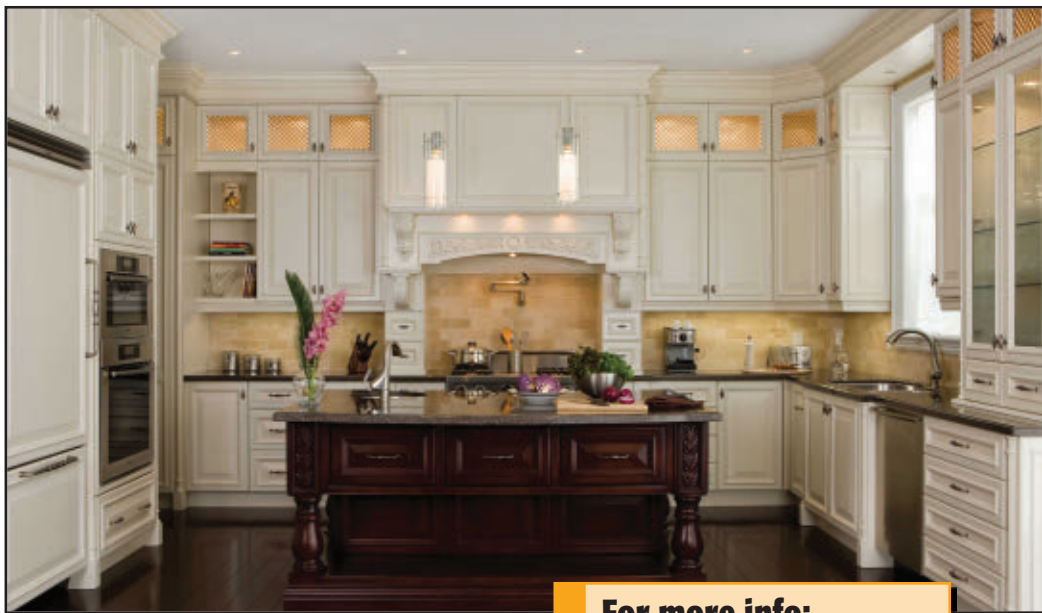
QTK Fine Cabinetry aims to satisfy its customers one kitchen at a time.

"Your kitchen, your taste, that's our slogan and we employ this methodology to build every single project," says Daniel Toto, general manager. "We don't stock parts, we cut everything we need for one job. Everything is processed in a batch size of one and our Schelling and IMA machine's speed and reliability allow this. We not only build the kitchen for each customer, we design it for how each particular user uses their kitchen."

The company rebranded from Quality Tops & Kitchens to QTK Fine Cabinetry because of its focus only on cabinets. QTK purchased a Schelling FH6 with Duplus and automatic label printing in May 2009 at Ligna. Shortly after that and before the Schelling was delivered to QTK, the company moved from two buildings comprising 31,000 square feet to one building with 45,000 square feet in size in Vaughan, Ont., near Toronto.

"Before we moved we were forced to place new machinery where it fit as opposed to where it belonged in the manufacturing process," Toto says. "By moving we were able to plan the production work flow and install the machines in the most efficient location possible. This allowed us to capture lost efficiencies from being separated into two plants."

QTK has been in business manufacturing quality custom-made residential cabinetry since 1974. "Our customers are new home builders, designers, contractors and private home owners," Toto says.



QTK focuses on making one kitchen at a time with its efficient process and equipment.

At a glance

Who: QTK

Where: Vaughan, Ont.

What: Custom kitchen cabinets

Web site: www.qtk.ca

Everything is made in one location. "We order sheet stock, cut on our Schelling FH6, edgeband on our IMA Novimat Concept with 24-color automatic selector, then parts get drilled on three point-to-point CNC machines. From there boxes are assembled using dowels," Toto says.

"We employ a just-in-time system for all material and hardware inventory as well as work in progress inventory. We don't cut, edgeband and build cabinets until just a few days before they are to ship. The reliability of our European machinery allows us to do this."

For more info:

IMA Schelling Canada, Schelling saw, IMA Novimat edgebander
905-565-0001 www.imacanada.com

Eurosoft Inc., Ardis optimizing software
919-468-6374 www.eurosoftinc.com

Microvellum, Manufacturing software
800-204-0913 www.microvellum.com

Or go to
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Increasing speed

Toto says that one of the biggest upgrades has been in the speed of the process. "We replaced our front-load panel saw with a rear load, automatic labeling Schelling FH6, replaced an edgebander with one tape color with an IMA Novimat Concept with 24-tape coil. And we employed just-in-time ordering of all hardware and sheet goods. Assembled cabinets take up a lot of space, so we try to minimize how many kitchens we warehouse waiting to be shipped."

The company uses a lot of colored melamines for their interiors. They offer the customer the option of using a color matched melamine as the interior as opposed to white. Last year more than 90 different colors were used for their



Each kitchen is designed to address how the customer uses their kitchen, and includes as many as 90 interior melamine color choices.

cabinet interiors.

QTK employs Microvellum software for engineering and creating automatic g-code for the three CNC machines in the factory, and Ardis optimizer and automatic part labeling on the Schelling FH 6 panel saw. The company also uses the MicroManager ERP system to track projects in production, assign employees to projects, to scan items being shipped and to gather data recording the number of man hours spent on each project.

The Ardis Inventory Management System (AIMS) allows them to keep, catalog and re-use offcut pieces.

Handling offcuts

"This makes keeping offcuts easier, more organized and is environmentally friendly," Toto says. "Each time an offcut is generated that is bigger than a certain size, an offcut label is automatically printed.

"The saw operator places the offcuts in a section that is also labeled and scans the part label and the area label so the system knows where the parts are located. Next time we optimize, all the offcut parts scanned into the system will try to be re-used – if any of the parts are to be re-used the system tells the saw operator which part to get and where it is located.

QTK doesn't use bubble wrap and cardboard to transport cabinets because of they are not environmentally friendly. Instead, QTK wraps cabinets in re-usable

blankets that are transported back to the factory upon completion of the project.

"We are constantly innovating and pushing forward in design and process improvements," Toto says. ◀

+ Doors made in house

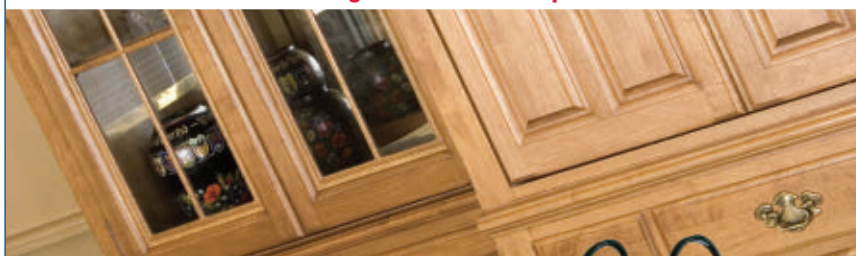
QTK manufactures all of its own doors. "We purchase rough lumber stock, rip, plane, cut, profile, assemble, sand and drill all our doors in house," says QTK's Daniel Toto. "This allows us to ensure only the highest quality materials are used in our doors."

Once the doors are built they are drilled using CNC machines for handles, hinges, bumpers and any other necessary machining. From there the doors are sanded again before applying stain, sealer and top coats on an automated finishing line.

Finished doors then exit the dust-free paint room to have hinges installed, placed on the cabinets and loaded directly into the delivery truck.

Cutting Through the Competition

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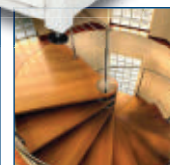


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McGrew Woodworking gets sweet contract with Krispy Kreme bus

South Carolina cabinet shop provided interior cabinetry and custom CNC work for tour bus restoration.

What do doughnuts, an old tour bus, and CNC woodworking have in common? The answer is a recent project at McGrew Woodwork Inc. in Columbia, S.C.

Jim McGrew, who was featured in *CabinetMaker+FDM* magazine in June 2010, was contacted by Outcast Kustoms of Mooresville, N.C., to help restore a 1960 Flexible Starliner bus so it could be used by Krispy Kreme to celebrate the iconic doughnut company's 75th anniversary on a cross-country "Glaze the Nation" tour.

Painted to resemble Krispy Kreme's famous boxes, the green and white bus was officially unveiled at the Daytona 500 in February with famous race drivers Kyle, Richard and Austin Petty on hand.

"Because our purpose is to 'touch and enhance lives through the joy that is Krispy Kreme' we felt it was important to get out of our shops and take the party on the road," explains Dwayne Chambers, chief marketing officer for Krispy Kreme. "We searched the entire country to find a vehicle that had just the right balance of nostalgia, retro and cool. There were a lot of possibilities, but our search always seemed to come back to the Flexible."

McGrew used his CAMaster CNC router and Vetric software to do all the interior millwork on the project, including inlaid countertop logos, engravings and



McGrew Woodworking in Columbia, S.C., won the contract for all of the interior millwork, much of which was done with a CAMaster CNC router and Vetric software.



Inlaid logo details highlight the countertops inside the tour bus.

Painted to resemble the two-toned Krispy Kreme doughnut boxes, the Krispy Kreme Cruiser is a 1960 Flexible Starliner.

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Lighted logo details are also part of the bus project, which debuted at the Daytona 500.



The McGrew Woodworking crew will see their work highlighted on the television show *Outcast Kustoms* on the Velocity network in April.

special lighting details. There is even a doughnut pole column. The restoration has been chronicled for an episode of Velocity's new *Outcast Kustoms* show, which airs April 2, 8pm ET on Velocity.

McGrew has made a point of capitalizing on the capabilities of his CNC router to tackle unusual projects and expand his business. He has done

everything from intricate architectural carvings to life-size chess pieces.

But the Krispy Kreme project will likely be his broadest exposure with both the nationwide tour and television show connection.

Operated for Krispy Kreme by Richard Childress Racing, over the next few months the Krispy Kreme Cruiser will

make nearly 500 stops at local fairs and festivals, Krispy Kreme shops, a myriad of major events in 37 states, and spontaneous stops along the way with fun and games, prizes and giveaways, and of course Krispy Kreme's doughnuts.

To check out the Krispy Kreme Cruiser tour schedule, go to www.krispykremecruiser.com. ◀

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+ No sweet success in McGrew's attempt to save school cabinetmaking program

While Jim McGrew is justifiably proud of his success in landing and completing the Krispy Kreme Cruiser bus restoration project, he is frustrated by his inability to save a vibrant local high school woodworking program.

McGrew had long been involved as an unpaid adviser in the cabinetmaking program at Richland Northeast High School. He had helped introduce CNC machining and computer design software to the students and was negotiating with one manufacturer to get a CNC router at a cut-rate price for the program.

But the high school principal said the cabinetmaking program and an auto shop program did not have enough students completing all four years of instruction available. So, she plans to drop the auto and cabinet classes and start two new programs in health services and culinary arts.

McGrew said he was flooded with more than 5,000 communications in support of his efforts to save the woodworking program, but in the end, he suggests it was a "game of numbers."

"Unfortunately the Richland County District 2 school board voted 7-0 to shut down cabinetmaking at the high

school levels," he said. "Industrial manufacturing and automotive will cease this year, with the addition of new programs which will not report 'completer' numbers for three years and with no reporting of numbers by the industrial programs, the overall (statistical) performance of the district will rise, a few will be given awards, the government will be asked for money and eventually the superintendent will go to another state and we will be back where we started."

David Pietras, the cabinetmaking teacher was quoted in The State newspaper as saying the decision will harm minority students. "I have 68 black male students on my roster this year. (The school district) is taking a predominantly black male course and replacing it with two courses that are traditionally female dominated," he said in a letter to school board members. "Most of my students will not go to college or a technical school. My concern is that these students' needs are not being addressed. They need a skill they can take with them to help them secure employment."

McGrew suggested the community will have to look to upcoming elections for any relief.

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QUICK CUTS

Architectural Woodwork Institute-Georgia to sponsor WoodLINKS USA

The Architectural Woodwork Institute's Georgia chapter has recently decided to dissolve as a result of declining membership in difficult economic times, and will use the remainder of its money to

support the WoodLINKS USA student woodworking program.

AWI-Georgia's remaining funds will go toward paying state license fees for up to six schools in that state, and to pay

for teachers to attend the International Woodworking Fair in Atlanta.

WoodLINKS USA is currently looking for schools in Georgia interested in becoming part of its national network. If you know of a school that would be interested in becoming an AWI-sponsored WLUSA site, send a letter of interest and include a statement explaining how the program would benefit. Information should be submitted via email to woodlinksusa@medicacombb.net. For details, go to www.woodlinksusa.org.

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KCMA survey finds cabinet sales drop 1.7 percent in 2011

According to the Kitchen Cabinet Manufacturers Association's monthly Trend of Business Survey, participating cabinet manufacturers reported cabinet sales of \$4.4 billion for 2011, down 1.7 percent compared to total cabinet sales for 2010.

Stock cabinet sales decreased 3.2 percent in 2011 from 2010; semi-custom sales remained the same as in 2010; and custom sales fell 3 percent from 2010.

December 2011 monthly cabinet sales were down 1.9 percent compared to December 2010. For more on the survey, visit www.kcma.org.

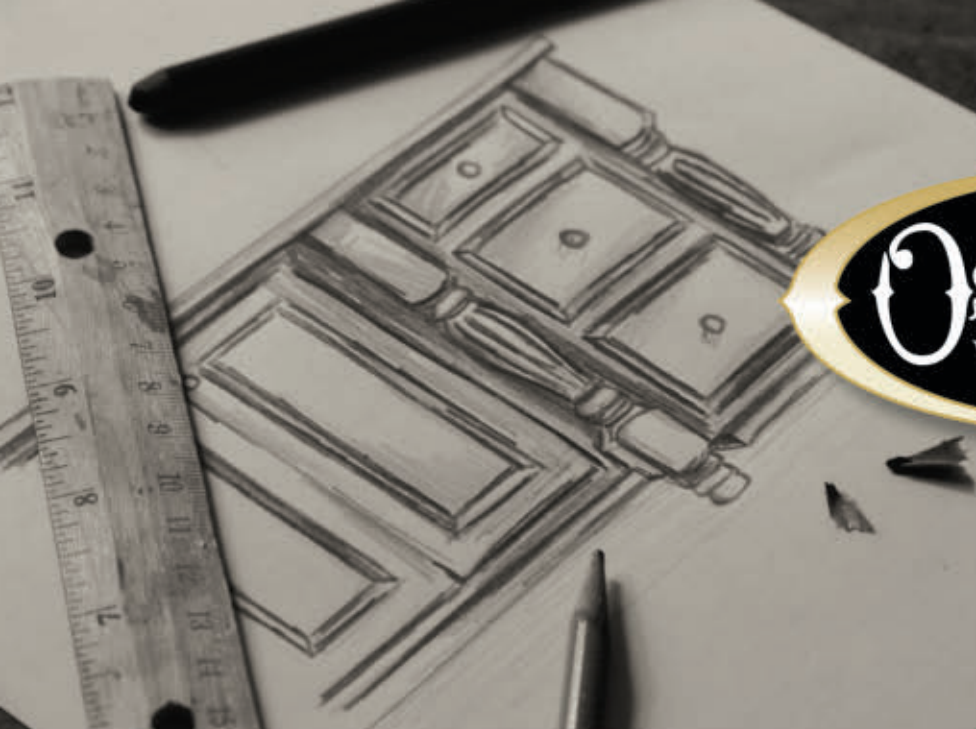
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Sales slip for cabinet segment

More cabinet manufacturers in the FDM 300 report higher sales, but overall trend is down in 2011.

Reported annual sales for cabinet manufacturers in the FDM 300 declined again in 2011. Even though more companies had higher sales the overall trend was still negative.

Overall, sales for this group of 300 companies, including cabinet, furniture and millwork producers, amounted to \$36.17 billion for the year 2011, a decrease of 2.25 percent from 2010. See the complete FDM 300 by going to www.CabinetMakerFDM.com and clicking on "FDM 300."

