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GRAPHICS PRO

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FEATURES

APPAREL DECORATING

GP+ wide-format



Is the latest print technology right for your shop? By Kristine Shreve

16 Making Shop Moves

Re-thinking your entire shop layout to maximize efficiency By Howard Potter

20 SOFTWARE TO SUBSTRATE Cowboy up!

By Lon Winters

30 SCREENS ON THE SCENE

Dirt track racer screen prints live at events By Mark Vasilantone





33 ROLL-TO-ROLL PRINTERS MAINTAIN MOMENTUM

Despite competition, these machines are still the kings of printing flexible substrates By Shelley Widhalm

37 PRINT ON CANVAS WITH YOUR WIDE-FORMAT PRINTER

Courtesy of Xanté Corporation

38 FLATBED PROJECTIONS ARE FAR FROM FLAT

What to know before making the leap to this expanding field *By Paula Aven Gladych*

43 DIGITAL WALLCOVERING New and profitable opportunities Courtesy of Canon Solutions America

44 LET'S TALK SHOP Shop efficiency

By Charity Jackson 49

INSTALLING WINDOW MEDIA: WET OR DRY? Courtesy of Mactac

50 The Rising Tide OF Business

Investing in wide-format sublimation By Aaron Montgomery

53 HOW TO CHOOSE THE PROPER TOOL FOR THE JOB Courtesy of Lidco



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MARCH 2023

NUMBER 7

VOLUME 37





86 THE DIGITAL EYE Al's IQ By Stephen Romaniello GPX GRAPHICS PRO 54 GRAPHICS PRO EXPO IRVING, TX PREVIEW

ON THE COVER: Direct-to-film printing is the hot new trend in apparel decoration. Find out if it's right for you, and what it takes to make money with this latest technology, Page 8 (image courtesy Vanessa Nilsson, Equipment Zone). Bottom right: This month's GP+ is all about wide-format printing, Page 33.

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In Memoriam

Sign Columnist Rick Williams Passes



Longtime sign guy, magazine columnist, and educator Rick Williams died this week in Longview, Texas. For over 35 years, Williams was an integral part of this magazine and its parent company, National Business Media.

Williams began writing about his trials and tribulations as a sign maker back in 1986 with the introduction of Sign Business magazine. And while the name of the magazine changed from Sign Business to Sign & Digital Graphics to eventually GRAPHICS PRO, he never wavered in his goal of

entertaining and informing his audience about the sign industry. His monthly *In The Trenches* column was a monthly peek into the ups and downs of running his small shop, Rick's Sign Co., in the heart of Texas. He also wrote a bi-monthly column called *Shop Talk* that was the industry standard for "how-to" signage articles.

On top of his writing, he was also a longtime educator at trade shows, bringing his wit and wisdom to cities across the country as he tried to help his fellow sign makers improve and thrive.

Rick's Sign Co. served businesses and oilfield companies in Longview and East Texas since 1974. He started his sign shop while still a student at Kilgore College.

Rick's final column for GRAPHICS PRO ran in the August 2022 edition. (https:// gpro.link/finalcolumn) Our hearts are with the Williams family, as well as the Longview, Texas, community, and sign makers around the country who enjoyed his work for decades.

Rick is survived by his wife, Sharon, sons Sloan and Slade, daughter Lacey, and six grandchildren: Carson, Caden, Cole, Callie, Eli, and Wren. Memorial donations can be made to Pine Tree Church of Christ Mission Fund, 3221 Dundee Rd, Longview, TX 75604.







Hear Rick talk about his long career during his interview at GPX Expo.

Visit https://gpro.link/rickwilliams



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APPAREL DECORATING

THE INCOMING WAVE OF



Is the latest print technology right for your shop?