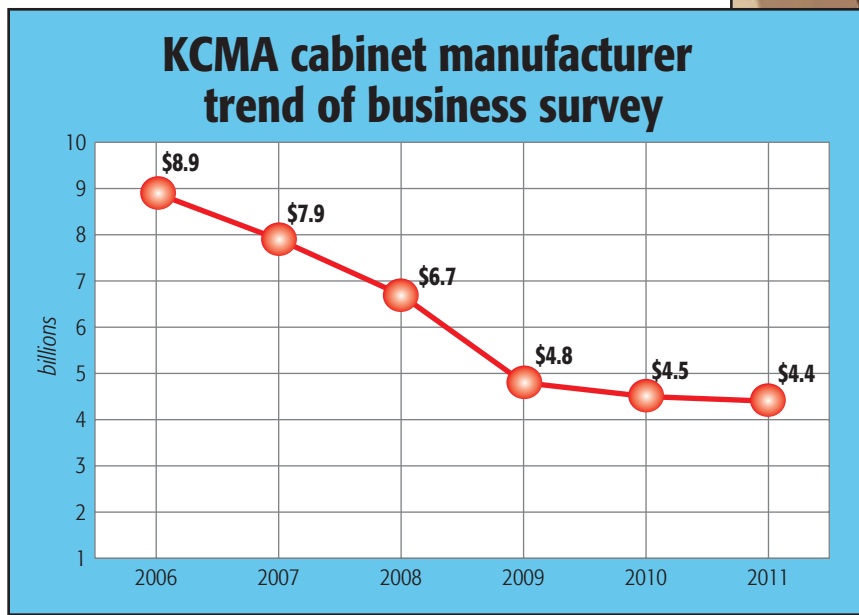
Cabinet manufacturers in the FDM 300 group of companies recorded years of sales growth up until late 2006, but sales declined sharply for all woodworking sectors in 2007-2009. The cabinet industry has used technology and advanced manufacturing processes to stay current.

But there have been consolidations, equipment auctions and some plant closures. At last year's KBIS exhibition in Las Vegas there were more imported cabinets shown than at previous shows.

Cabinet market in 2012

Dick Titus, executive director of the Kitchen Cabinet Manufacturers Assn., spoke on the kitchen and bath cabinet market industry size analysis and the KCMA Trend of Business report during Industry Reports and 2012 Forecasts. (www.cabinetmakerfdm.com/webinars.aspx)

KCMA currently has 175 cabinet manufacturer members, with 60 percent of member companies having less than \$10 million in sales. The analysis estimated that the 2011 market size was \$6.8 billion



KCMA expects cabinet sales to remain flat in 2012 after several years of declines. The monthly trend of business survey peaked in November 2006.

in 2011, down 2.6 percent from \$7 billion in 2010. In 2006, the market was estimated to be in the \$12-13 billion range.

Titus said that the monthly Trend of Business report showed that the cabinet Industry had 126 consecutive months of sales growth, which ended in November 2006. There have been positive months since then. Estimates by others that business was off 50 percent since then were pretty accurate, he said. For 2012 Titus sees a flat year with industry sales holding at about the \$7 billion mark.

Cabinet business survey

According to the KCMA's monthly Trend of Business Survey, participating cabinet manufacturers reported sales

totaling \$4.4 billion for 2011. This was down 1.7 percent compared to total sales for 2010. Stock sales were down 3.2 percent; semi-custom sales were even with sales for 2010; and custom sales fell 3 percent.

December 2011 monthly sales were down 1.9 percent compared to December 2010. Stock sales were down 1.7 percent; semi-custom sales were down 0.7 percent; custom sales were down 9.3 percent compared to December 2010. Previously the cabinet manufacturers surveyed reported sales of \$4.5 billion in 2010. That was down 4.1 percent compared to total sales for 2009. In 2010, stock sales in this group of companies fell 6.7 percent, Semi-custom sales were down



Merillat's Classic Avenue cherry paprika ebony glaze is shown to good effect in this design.

0.5 percent, and custom sales declined 13.2 percent. In 2009, KCMA's survey reported sales of \$4.9 billion, down 28.3 percent compared to total sales for 2008. Stock sales in this group were down 24.1 percent for the 2009. Semi-custom sales were down 30.2 percent, and custom sales were down 37.2 percent.

Cabinet top ten

In late 2011 and early 2012 *CabinetMaker+FDM* surveyed the largest wood products manufacturers in North America for the FDM 300. Masterbrand and Masco were the only two cabinet manufacturers in the overall FDM 300 top ten. This is the same group of the 10 largest companies that we broke out a year ago.

MasterBrand Cabinets. Fortune Brands Home & Security LLC is a new company that was spun off from Fortune Brands and includes the kitchen and bath cabinet, plumbing and accessories, and storage and security businesses. Sales estimate of \$1.275 billion is based on the third quarter sales (ending Sep. 30) for the cabinet segment. Sales increased in 2011. MasterBrand makes stock, semi-custom and custom cabinets. The company includes Aristokraft, Diamond, Schrock and HomeCrest, and operates 14 plants.

Masco Corp. Masco is optimistic about long-term fundamentals, but their third quarter cabinets and related products segment had a 14 percent decline in sales. Our estimate of \$1.265 billion was based on sales through the third quarter for the cabinet segment, ending Sep. 30, 2011. Masco Corp.'s two

Mill's Pride plants in Waverly, Ohio, were closed. Earlier, Masco announced that it would combine its two cabinet companies, Masco Retail Cabinet Group (KraftMaid) and Masco Builder Cabinet Group (Merillat, Quality-Cabinets and DeNova) to form Masco Cabinetry.

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CABINET SEGMENT

American Woodmark. Company reported \$452 million in 2011 fiscal year annual sales.

The company announced in December 2011 that Hardy County, W.Va. and Hazard, Ky., plants will close in 2012 and that its idle Tahlequah, Okla., location would be sold. American Woodmark announced in February that sales for the first nine months in the company's 2012 fiscal year rose 16 percent. The company makes stock and semi-custom kitchen and bath cabinets in 11 plant locations.

RSI Holding Corp. One-half of the company was purchased by Canada's Onex Corp. RSI purchased Continental Cabinets in Dallas, Texas, in 2010. Continental was listed as a separate company for the 2010 FDM 300. For 2011, it is included in RSI's listing. There have been auctions for equipment in the Dallas operation, along with Coffeyville and Columbus, Kansas. The company sells large volumes of cabinets and vanities

Cabinet sales in group of 30 selected FDM 300 companies



CabinetMaker+FDM defined a group of 30 cabinet companies and compiled annual sales over the past seven years. Sales peaked in this group in 2007.

for major home retailers. The sales figure of \$350 million is our estimate based on online data; no complete information is available.

Norcraft Companies. This figure of \$270 million is based on the third quarter sales, ending Sep. 30, 2011. Sales increased slightly from 2010. Norcraft

Go Beyond Face-Frames

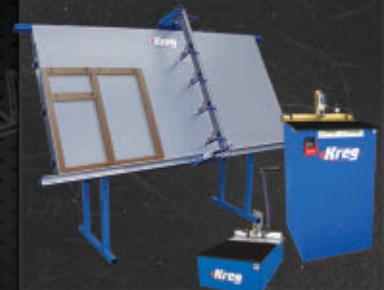
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makes Fieldstone, Mid Continent, Norcraft, StarMark and UltraCraft cabinets. The Winnipeg plant makes cabinets for the Canadian market under the Norcraft Canada brand.

Elkay Cabinetry Group. The maker of Mastercraft, Medallion, Yorktowne and Schuler cabinets in seven locations did not provide any information. Sales number of \$250 million is our estimate. The company is a large part of Elkay, which also makes sinks, plumbing and surfaces.

WoodCrafters Home Products LLC.

Company is one of few in this sector that has grown during the recent recession, and reported higher sales in 2011 of \$209 million. WoodCrafters employs 2,000 in South Texas and makes cabinets and vanities for major home centers.

U.S. Home Systems. Company makes custom cabinets and countertops in Charles City, Va. Sales number showed a solid increase. The \$165 million figure was based on the third quarter 2011 number.

FDM300 snap it!



To access an online directory of the entire FDM 300 list, scan the QR code or go to www.CabinetMakerFDM.com/FDM300.aspx

Armstrong Cabinet Products. The sales figure estimate of \$145 million is based on the third quarter sales reported for the Armstrong World Industries cabinet segment. Sales will be higher for the year. Company closed its Auburn, Neb., cabinet plant two years ago, consolidating work in its Thompsonstown, Pa., location.

Cardell Kitchen & Bath. Company is based in San Antonio and makes stock and semi-custom cabinets. We were unable to confirm sales numbers. \$125 million is our estimate. Part of the

company was bought by HIG Capital in November 2010.

Cabinet group comparison

For comparison, we broke out 30 cabinet manufacturers for which we had good sales information consistently over the past five years. This group consisted mostly of mid-size to large companies, without the very largest and the smallest companies. In 2011, sales fell 6.3 percent to \$11.97 billion for this group of 30 companies. In 2010, sales decreased 4.2 percent to \$12.78 billion for this group.

In this same group, sales increased in 2006 to \$20.91 and these companies recorded a slight sales gain even in 2007, to \$21.70 billion. That turned around in 2008, when sales fell to \$19.37 billion. The decline gathered momentum in 2009, with sales down to \$13.35 billion. What will 2012 hold for the cabinet sector? After the sales declines of recent years, a flat sales year would be welcome by many. <

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Arkansas Wood Doors Inc. Stonehenge cabinet line

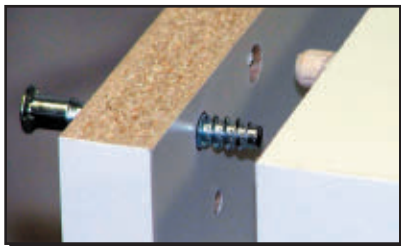
Arkansas Wood Doors Inc. Stonehenge line is a ready-to-assemble cabinet line. The cabinets are manufactured to the customer's size and style specifications. Customers can choose from a selection of wood or RTF doors, in any wood species, finished or unfinished.

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www.arkansaswooddoors.com

CabParts, Inc. cabinet boxes

CabParts offers modular cabinet boxes,



drawer boxes, shelves, doors and drawer fronts, plus a modular closet system. Cabinet boxes and casework are available in two joinery methods: Conformat screws with hardwood alignment dowels inserted or 8mm hardwood dowels for a traditional glue and clamp joint.

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Adams Wood Products Inc. unfinished split cabinet onlays

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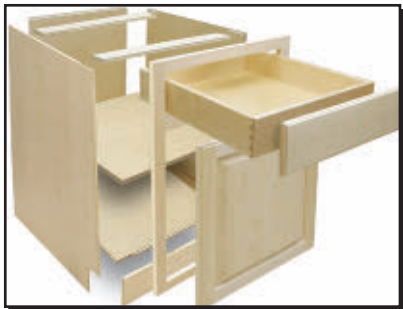


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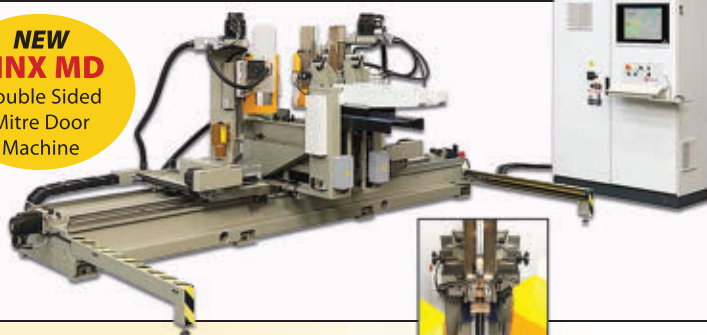


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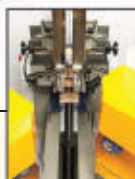
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iron. The Durham metal Scroll Foot is made of classic wrought iron and comes in a flat black finish, standing 4 1/2 inches tall. The Du Pont Vanity Leg in brushed nickel and the Madison Vanity Foot are other popular choices.

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Panoramic Enterprise LLC panoramic sliding mirror system

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Osborne Wood Products Inc. metal vanity feet

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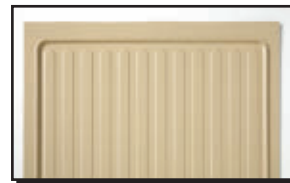


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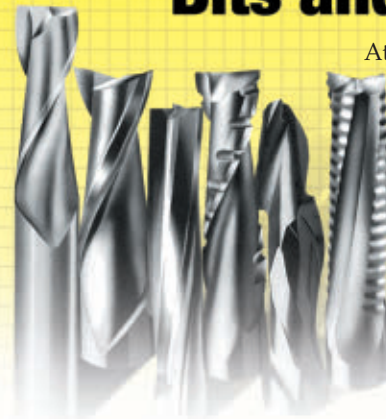
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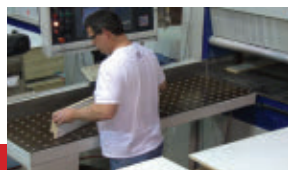
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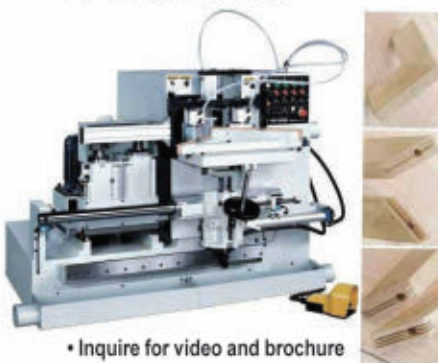
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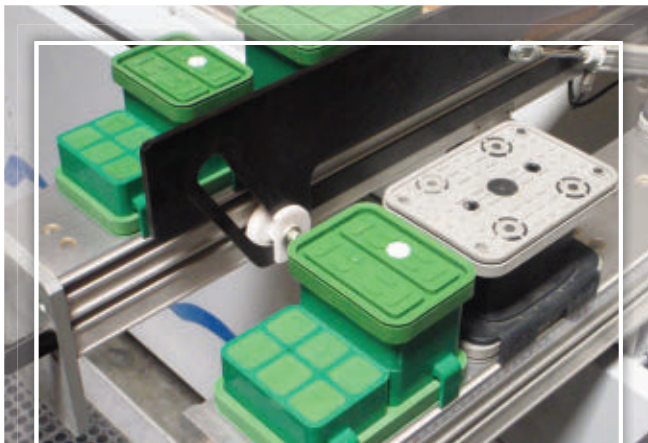
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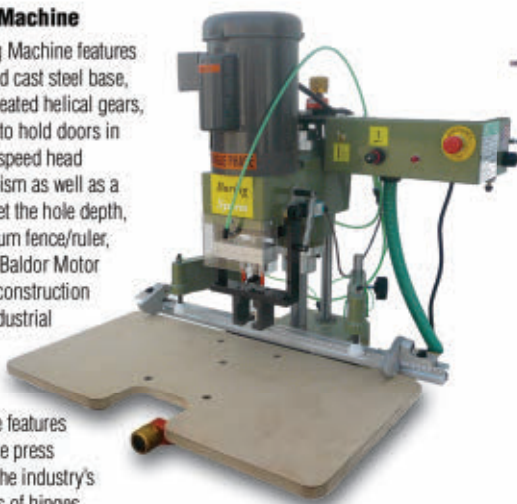
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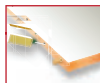
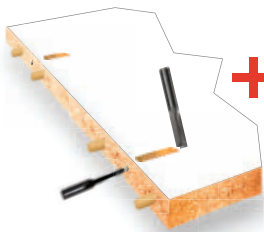
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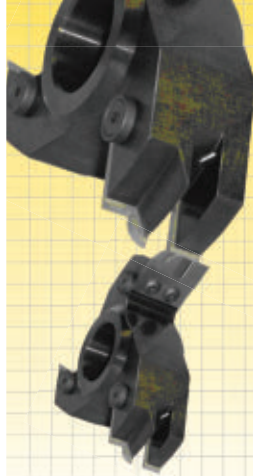
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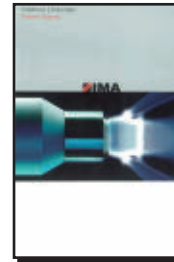
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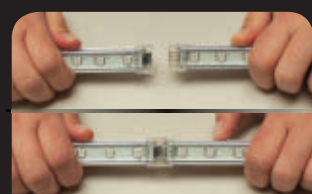
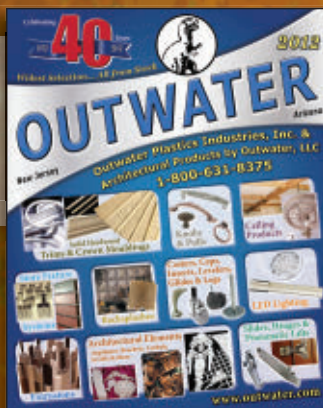
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4"	\$9.04'	\$10.04'	\$12.06'	\$8.14'

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General Tool mortise and tenon jig

Testing a new jig designed to make quick work of traditional mortise and tenon joinery.

Mortise and tenon joinery has long been considered a hallmark of craftsmanship in solid wood construction, so there are lots of jigs, fixtures and machine setups out there that try to make it fast, precise and easy. The latest entry in that field is the E Z Pro Mortise & Tenon Jig (Model #870) from General Tools & Instruments. We decided to put it to the test.

What it is

The General jig is based on a sturdy aluminum extrusion and is designed to cut both the mortise and matching tenon at the same time using a standard plunge router with a spiral upcut bit. A ¼-inch bit is included in the kit, which works for ¼-inch thick mortises and tenons, but you can also cut 3/8-inch and ½-inch mortises and tenons with the appropriate bits.

Besides the bit and jig, included in the kit are bushings to fit common router baseplates, a bushing wrench and a centering tool to help in aligning your router base with the collet of your router, an Allen wrench for adjusting the jig, and a centering tool to make those jig adjustments easier.

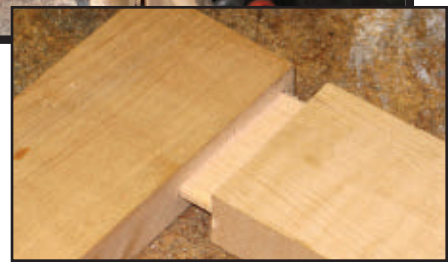
How it works

The jig will handle stock from ½-inch to 1-1/2-inch thick and will make mortises from 1 to 3 inches wide. It is clearly designed to emphasize face-frame and style-and-rail joinery. I was going to use it for a table apron, but the legs I was us-

General Tools' new mortise and tenon jig is designed to work with a standard plunge router to cut both mortise and matching tenon at the same time.



The jig holds the mortise and tenon workpieces in separate side-by-side sections of the jig. You can clamp stock from ½ to 1-1/2-inches thick.



Joint fit is very precise, although you typically have to knock away a little flange waste from the tenon piece after cutting.



To see this in action watch our video on your smart phone or www.CabinetMakerFDM.com/85820.html. If your phone has a Web browser and camera, download the free app at <http://qrcode.kaywa.com/> and scan over this barcode.



Snap it!



ing were larger than 1-1/2 inches, so that was a no-go. But for typical face-frame joints it excels.

To make your joints, you first mark center lines for both the mortise and the tenon on your stock. Then set the jig to the correct sizes and clamp your workpieces in place. Moveable alignment bars help you position the pieces and must be moved out of the way before cutting. I would have liked to have seen something to better square up the stock before clamping, but I used a T-square for this, which worked just fine.

Fast, precise joints

Cutting the joints is straightforward with a plunge router. I cut the tenons in

three steps using the turret stops on my plunge router for depth of cut. For the mortise, I followed the instructions that came with the jig and an online video that suggested plunge drilling overlapping full-depth holes before moving the router back and forth to clean out the mortise.

Once removed from the jig, there is a bit of flange to remove from the tenon piece, but once you do that, the parts fit together perfectly. This is a sturdy and reliable setup that could be semi-permanently mounted to a bench for regular use. At a retail price of about \$150 it's worth checking out if you regularly do this kind of joinery. For more information visit www.generaltools.com. ◀

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PRATIX Z 5

5-axes cnc machining centre with multifunction table

		Z5-3I	Z5-52
Working area along X-Y*-Z axes	mm	3110 - 1550 - 180	5200 - 1550 - 180
Panel length (for alternated work process)	mm	1390	2460
fi8 boring head with electrospindle up to:	kW (HP) - S6	11 (15)	11 (15)
Tool changers up to:		22	22

* = with vertical cutter

5-axes cnc machining centre with multifunction aluminium table and “T”-shaped grooves: “top-of-the-range” for those who consider flexibility as a way of life. The very best multipurpose machine available due to the possibility to **size nested panels** and **bore-router already sized panels**.



pratix

“Multifunction”
par excellence.



PRATIX Z 2

Cnc machining centre with multifunction table

		Z2- 27	Z2-31	Z2-52
Working area along X-Y*-Z axes	mm	2750-1300-180	3110-1300-180	5200-1300-180
Panel length (for alternated work process)	mm	1210	1390	2460
fi8 boring head with electrospindle up to:	kW (HP) - S6	11 (15)	11 (15)	11 (15)
Tool changers up to:		18	18	18

* = with all tools

Cnc machining centre with multifunction aluminium table and “T”-shaped grooves: “top-of-the-range” for those who consider flexibility as a way of life. The very best multipurpose machine available due to the possibility to **size nested panels** and **bore-router already sized panels**.





PRATIX		PRATIX N 12	PRATIX N 15	PRATIX S 12	PRATIX S 15	PRATIX S 22-31
Working area along X-Y*-Z axes	mm	2440-1220-150	3660-1550-150	2480-1250-150	3686-1555-150	3100-2250-150
Vectorial speed along X-Y axes	mm	56	56	35	35	35
Boring head with electrospindle up to:	(HP) - S6	11 (15)	11 (15)	6,6 (9)	6,6 (9)	6,6 (9)
Tool changers up to:		20	20	8	10	14

* = with all tools

Why choose the pratix?

Because it is the ideal machine for those who have machining with nesting requirements.

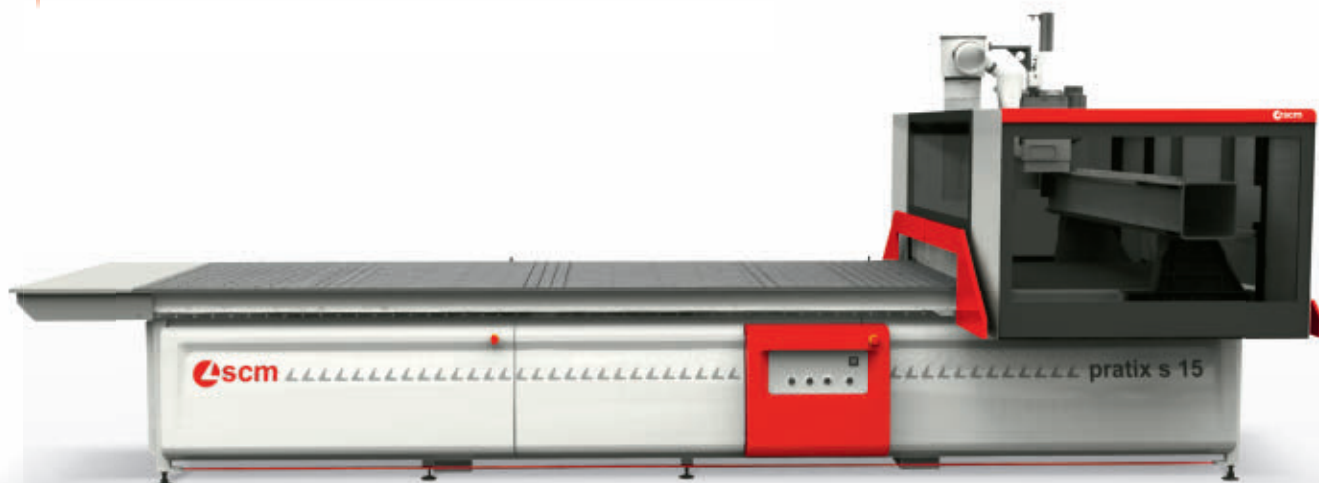
2 PRATIX N

High performance cnc machining centre with multifunction table



3 PRATIX S

"Entry-level" cnc machining centre with multifunction table

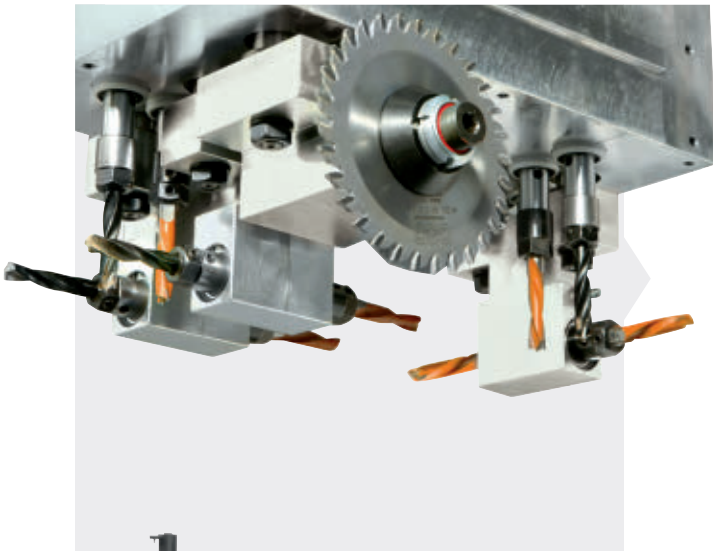


toptech

“BUMPERS”: THE PERFECT COMBINATION OF SAFETY AND PRODUCTIVITY.

The “bumpers” safety system is the only one that can fully exploit the potential of machining centres, without placing restrictions or constraints on the use of the machine:

- maximum productivity
- ease-of-use
- more compact dimensions
- guaranteed safety



BORING HEADS: NO MORE MACHINE DOWNTIME.

The sturdiness of **Scm** boring heads is proven by the frequency of required maintenance, only every 1000 hours, five times better than that imposed by the majority of other machine manufacturers: **indestructible** and with **low maintenance**.



SAFE AND COMPACT.

Ideal for those with limited available space, it is distinguished by:

- absence of perimeter protections
- protections mounted directly on the mobile upright
- also free access to the rear of the machine

pratix s

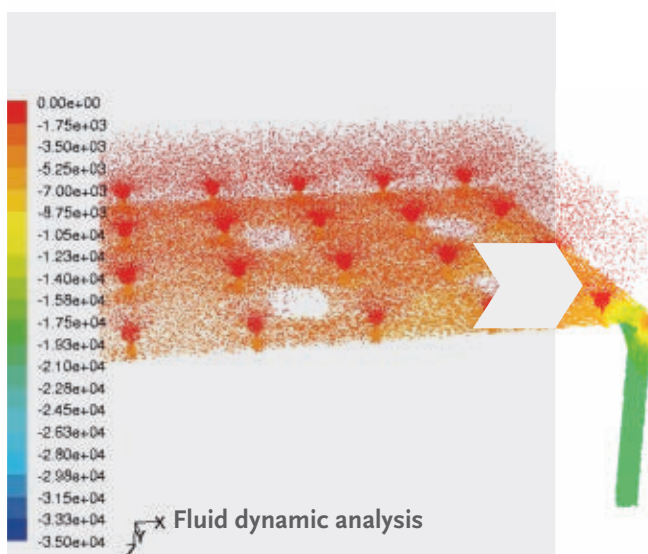


toptech

"PRISMA 5" 5 AXIS ELECTROSPINDLE: OPERATING EASILY IN REDUCED SPACES WITHOUT RISK OF COLLISIONS.

No limits to the possible uses of the 5-axis "Prisma 5" group which, with the patented **Scm** solution, allows the keeping of the overall dimensions in each direction of travel to a minimum. This results in **maximum operator convenience and flexibility of use.**

pratix z5



"HE" WORKTABLE: DESIGNED FOR EFFICIENCY AND SAVING.

Careful studies and tests allow us to achieve a high level of work piece holding down without resorting to several high-power vacuum pumps. The result:

- secure hold down of the work piece = excellent machining speed
- internal flows' speed of up to 250Km/h = efficiency on the whole worktable
- less consumption = energy saving (ecologically beneficial)

pratix s - pratix n



"TECPAD"

EASE OF USE AND PRODUCTIVITY AT FINGER TIPS.

The "Tecpad" standard remote control with LCD display, with 7" colour touch-screen allows the operator to fully **manage the machine intuitively.** The commands are always close to both the machine and the operator.

pratix s

thanks to **SANPATRIGNANO**
photos **ALESSANDRO ROCCHI**

rev. n.00 - 01/2012
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SOLUTION HD

NC single-sided edgebanders



OUR TECHNOLOGY BEHIND YOUR IDEAS

SOLUTION HD

Fully automatic single-sided edgebander



4 PANEL SIDES EDGEBANDING

SAWING

4 PANEL SIDES EDGEBANDING

BORING/WORKING CENTRE

SOLUTION HD

FOR AN INTENSIVE
AND PROFESSIONAL USE



NC single-sided edgebander



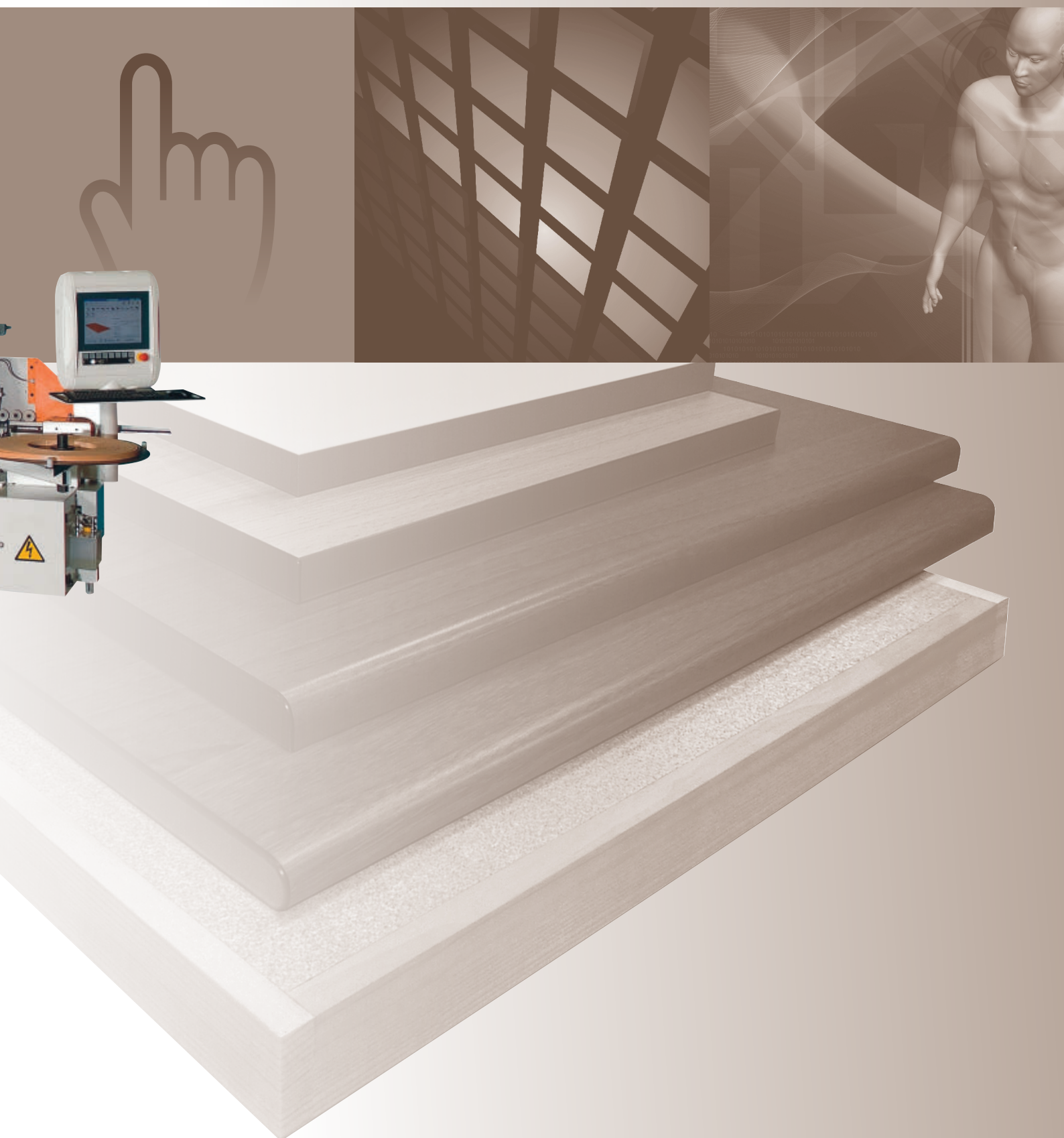
STEFANI industrial
Quality and Performance
without compromises.