Kristine Shreve is the founder and CEO of Kristine Shreve Consulting, which offers writing, marketing, and business development services. The company can be found at kristineshreve.com. Kristine is also the creator and host of the Business + Women podcast and is also the director of marketing and outreach for Applique Getaway. Kristine was the director of marketing for Ensign Emblem and EnMart from 2006 to April 2020. Direct to film, or DTF printing, is one of the newer options to crop up in the garment decoration world. The latest trade show floors are loaded with new DTF machines ready to get people into this fresh new decorating option.

If you work in some aspect of garment decoration or buy decorated garments regularly, you've probably heard of it, but you may not know or understand quite what it is and why you'd want to use it. Like with a lot of new things, it takes some time to learn the basics and to decide if DTF is for you. This article will give you



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(Images courtesy of Equipment Zone)



some details about DTF printing, what it is, why you might want to use it, and the benefits and minuses, so you can get a handle on this relatively new technique and decide whether or not it fits in with your current products and is something you want to offer.

First off, we start at the basic level. What exactly is direct-to-film printing? As the name implies, a print is made on a film and then transferred, with the use of heat, to a fabric. Unlike sublimation, which requires 100% polyester fabric for the best transfer, or direct-to-garment printing, which generally works best with cotton, DTF prints are suitable for a variety of fabrics. DTF also works on both light and dark colors, so you can print on more types of garments.

One of the things about DTF printing that excites a lot of people is the fact that it can print white ink. For a lot of decorators, white ink is the holy grail because it Keep in mind that a DTF print is essentially a heat transfer, meaning that you will need a heat press in order to seal the print to the garment.

allows printing on dark garments. White ink is one of the reasons that DTG was so popular when it was first introduced, despite a fairly high learning curve and issues with the inks and printer clogging in some cases. Being able to print white expands the range of designs that can be used and allows shops to sell garments in the colors that a lot of businesses favor.

Keep in mind that a DTF print is essentially a heat transfer, meaning that you will need a heat press in order to seal the print to the garment. If you already have a heat press in your shop, great! You're set. If not, keep in mind that it is always wise to purchase the largest heat press you can, and to consider the largest-sized garment or item you might be decorating with that press. Keep in mind that, while a no-name heat press from Amazon might seem like a cheaper alternative, presses from reputable businesses like STAHLS' or Geo Knight will have warranties, maintenance agreements, and tech support. A heat press can be a cornerstone of your shop's business, so it is wise to invest in one that is well supported.

Besides a heat press, you'll need some other equipment and supplies to get started with DTF printing. One thing, of course, is a printer, which may be called a DTF-modified printer. These printers work with six colors: your standard CMYK and then white in the additional tanks. Also, the printers have special rollers that move the film so that you avoid lines in the white layer being printed on the DTF film.

Since you are printing on film, you will need to keep some in stock. PET films are used and may be called DTF Transfer Films. Most will come in either cut sheets or rolls. They will also have the option of being hot peel or cold peel. This means that the transfer film is either peeled from the garment while it's still warm, or it is allowed to cool and is then peeled away. As with most things where there are options, decorators have preferences on both sides of this issue. Some people maintain that hot peel transfers can be rubbery and have a textured feel, which may work for some decoration styles but not for others. Cold peel transfers are often more matte in appearance and may have a softer feel. This may be a case where one style of transfer will work best for some things, and another style will work best for others.

As with most printing options for garments, software plays a large part in the process. RIP software is necessary to manage the color profiles of the ink, the characteristics of the print, and the final performance of the print on the fabric. For DTF, the RIP software has to be able to manage both white and CMYK colors.



APPAREL DECORATING



(Image courtesy of Equipment Zone)





(Images courtesy of Equipment Zone)



There is also DTF printing software, which is used to manage the machine and help ensure that the final print is optimized to get the best result.

One thing that DTF printing requires that other printing techniques may not is hot melt adhesive powder. This is used as an adhesive to bind the color to the fabric. There are different grades of this powder, which are measured in microns.

> You will need to have the proper powder based on the requirements of your setup and designs. Another need will be some way to get the powder on the garment accurately and evenly and to remove excess powder. Commercial DTF setups may use an automatic powder shaker. This applies the powder evenly and provides a way to remove any excess.