Production costs for
individual panels are
reduced and under control.

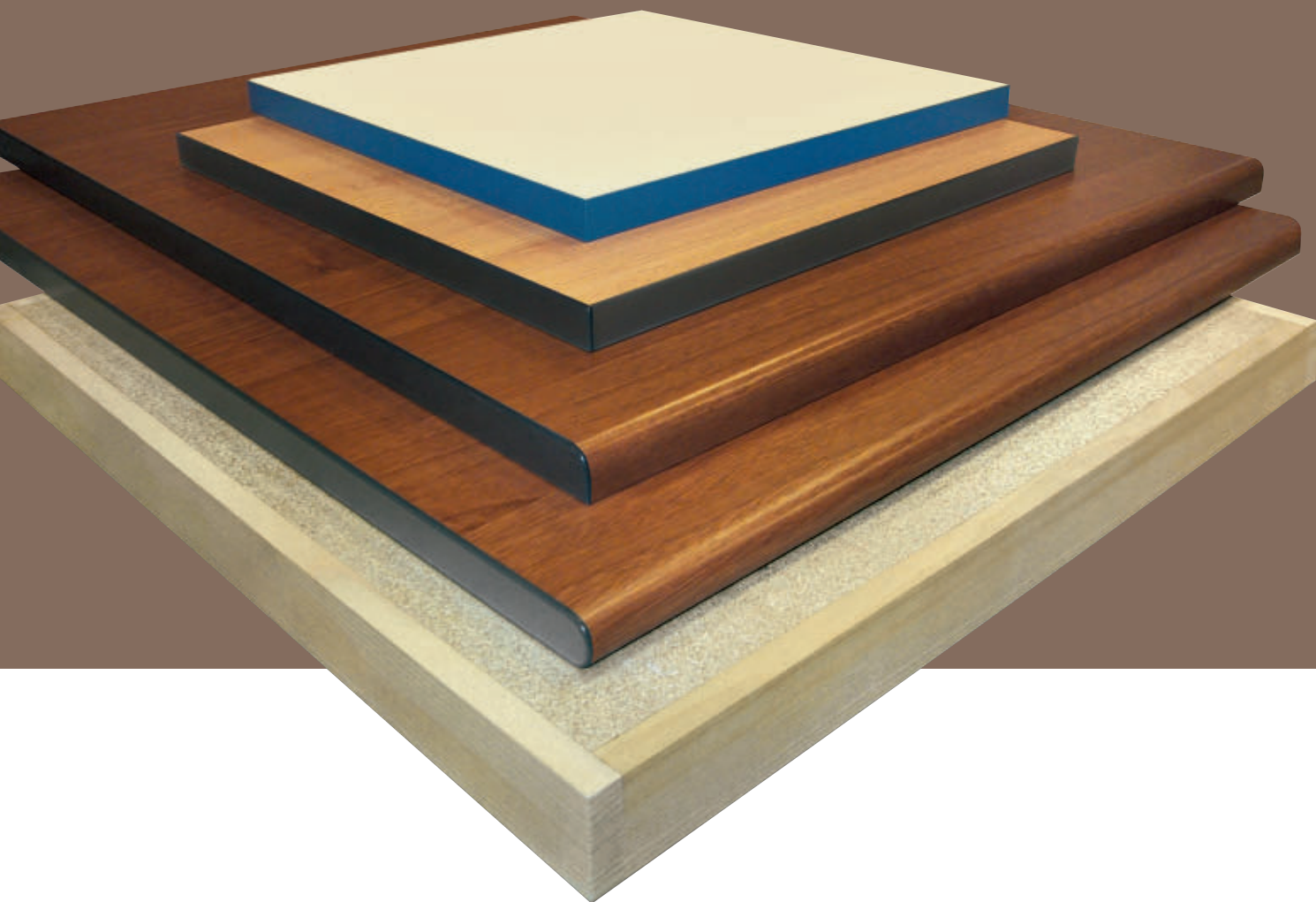


Ergonomics and
safeguarding of resources.
A technological reference
point.



SOLUTION HD

FOR AN INTENSIVE AND
PROFESSIONAL USE



EFFICIENT PRODUCTION

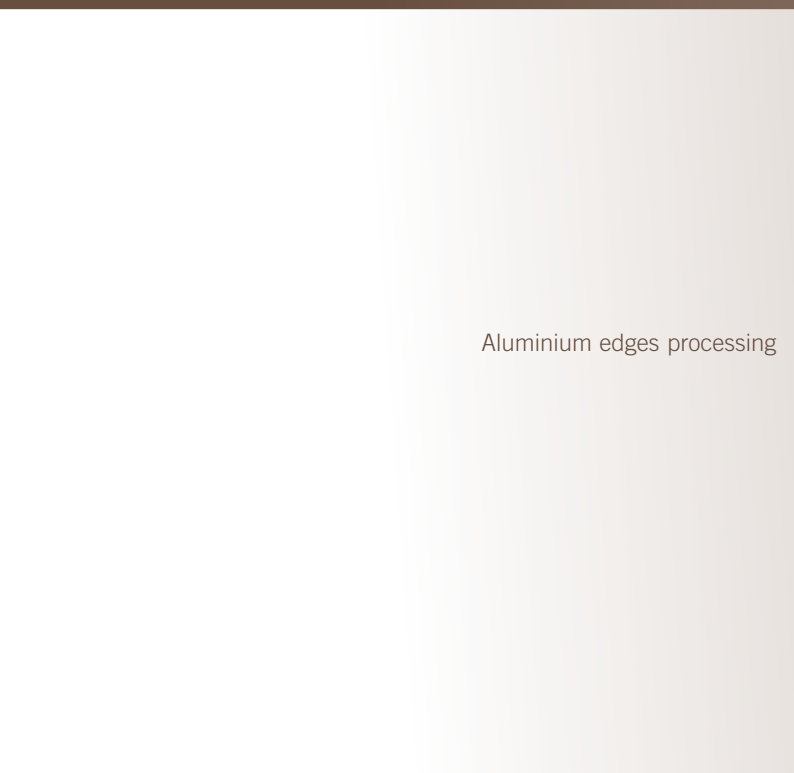
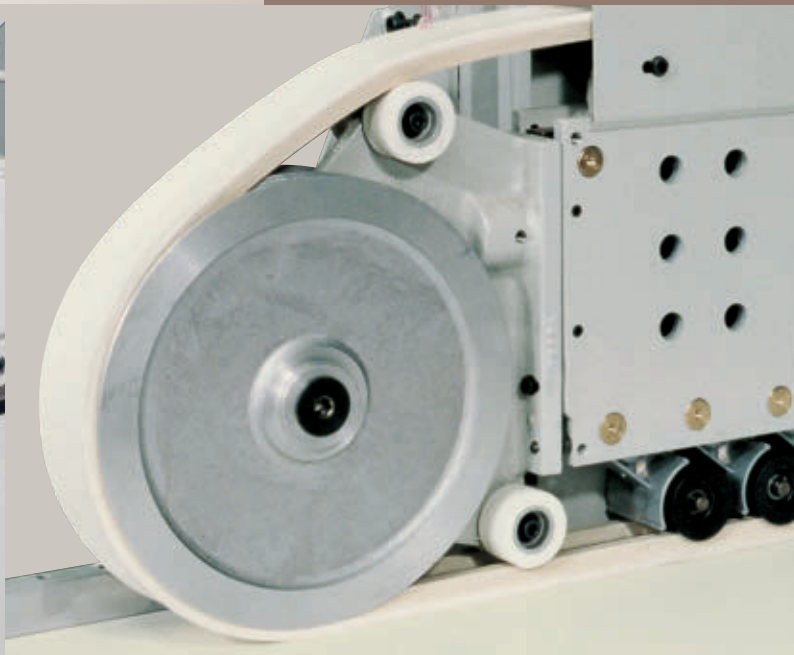
Solution HD distinguishes as industrial edgebander. In fact, the heavy machine frame and the working units of industrial range, allow an intensive and professional use with enduring precision and reliability guarantee. The reachable working speed allows high productivity with a possible infeed speed from 12 to 30 m/min. Equipped with PC Office, SOLUTIONI HD ensures the maximum NC management, reducing to the minimum manual set-up and making production profitable.

UNIVERSAL EDGEBANDING

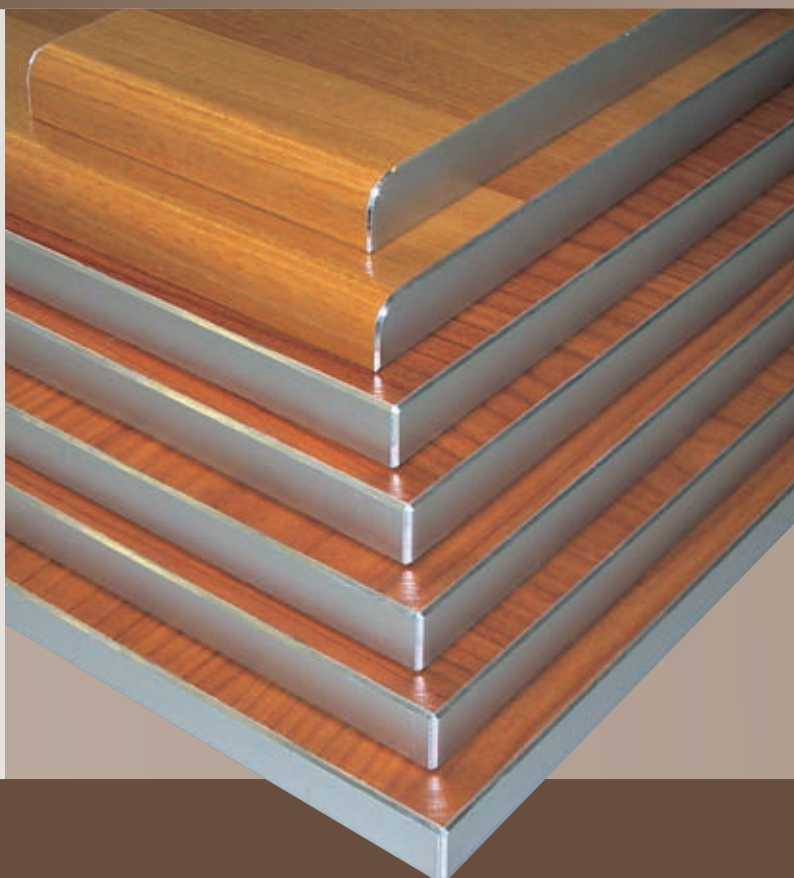
Solution HD can apply thin melamine edging, plastic PVC, ABS edging, aluminium edging, ready-cut veneer strips and solid wood strips with the maximum quality and without splinters.



Steel top pressure beam with idle wheels or large belt



Aluminium edges processing



EPP

STEFANI SOLUTIONS TO IMPROVE THE QUALITY OF YOUR PRODUCTION

ECO POWER PACK: A REAL SAVING POTENTIAL

SOLUTION HD is equipped with **EPP – ECO POWER PACK**, which allows a notable saving of power and material.

► **ED-SYSTEM suction system:**

effective chip and dust evacuation is ensured, with lower power consumption and improved cleaning of working units and machine.

► **OPTI-CUT device:** precision edge feeding and rear cut to reduce waste generation to a minimum for significant advantages of edge saving.

► If the machine is not in use, the track feeding automatically goes on stand-by and the glue pot temperature drops.

► Possibility of separated management of suction hoods to reduce consumptions up to 65%.

MULTIEDGE: DYNAMIC WORKING PROCESS CHANGE

To automatically change between 2 radiuses and infinite thin edges, without tool change. Available on fine trimming, corner rounding and edgescraping units. Patent pending.



SOLUTION HD

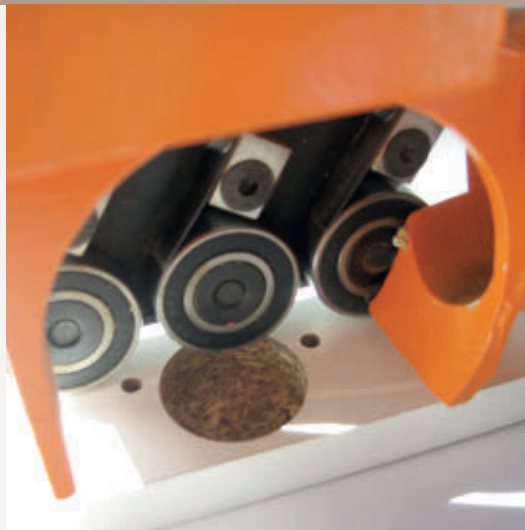


X GRINDER PERFECT QUALITY BAR MACHINING

A system for grinding waste built into the extractor hoods of the edge scraper unit reduces the size of the waste when machining medium - long panels or bars (optional device, STEFANI patent pending).

NESTING EASILY WORKING WITH INTEGRATED CELLS

Availability of special feelers in trimming and fine trimming units for the edgebanding of nested panels.



EFFICIENT CHIP CUTTING AND SUCTION

The optimized ED-SYSTEM improves the chip suction's quality and performance by means of tools and suction hoods precisely designed for this purpose. By means of this technology chip is always evacuated from the panel and is always controlled. ED-SYSTEM is available on pre-milling, trimming, fine trimming and rounding units.



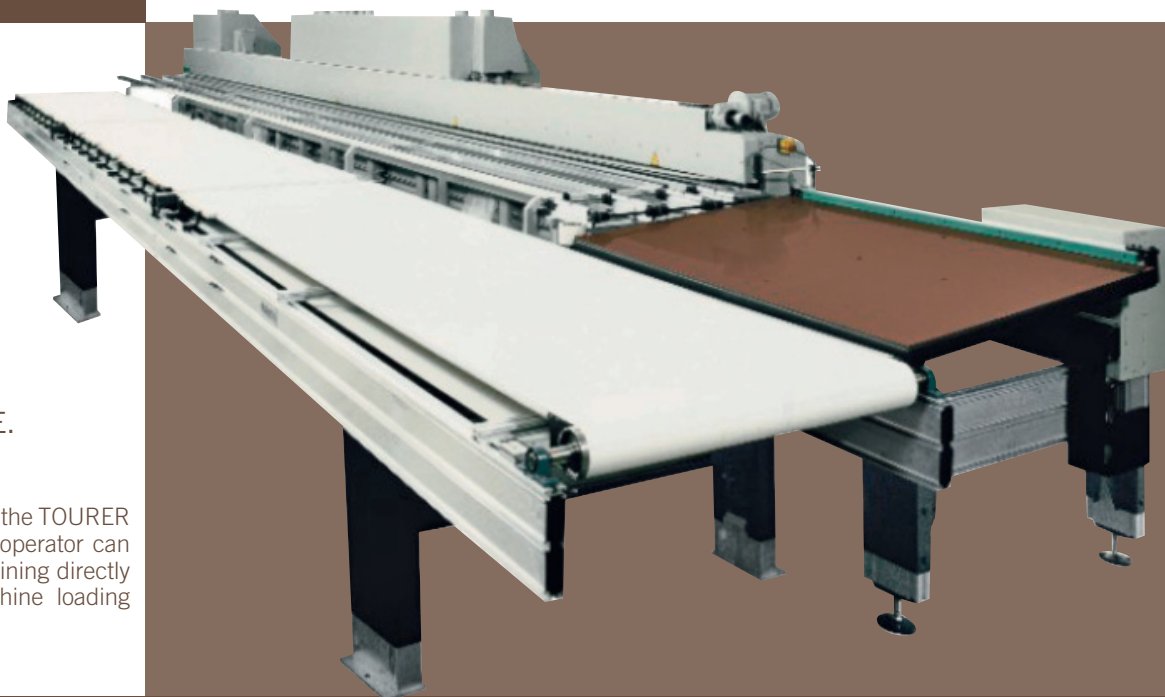
 edsystem

SOLUTION HD

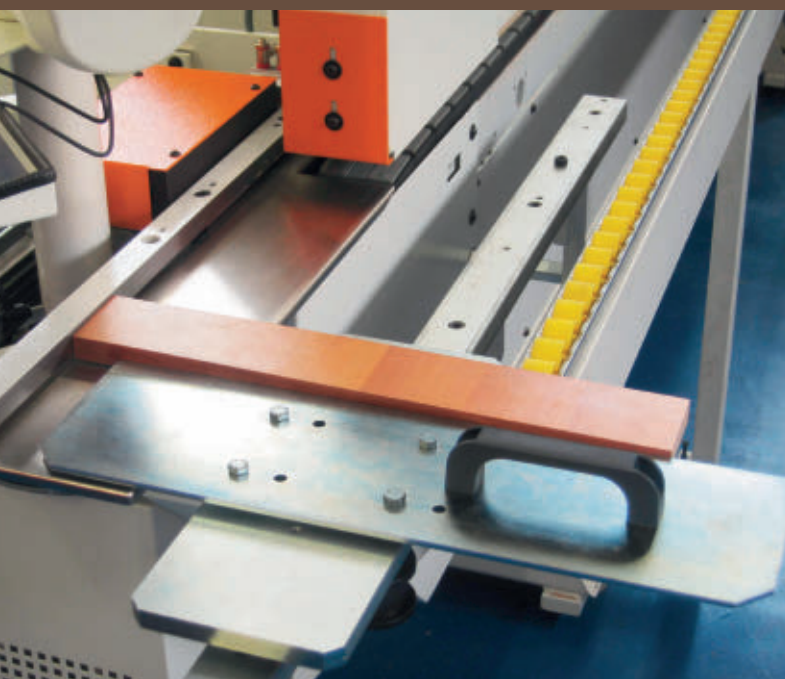
STEFANI SOLUTIONS TO IMPROVE
THE QUALITY OF YOUR PRODUCTION

TOURER. PANEL RETURN DEVICE.

Solution HD can be set up with the TOURER panel return device. A single operator can perform complete panel machining directly from the edge banding machine loading zone.



INSERTION SYSTEMS Simply extending the potential of SOLUTION HD



Infeed system for narrow workpieces

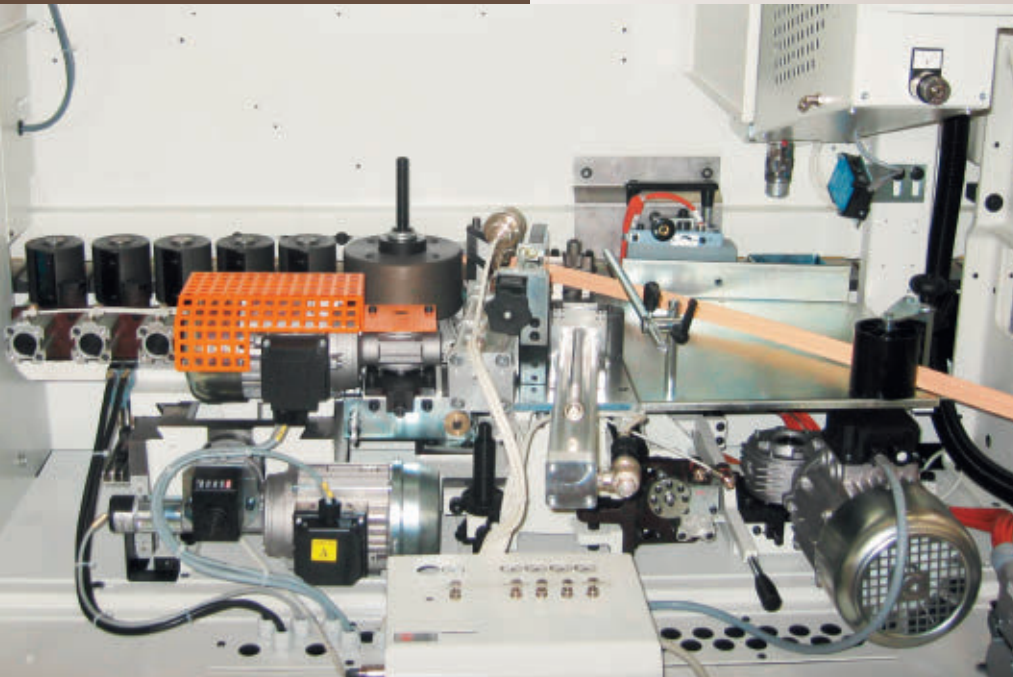
This device can be set up, facilitating the insertion of smaller panels.



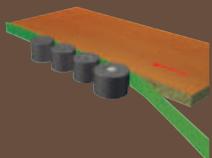
Manual infeed system for large workpieces

Optional device which facilitates transversal insertion of medium/large panels. The reference guide can be tilted to allow the insertion of panels with angled sides.

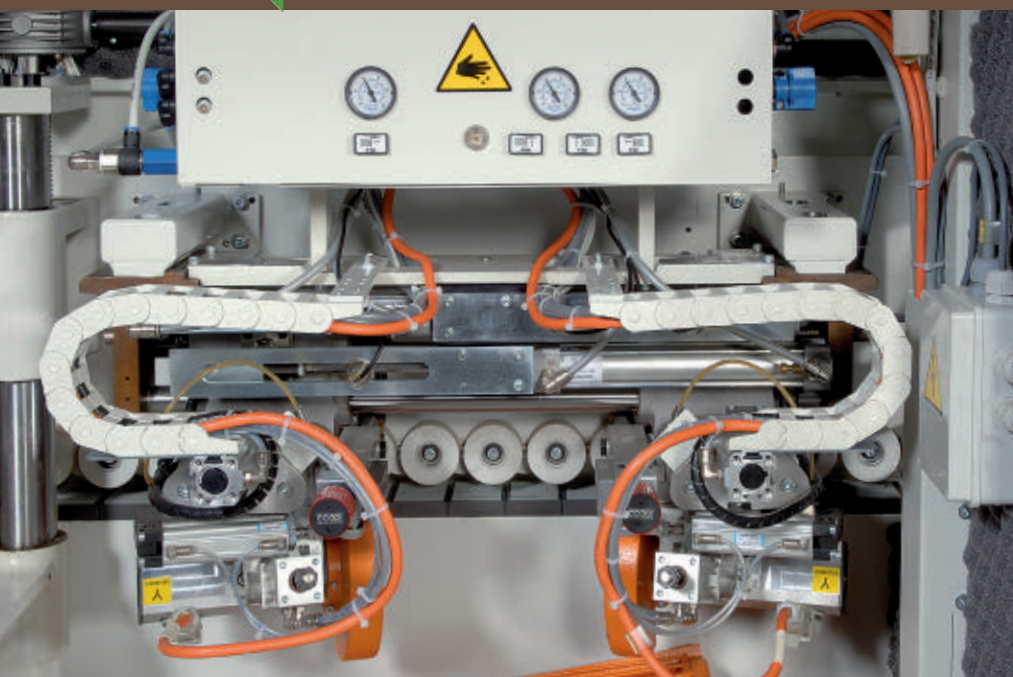
HEAVY DUTY WORKING UNITS SUPERIOR TECHNOLOGY



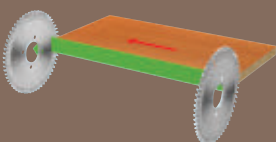
Allows high quality application of the edging in a 0.4 - 3 mm roll and in 1 - 12 mm thick strips/solid wood. Glue pot quick release for working with different types of glue. Tracer device for optimising glue dosing. NC management of the pressure roller pressure. Possibility of pre-melting device for hot-melt glue pellets with automatic drawing and easily filled in an ergonomic way. Possibility of working solid wood edging measuring up to 22 mm, aluminium edging and ready-cut strips. Possibility of NC positioning of the pressure roller. Possibility of managing PU block glue. Possibility of automatic change of the type of edging for up to 2 rolls. The change takes place at the end of a roll or when there is a change in machining.



Gluing unit



For removing excess edging at the head and tail of the panels. Possibility of using the NC to separately tilt the blades for working the head and tail of the panel independently.

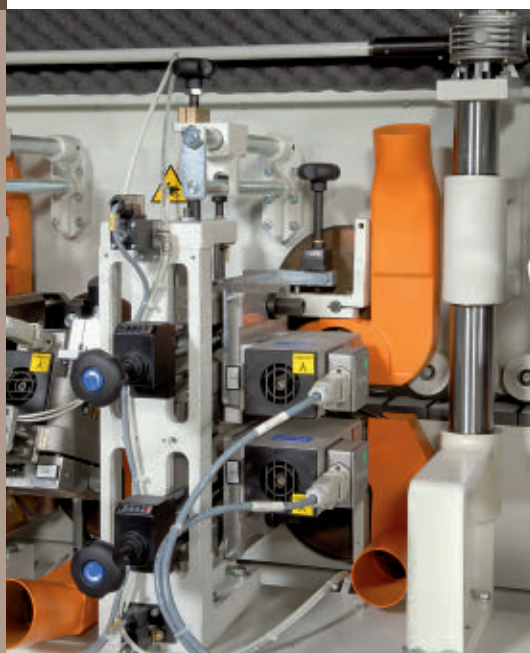


Upper end-trimming unit

SOLUTION HD

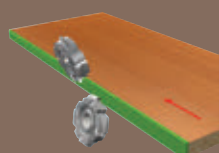
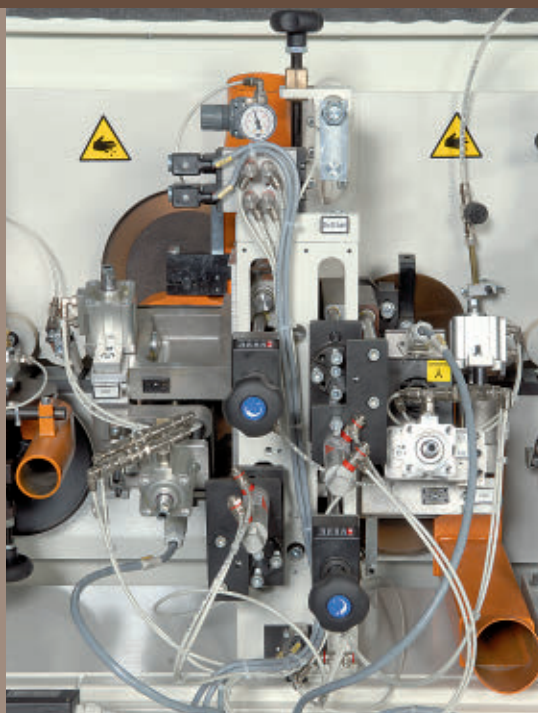
HEAVY DUTY WORKING UNITS SUPERIOR TECHNOLOGY

For the top and bottom trimming of the edge excess. Possibility of NC double automatic positioning. Availability of special feelers in trimming and fine trimming units for the edgebanding of nested panels. Optimized chip suction flow with ED-SYSTEM.



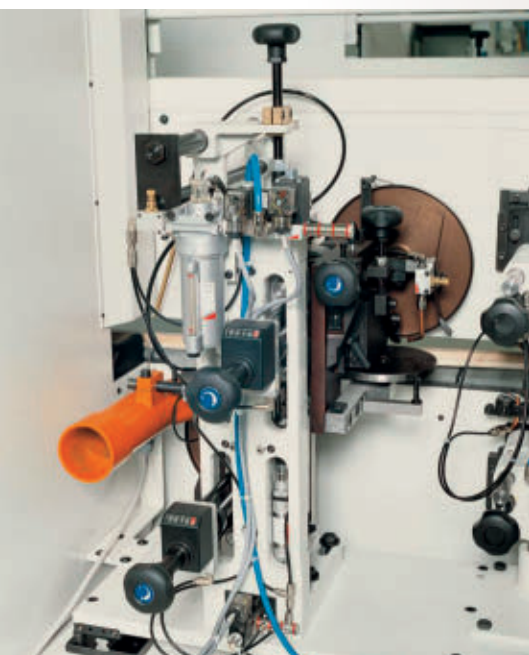
Trimming unit

To finish the top and bottom of thin edges or for trimming of the PVC/ABS edges Quick release device of the tool holder block. Possibility of NC managed side sensor to process different thicknesses or for automatic tolerance compensation. Availability of special sensors for the edgebanding of nested panels. Available in the equipment with KIT MILTIEDGE, to work automatically a melamine thin edge and two radiuses with a perfect quality. Available in the equipment with 2P KIT to work automatically a thin edge and a radius directly from NC. Available in the equipment with KIT MULTIPLA to work automatically a melamine thin edge and three radiuses with a perfect quality. Optimized chip suction flow with ED-SYSTEM.

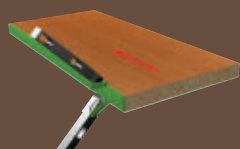


Fine trimming unit





For finishing/smoothing radiused PVC/ABS edging. Quick release device for tool taper block and tool. Availability of special tracers for edge banding panels previously machined with the nesting process. Possibility of setting up the 2P kit for working two radiused edging strips. Possibility of setting up the MULTIPLA kit for automatically working a thin melamine edging and three radiused edging strips with perfect quality. X-GRINDER waste grinding system built into the extractor hoods to reduce the size of the waste when machining medium - long panels or bars (optional device, STEFANI patent pending)



Edgescraping unit



SOLUTION HD

OPTIONAL WORKING UNITS AND DEVICES

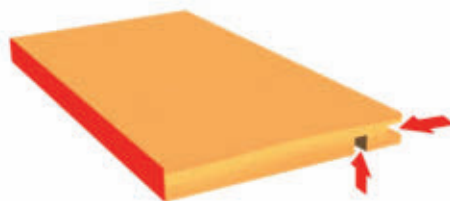
GET THE MAXIMUM ADVANTAGE FROM SOLUTION HD



- ▲ **NC upper pressure beam**
Possibility of managing the presser movement using the NC.



- ▲ **Automatic infeed system**
Possibility of managing panel insertion in an easier, automatic way.



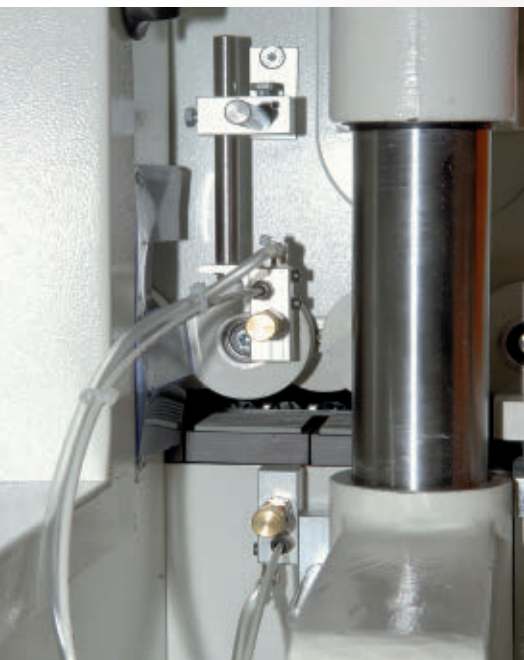
- ▶ **UX routing unit for external mortises.**
During edge banding, allows up to two timed or through-mortises to be made simultaneously on the side opposite the one being edge banded.

- ▶ **Fixed panel side support**
Replaces the standard telescopic version.

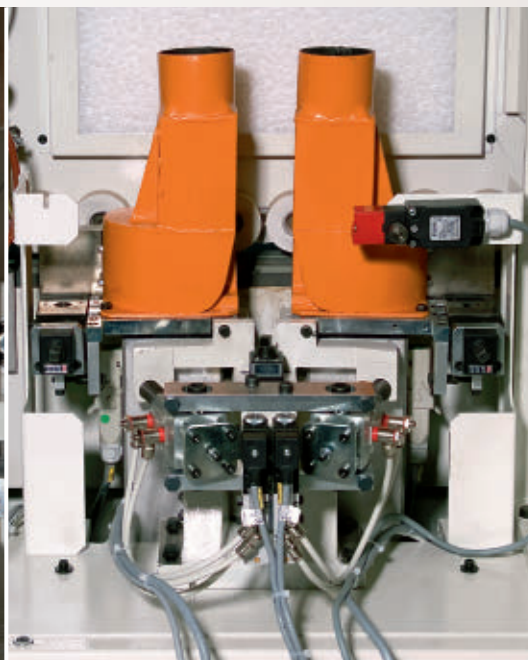


- ▶ **Infeed guide with possibility of double automatic position.** Possibility of **EASY SIZE NC** movement.