> In order to use the film and adhesive powder, you need to have ink with which to print. DTF printing ink comes in CMYK and white options. The white ink is generally used as a base layer, with the colors printed on top of it in the appropriate places. The ink is printed on the film, and then the adhesive powder is added, which sets the ink into the print. Heat is added to melt the powder. You can use a curing oven or a heat press, the top of which

would not be closed or locked. Generally, you would leave a four to seven mm gap between the top of the press and the face of the print. The melted powder becomes an adhesive, and this is what allows the print to stick to the garment. The melted powder essentially acts as a binder and melds the fibers of the garment of choice with the pigments.

DTF can potentially be a major profit center for a business, but, as with all decoration techniques, there are a few pros and cons to consider. One major pro is that this process uses white ink, which makes

One major pro to DTF is that it uses white ink, which makes it suitable for use with dark garments. It can also be used on a variety of fabrics.

it suitable for use with dark garments. It can also be used on a variety of fabrics. These two traits together mean that DTF printing opens up a wide range of garment colors and types to being decorated.

While having options when it comes to colors and fabrics is great, obtaining those options comes at a cost, which may potentially be a big con when you're considering whether DTF printing is for you. While some retailers will make the case that you can cobble together a decent entrylevel system for \$3,000 or so, heat press included, if you want to enter DTF printing on a professional level, you're probably looking at a cost of \$15,000 or perhaps higher. Now, the potential profit that can be made as a result of that expense may make it worth taking on, but it is a bigger commitment than the start-up costs of some other methods.

Another potential con is that DTF is still

a relatively new technology, and the kinks are still being worked out. There's also a ton of misinformation out there about what DTF is and what it does or will do for you. Yes, there are shops using it successfully and happily. And, equally, there are people selling you a bunch of bull about how easy and fast it is and how quickly the dollars will pile up when you add the process to your shop. As with all garment decoration processes, it's on the individual who owns the shop, or whoever buys the equipment and selects the processes the shop offers, to maintain their due diligence and make sure they get good information and deal with reputable dealers.

In the final analysis, DTF printing has a great deal of potential. The fact that there's no weeding or pretreatment needed is a selling point for some shops. The cost for a professional setup and the possible need for things like an automatic powder shaker and other process-specific equipment may price this decoration option out of the range of some shops, but, in those cases, starting out with DTF transfers may be a less expensive option for entry. DTF printing does work with a wide range of fabrics and color options, which means it offers the ability to print on a larger range of garment types, and that's always an attractive prospect. As with most new decoration disciplines, the main thing to remember is not to get so excited about the possibilities that you forget to research all sides of the issue and learn about the pitfalls as well as the peaks. The story of DTF printing is just starting to be written, and it remains to be seen if it's a decoration technique that is here to stay or one that is just the fad of the moment. Initial signs seem to be that it has staying power, but the full impact of DTF printing on the industry remains to be seen. GP







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Benefits for Directto-Film Transfers

COURTESY JAY BUSSELLE, EQUIPMENT ZONE

Increased sales opportunities

The new sales doors that will open are many and profitable. My good friend Cliff Quicksell says, "egos feed sales, profits feed families." This is a profitable opportunity. DTF transfers create a large, complementary sweet spot for apparel decorators. You will be less limited as a screen printer, embroiderer or DTG printer by offering DTF transfers.

A very wide variety of substrates can accept a DTF transfer

There are too many to list but some of my favorites are the uncommon ones, like: cork coasters, paper journal book covers, and cardboard kitting boxes. Also on the list would be can coolies, faux hoodie cinch sacks, nylon tech bags, zippered hoodies, healthcare scrubs, polyester jerseys, nylon umbrellas, and headwear of every kind including visors and beanies. The limitations will usually be determined by the maximum temperature and amount of pressure the substrate can take.



No cut lines — no weeding material — full-color prints

Nothing more to say there!