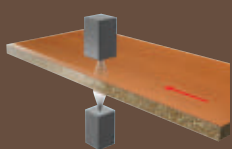


To avoid glue deposits on the top and bottom surfaces of the panel.

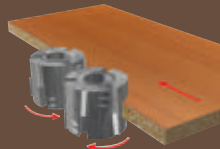


It mills the panel side to be edged ensuring an excellent gluing surface. Possibility of NC managed positioning of the first feeler. Possibility to equip the tools with HYDROLOCK technology to reduce coupling play and vibration. Optimized chip suction flow with ED-SYSTEM.

Possibility to equip the EASY SIZE device, to manage from NC material removing depending on the applying edge.



Anti-adhesive unit



Pre-milling unit

▶ Standard telescopic panel side support



Heating panels lamps

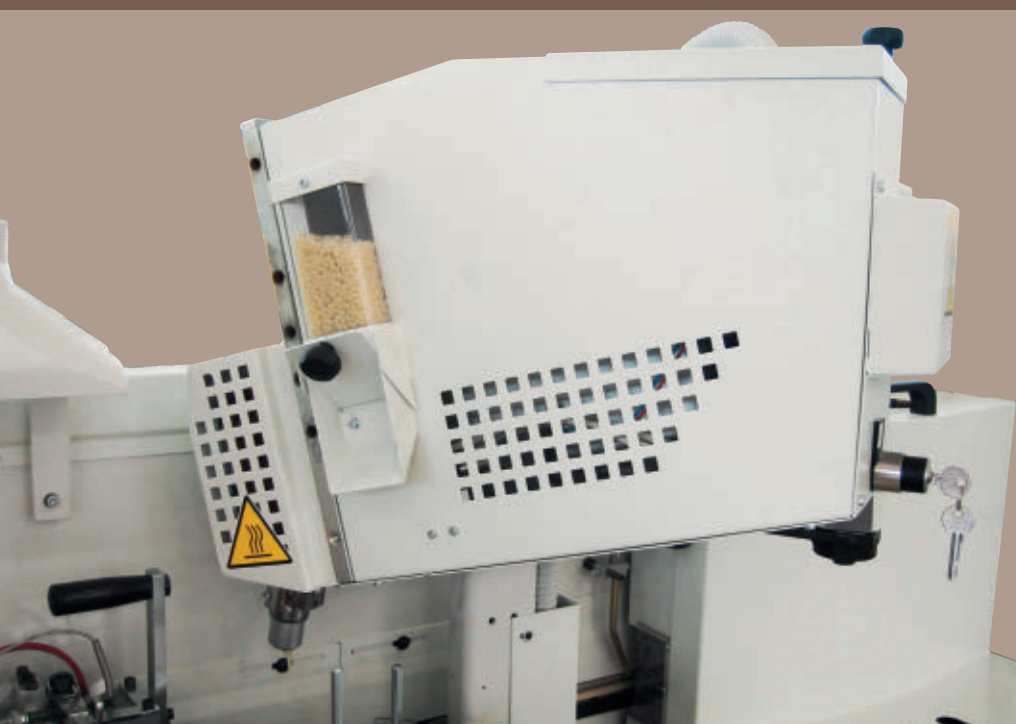


SOLUTION HD

OPTIONAL WORKING UNITS AND DEVICES

GET THE MAXIMUM ADVANTAGE
FROM SOLUTION HD

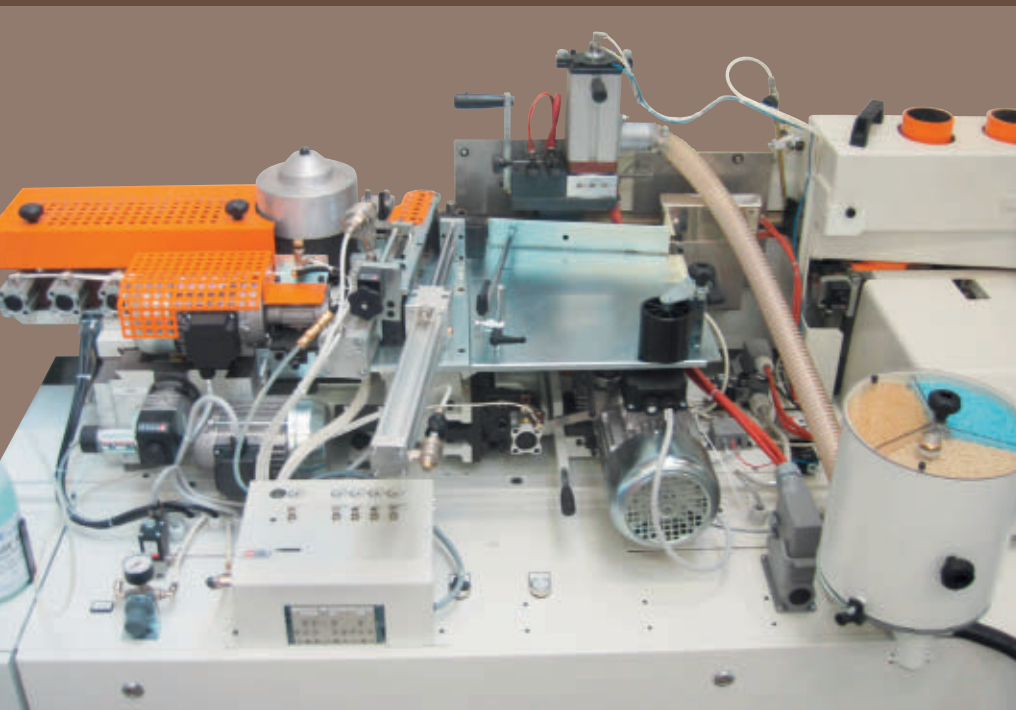
GLUE PRE-MELTING SYSTEMS
STEFANI EXPERTISE IN THE USE OF GLUE



QMS pre-melting unit for hot-melt glue capacities of up to 8.5 kg/h. Possibility of pellet feeding with ground hopper.

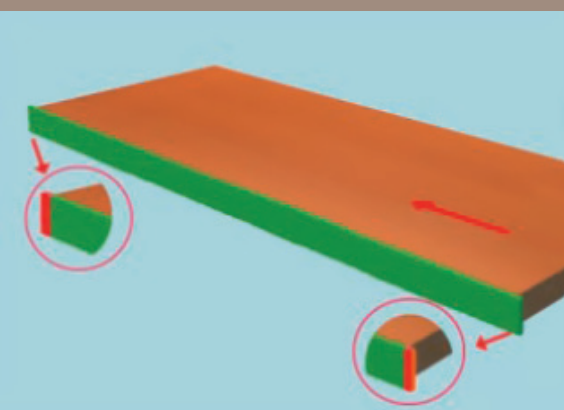


QMS pre-melting unit and unit for polyurethane block glue weighing 2 kg MC4 with melting capacity of 4 kg/h, with quick change-over device.



EASY GLUE BASIC pre-melting unit, allows manual change-overs and in just a few minutes up to 5 colours of hot-melt glue, polyurethane glue and cleaner.

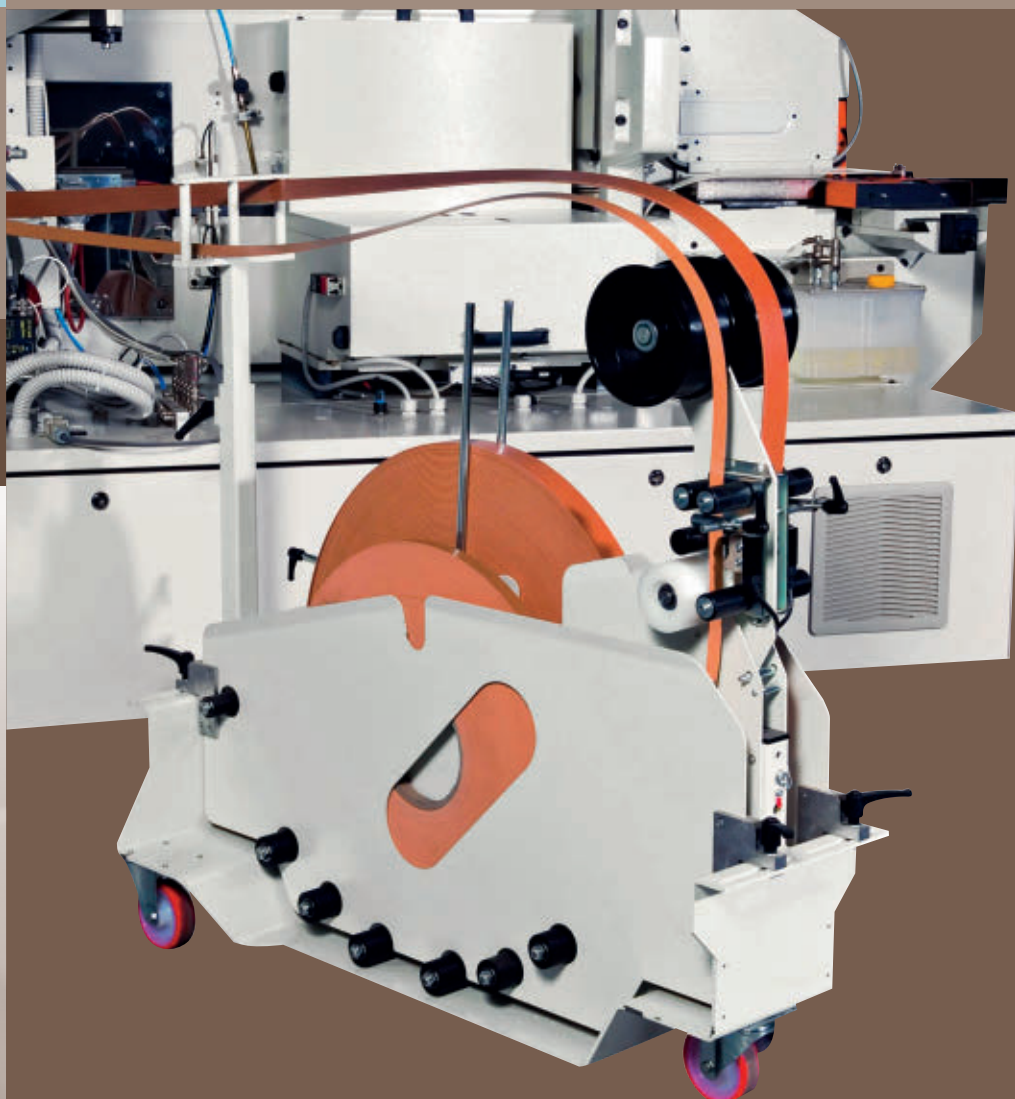
POWER-ASSISTED EDGING FEED



Edging can be fed with a precision of ± 2 mm on the front and rear parts of the panel. This reduces the production costs for each panel.

ROLL MAGAZINES WHEN ONE TYPE OF EDGING IS NOT ENOUGH.

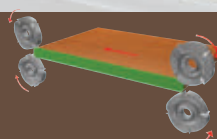
2-roll vertical magazine with automatic change-over from NC or at end of roll.



SOLUTION HD

OPTIONAL WORKING UNITS AND DEVICES

GET THE MAXIMUM ADVANTAGE FROM
SOLUTION HD

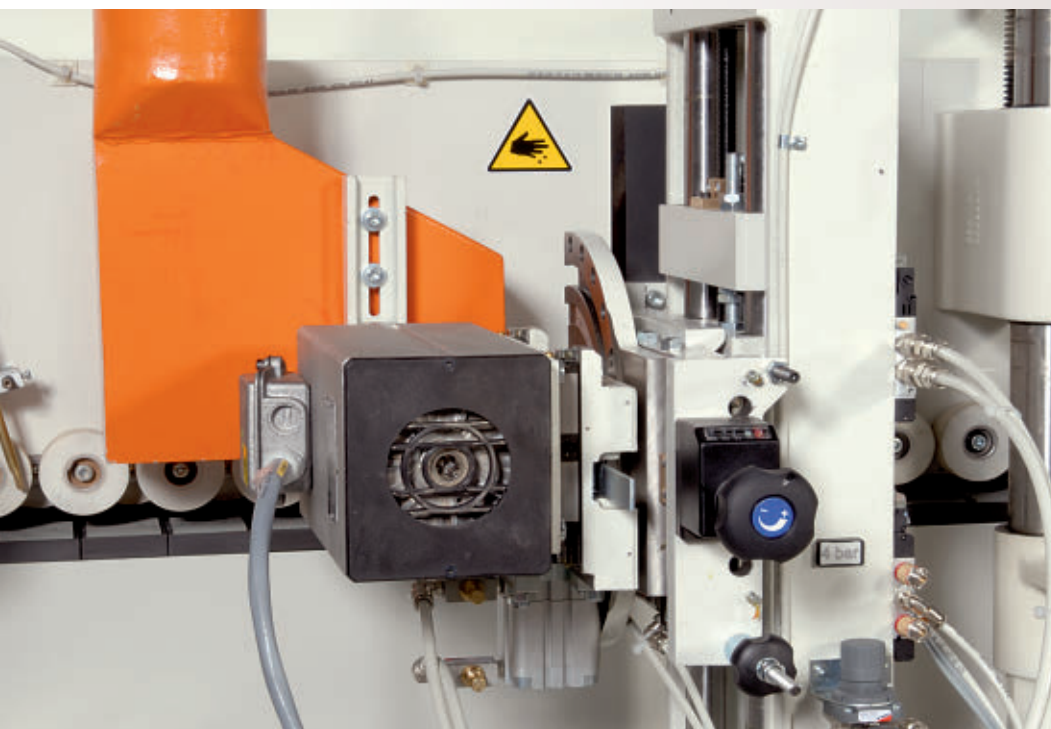


4 motors corner
rounding unit

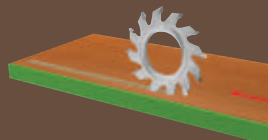
For finishing with corner rounding of the panel edge banded with melamine, PVC, ABS and solid wood edging strips. Quick release device for tool taper block and tool, for setting up more processings. Possibility of a NC lateral feeler for working different thicknesses or compensating for tolerances. Availability of special feelers for edge banding panels previously machined with the Nesting process. Possibility of setting up the 2P kit

for automatically working a thin edging and a radiused edging using NC. Possibility of setting up the Multiedge kit for automatically working a thin melamine edging and two radiused edging strips with perfect quality. Optimised extractor flow with the ED-SYSTEM.

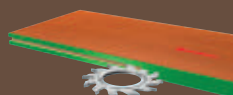




To process through or timed grooves on the top, bottom and sides of the panel. Quick release device for the suction hoods. Intervention precision up to ± 2 mm.



Grooving unit

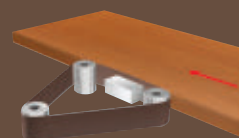


Grooving unit



For finishing veneered and solid wood edging and preparing it for painting.

Sanding unit



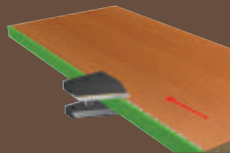
SOLUTION HD

OPTIONAL WORKING UNITS AND DEVICES

GET THE MAXIMUM ADVANTAGE FROM SOLUTION HD



Gluescraping unit

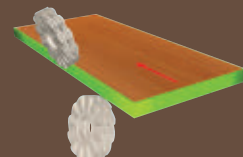


◀ To eliminate possible residual glue on the top and bottom side of the panel. Double bearing feelers for perfect process precision.

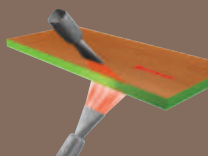
▶ For panel cleaning and brightening of plastic edges.



Buffing unit



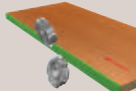
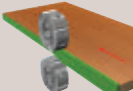
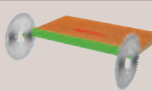
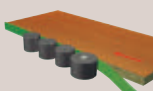
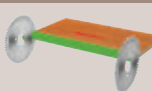
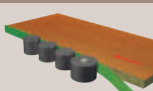
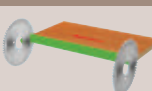
Edge brightening unit



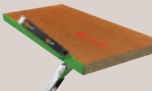
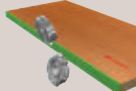
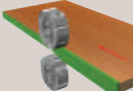
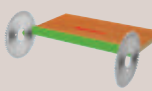
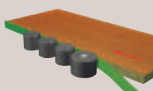
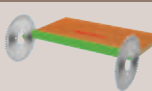
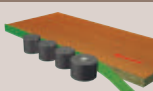
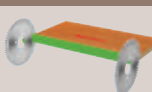
◀ For brightening of plastic edges.

COMPOSITIONS

Processing of thin
and solid wood edges

SOLUTION HD-R (48)								
		2-S					1-R	
SOLUTION HD-T (53)								
	2-S	1-X						
SOLUTION HD-RT (58)								
	2-S	1-X					1-R	

Processing of thin, solid
wood and ABS edges
on 2 sides

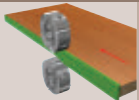
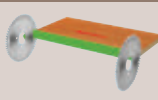
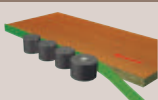
SOLUTION HD-VS (53)			3-S						
SOLUTION HD-RS (58)									
	3-S								1-R
SOLUTION HD-RTS (63)									
	3-S	1-X							1-R

SOLUTION HD

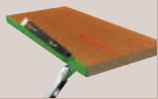
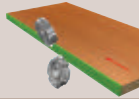
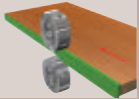
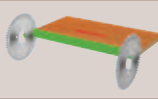
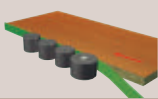
COMPOSITIONS

Processing of thin, solid wood and ABS edges on 4 sides

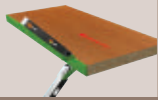
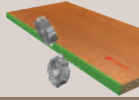
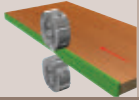
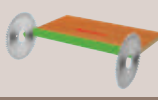
SOLUTION HD-4 (68)

	3-S		1-C4					
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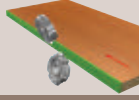
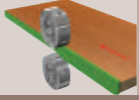
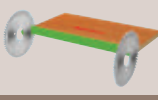
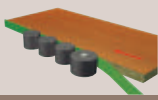
SOLUTION HD-R4 (73)

	3-S		1-C4					1-R
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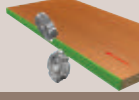
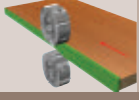
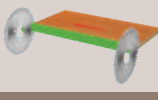
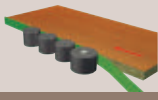
SOLUTION HD-T4 (73)

3-S	1-X		1-C4					
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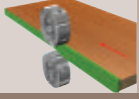
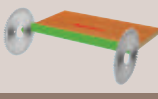
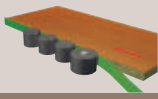
SOLUTION HD-RT4 (78)

3-S	1-X		1-C4					1-R
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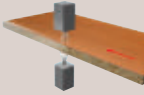
SOLUTION HD-RL4 (78)

3-S	2-X		1-C4					
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SOLUTION HD-RTL4 (83)

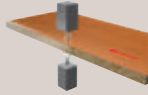
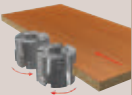
3-S	2-X		1-C4					1-R
-----	-----	---	------	---	--	---	---	-----

Free spaces



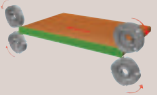
1-AA

Free space for anti-adhesive unit



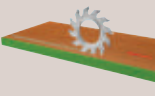
1-R

Free space for pre-milling unit and anti-adhesive unit



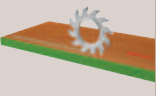
1-C4

Free space for 4 motor corner rounding unit



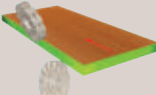
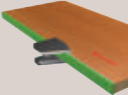
1-X

Free space for grooving unit or sanding unit



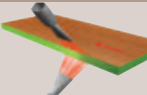
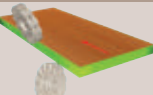
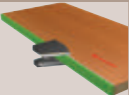
2-X

Free space for grooving unit and sanding unit



2-S

Free space for 2 finishing units (gluescraping unit, buffing unit)



3-S

Free space for 3 finishing units (gluescraping unit, buffing unit, edge brightening unit)

SOLUTION HD-P

HIGH PRODUCTIVITY

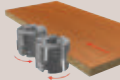
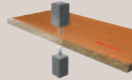
Solution HD P-R4 and Solution HD P-RT4 edgebanders achieve a standard 25 m/min feeding speed for intensive and high productivity process.

SOLUTION HD P-R4 (78)



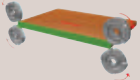
SOLUTION HD P-RT4 (83)



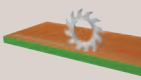
1-R

Free space for pre-milling unit and anti-adhesive unit



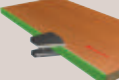
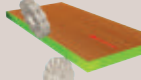
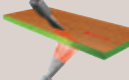
1-C4

Free space for 4 motor corner rounding unit




1-X

Free space for grooving unit or sanding unit

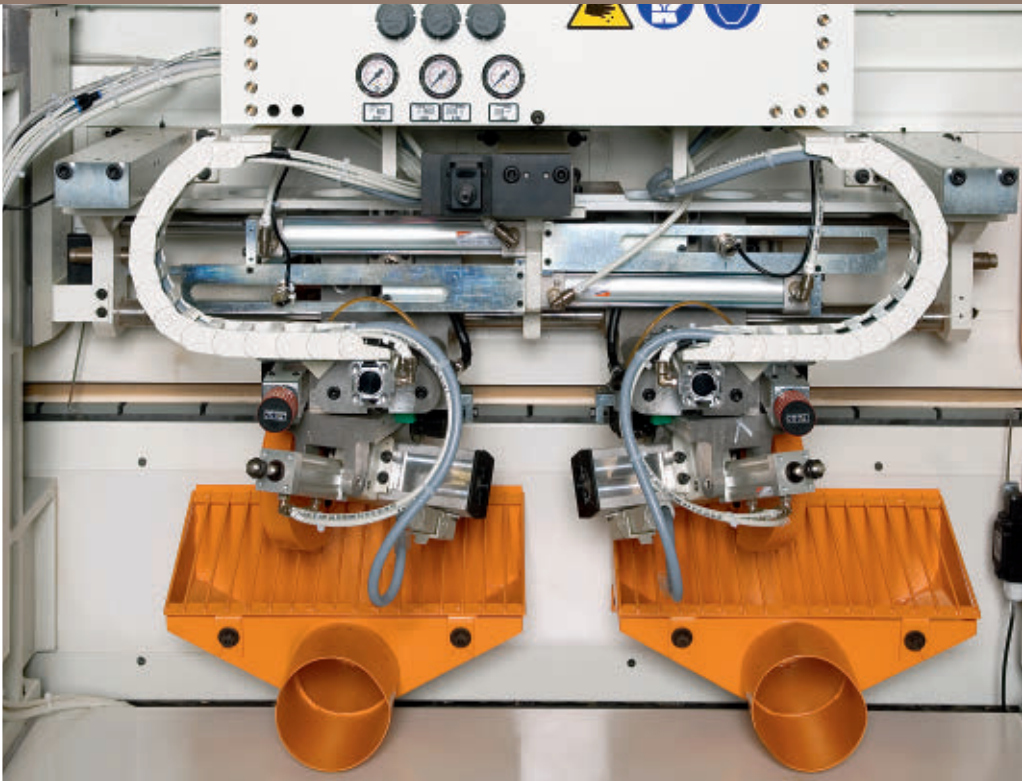
3-S

Free space for 3 finishing units (gluescraping unit, buffing unit, edge brightening unit)



Top belt pressure beam


 Upper end-trimming unit

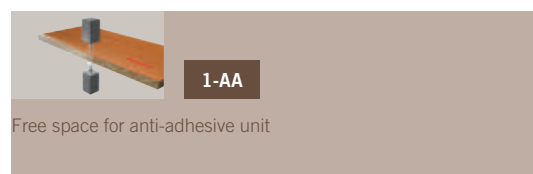
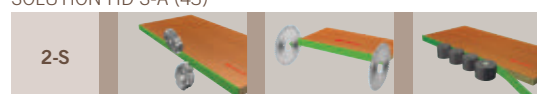


30^{up to}
m/min

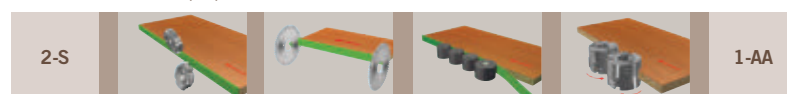
SOLUTION HD-S HIGH SPEED

The edgebanders SOLUTION HD S-A and SOLUTION HD S-RA are equipped with top belt pressure beam and guarantee high productivity as they can process thin edges up to 1,5 mm with feeding speed up to 30 m/min.

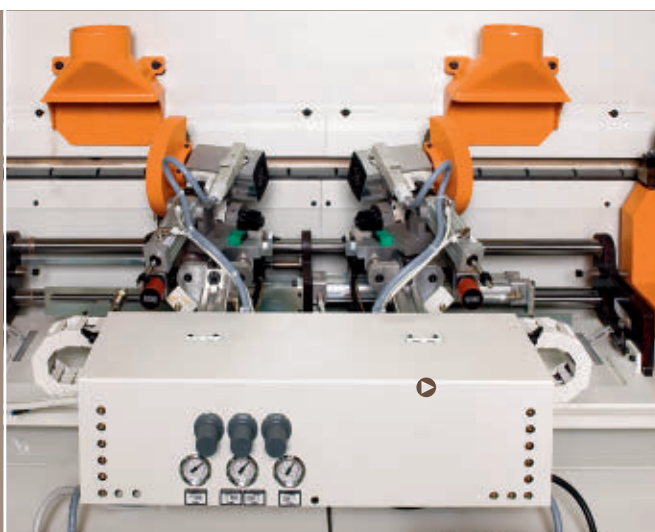
SOLUTION HD S-A (43)



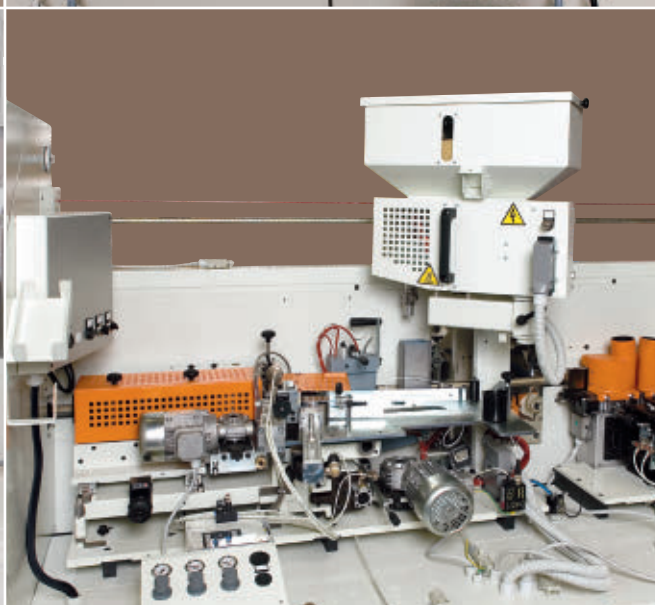
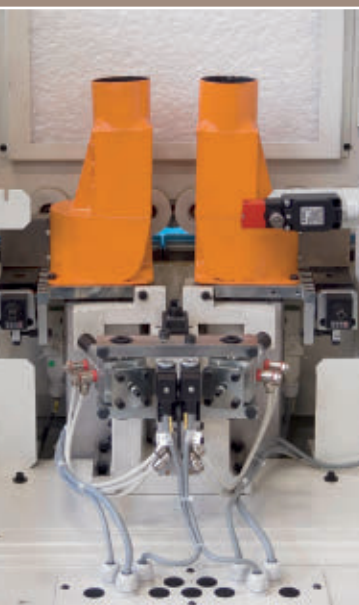
SOLUTION HD S-RA (53)



End-trimming unit ▶



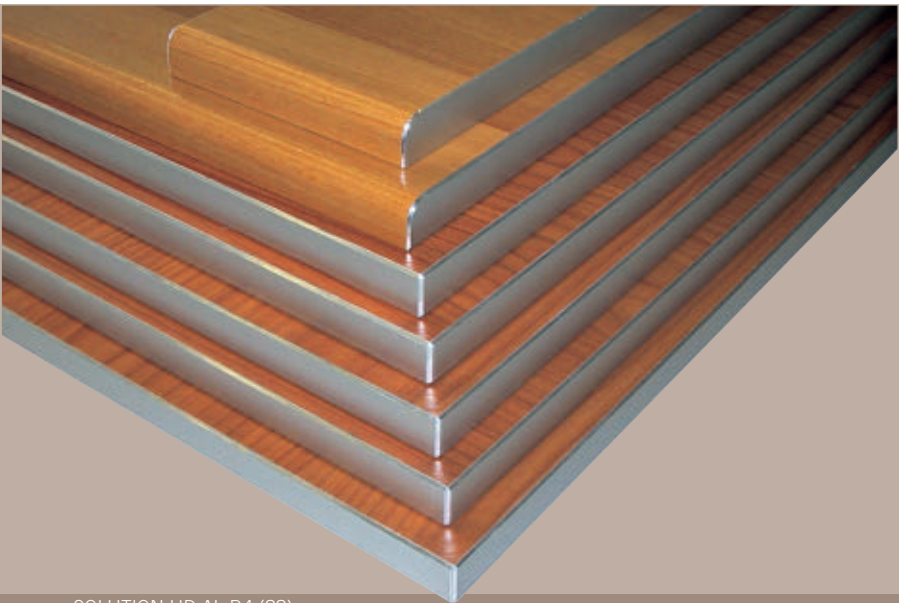
▶ Pre-milling unit



2 or 6 roller vertical magazine with automatic edge change over (optional)

▶ High productivity gluing unit with pre-melting unit

SOLUTION HD-P HIGH PRODUCTIVITY



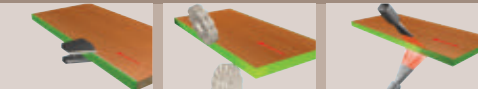
Solution HD AL-R4 edgebander, equipped with top belt pressure beam, is suitable to process aluminium, thin and ABS up to 3 mm edges. The technology developed by IDM for aluminium edge processing doesn't require sanding units and allows you to obtain both shining and opaque finishing.

SOLUTION HD AL-R4 (88)



1-C4

Free space for 4 motor corner rounding unit



3-S

Free space for 3 finishing units (gluescraping unit, buffing unit, edge brightening unit)

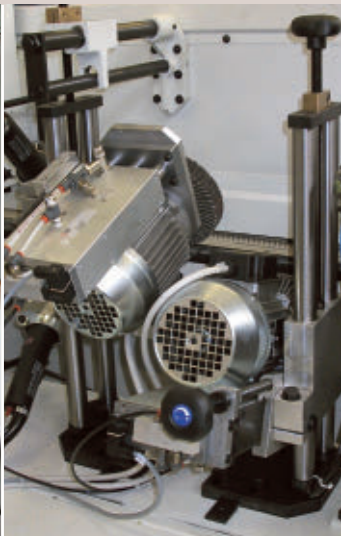
PUR glue process device



Finishing unit for aluminium edge



Buffing unit for aluminium edge



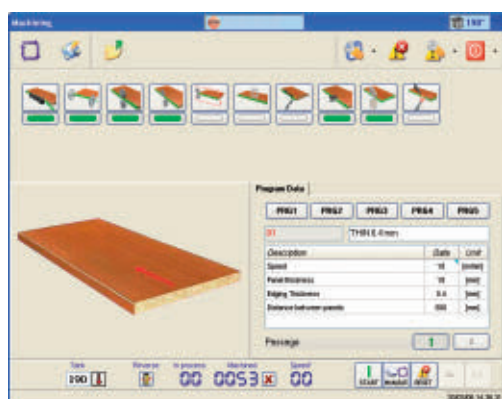
SOLUTION HD

PC OFFICE

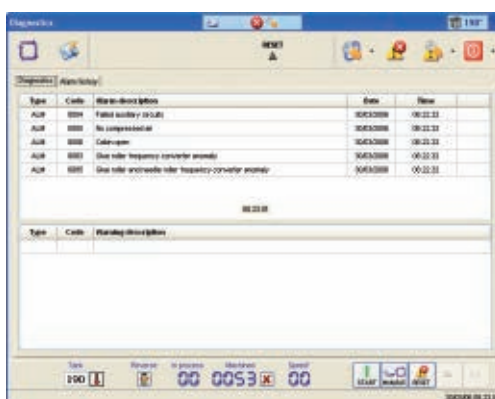


► Bar code reader

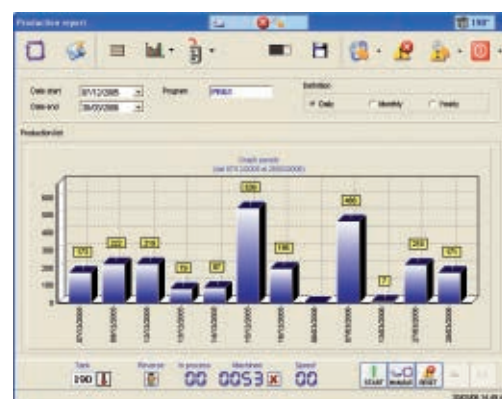
SOLUTION HD is equipped with PC Office that works in Windows XP. WIN EDGE software allows easy, quick and precise machine management thanks to data entering masks that can be managed easily with a guided surfing. Double Hard disk for a continual auto back-up. Display 15" LCD. Touch screen management is possible. UPS unit is available.



Unlimited number of processing programmes. Selection of the first or second pass without changing the program.



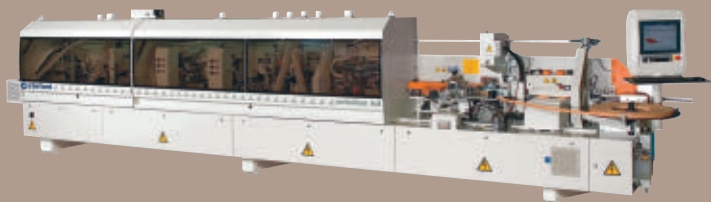
Diagnostic management.



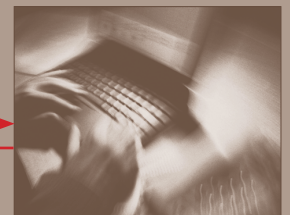
Production reports
Processing data, worked panels, used edge, daily, monthly and yearly. Reports allow production monitoring by statistic graphics and Excel files.

OFFICE-MACHINE INTERFACE

Workshop



Office

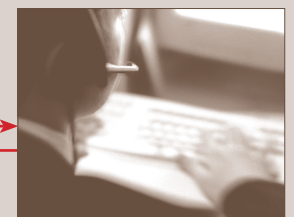


On demand, through the PC Office it's possible to program the machine directly from the office and to receive production reports directly from the machine.

Customer - premises



STEFANI after sales department



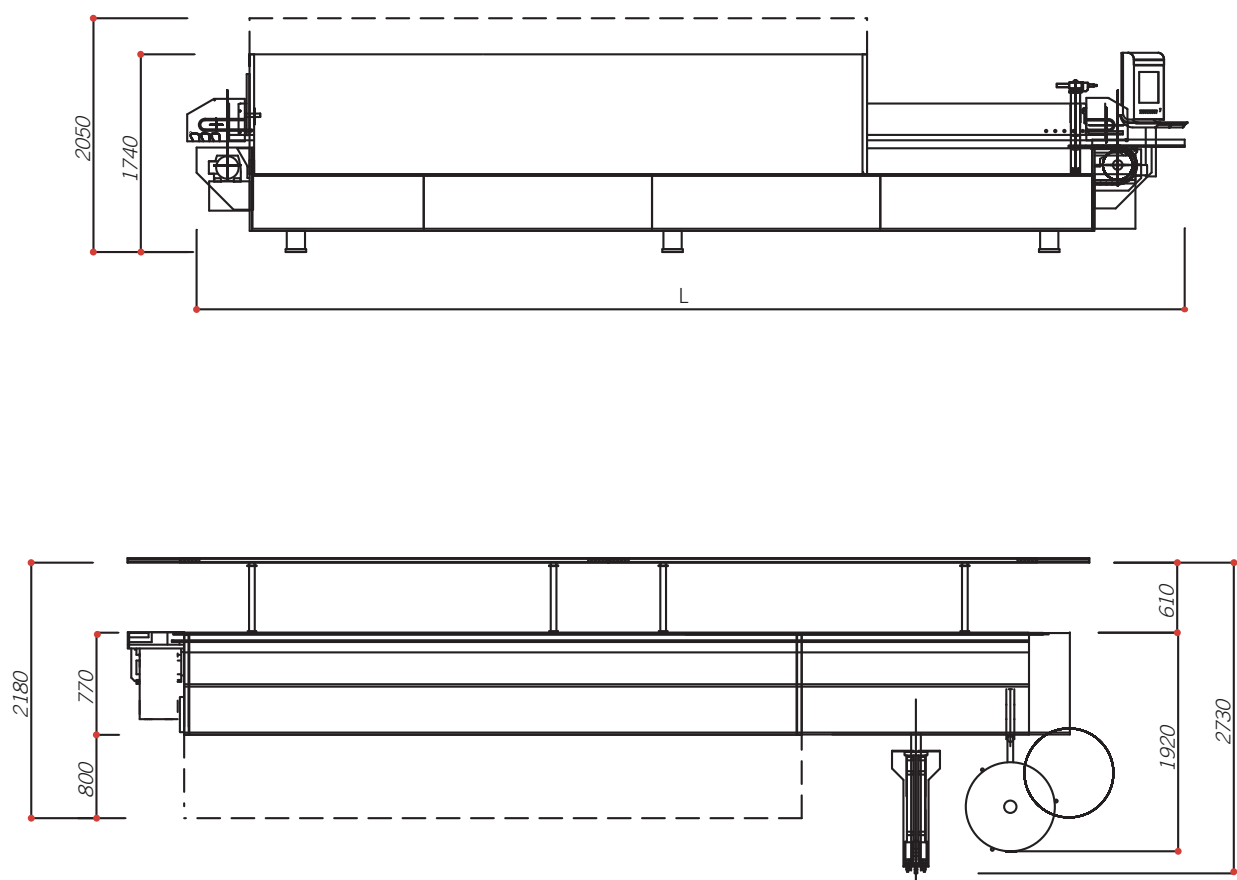
Through teleservice (optional) an immediate intervention from STEFANI technicians in situation of warnings during the machine process is assured to the customer. Further to the request of intervention about the

customer, STEFANI technicians will connect by modem to the PC situated on the customer machine and, in real time, they will resolve the software problems and re-set the machine to the best conditions. Besides,

thought teleservice it's possible to modify or update the programs according to customer requests.

SOLUTION HD

TECHNICAL SPECIFICATIONS



Solution HD	HD-V (43)	HD-R (48)	HD-T (53)	HD-RT (58)	HD-VS (53)	HD-RS (58)	HD-RTS (63)	HD-4 (68)	HD-R4 (73)
Total length (L) mm	5170	5670	6170	6670	6170	6670	7170	7670	8170

Solution HD	HD-T4 (73)	HD-RT4 (78)	HD-TL4 (78)	HD-RTL4 (83)	HD-ALR4 (88)	HD-PR4 (78)	HD-PRT4 (83)	HD-SA (48)	HD-SRA (53)
Total length (L) mm	8170		8670		9750		9250		6250

	Solution HD	Solution HD AL	Solution HD P	Solution HD S
Maximum coil material thickness	3 x 45	3 x 45	3 x 45	3 x 45
Maximum strip material thickness	12 22 (opt.)	3 22 (opt.)	12 22 (opt.)	- -
Minimum and maximum panel thickness	10/60	10/60	10/60	10/60
Feed speed	12/18 12-20 (opt. var.) 12-25 (opt. var.)	12/18 12-20 (opt. var.) 12-25 (opt. var.)	 12-25 (var.)	 12-30 (var.)
Glue types	EVA/PU	EVA/PU	EVA/PU	EVA

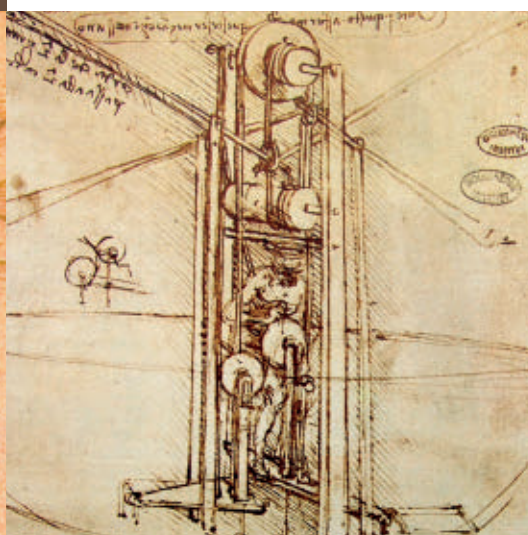
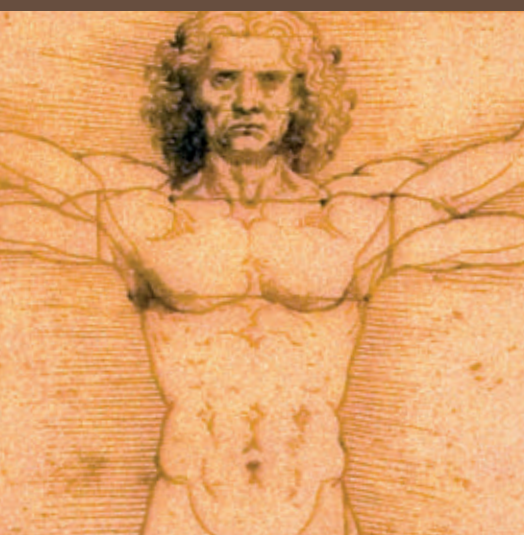
SOLUTION HD NOISE LEVEL

	Reference standard	VSA	LAV
Sound power level emitted dBw(A) [mW(A)	EN ISO 3746 : 1995 ISO 7960-95 Annex G	94,9 [3,1]	96,6 [4,6]
Sound pressure level at operator position, infeed, dB(A)	EN ISO 11202 : 1997 ISO 7960-95 Annex G	76,3	79,3
Sound pressure level at operator position, outfeed, dB(A)	EN ISO 11202 : 1997 ISO 7960-95 Annex G	76,2	78,3

Technical specifications may vary according to the composition chosen. For demonstration purposes, several photographs show machines complete with accessories. The technical data can be modified without advance notice, the modifications do not influence the safety prescribed by the CE regulations.

NLWE: no load values without extraction
OV: operating values. The tests were carried out with air extraction speed equal to 20 m/s.
Uncertainty associated with the measurement of the sound power ≤ 4,0 [dB(A)]
Uncertainty associated with the measurement of the sound pressure at the operator position ≤ 4,0 [dB(A)]
The maximum C-weighted instantaneous sound pressure values are less than 130 dB(C).





Scm group is a leading industrial group, in the design, production and distribution of technologically advanced solutions for processing a wide range of materials: wood, glass, plastic, marble, metal, composites.

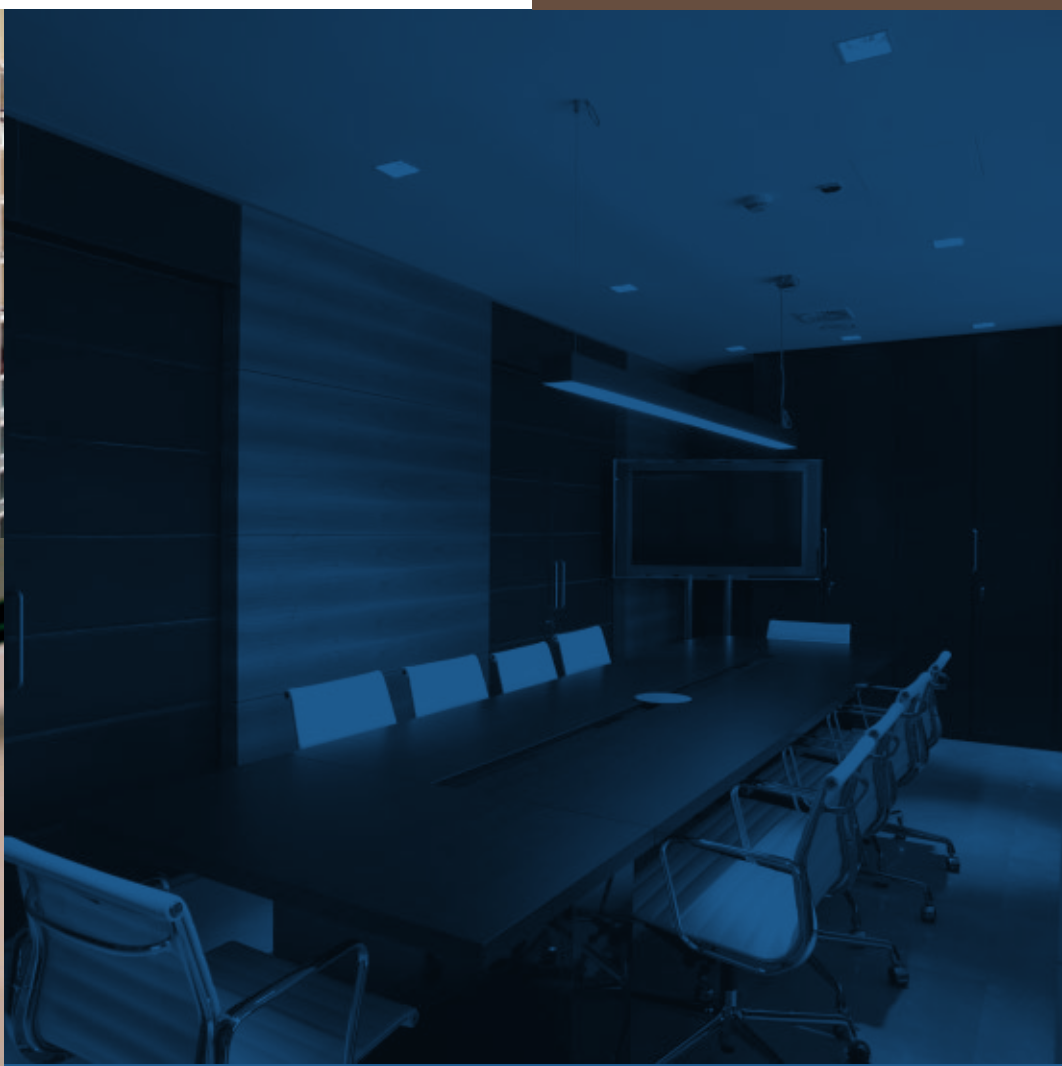
With specialist brands in the different application sectors and centres of excellence qualified in industrial components, scm group is present for over 50 years in the 5 continents.

PASSION. It's the passion for our work. It's the central role of man, his creative genius, the spirit of initiative and the ability to work in a team.

TECHNOLOGY. is the scientific rigour that transforms creativity in highly technological solutions, which are accessible and able to provide competitive advantages.

PERFORMANCE. is the commitment that is transformed in results and success of our partners that rely on SCM Group solutions. It's being recognised as suppliers of "competitive advantages that last over time".

THE BEST GLOBAL PARTNER FOR THE WOODWORKING COMPANIES



Since 1952 Scm supports the small woodworking companies and the manufacturers of made-to-measure furniture by means of user-friendly and innovative technological solutions, distributed by the

world's best sales network, constantly trained and updated in order to offer on local basis a global competence to the advantage of woodworking companies.

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