4 The very affordable cost of producing your own transfers (after the cost of the equipment, of course)

The cost of the film, adhesive powder, and ink, as well as the labor to produce your own Direct-to-Film transfers, is very affordable. I can't provide exact numbers at this time since the market is moving so fast, but your target should be under \$2 per square foot.

Power of personalization

The power of printing one full-color transfer with a person's name, player number, or their pet's name will always make an impact and create an emotional experience that the receiving party will never forget.



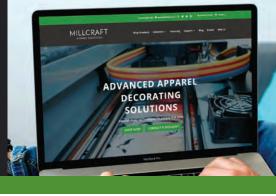
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14 GRAPHICS PRO • MARCH 2023

One Quick Click

If your print business is looking to grow and diversify (and add \$100K to your bottom line this year), make one quick click with Millcraft today.



With one quick click, here's what's going to happen. You'll be introduced to Millcraft's newly rebranded "Apparel Solutions" and discover that – even more than a beautifully designed, sleek, and gorgeous website – what you've really been introduced to is a bleeding-edge opportunity.

With one quick click, you'll see how your business can position itself to profit in one of the fastest-growing segments in print today, Direct to Garment (DTG), with Millcraft's experience and trusted expertise to guide your success within this new vertical.

Revolutionary Technologies

Millcraft is a time-honored legacy company with more than 100 years of experience in the print market; DTG technology is barely 20 years old. The commercialization of direct-to-garment printing didn't even begin until 2001.

Yet the market has since gained immense popularity and experienced continual growth. Within the digital print market that is forecast to grow by 65% over the next 10 years and top \$230 billion by 2029, DTG is today one of the fastest-growing segments in print.

Millcraft President and CEO Travis Mlakar says, "As our customers' needs evolve, Millcraft continues to diversify and grow as a vibrant company, adding to our resources and infrastructure to help our customers. Millcraft has been able to amass experience, hire textile industry experts, and build relationships within the apparel decorating segment. We're well positioned to support our customers and guide them through growing and diversifying their businesses."

Complementary Vertical

At the industry forefront, Millcraft's newly rebranded Apparel Solutions envelops DTG, Direct to Film (DTF), and a multitude of capacities within the apparel decorating space.

Millcraft Apparel Solutions Sales Manager Eric Deem says DTG technology is new enough that many commercial print shops haven't yet considered adding apparel to their print businesses – they don't yet see how it applies to them.

"Shops are printing flyers, business cards, pamphlets, trifolds, banners, and they're kind of in their own lane. Many of them have never even seen a T-shirt get printed." Deem, who brings nearly 20 years of experience in DTG and apparel solutions to Millcraft, says the conversation heats up when he asks: How would you like to add another \$100,000 GP to your bottom line this year, working about four hours a day?

"They begin to understand how apparel can be profitable and complementary to their already existing print-on-demand business. If you're looking to diversify, adding apparel to your organization makes sense," Deem says. "Apparel is complimentary. It's not like you're selling print jobs and now also selling cars. Apparel printing makes sense to your existing print-on-demand business; it becomes another tool in your toolbox and another revenue stream. Millcraft offers our customers the opportunity to get into a very rapidly growing segment, and in its infancy."

Apparel Solutions

With industry-leading Epson printing equipment, plotters, and operational software for fast speeds, sharp, vibrant images, and quick ROI for small businesses

to large companies, Millcraft's Apparel Solutions provides clear answers to the questions of today's print companies: We see technology changing; we're looking to grow into new areas; we need to diversify. What's our best move?

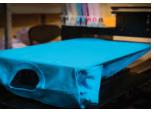
Deem says the Millcraft team has an unprecedented level of experience and expertise to help businesses grow in advantageous apparel solutions. "We're able to not only introduce them to new technology, but to walk them through their best buying decisions based on what they need and show them how to operate their business with this new technology."

Deem continues, "We develop relationships with our customers, and we're here to assist with installation, training, and support. From providing customers with an optimal workflow to expertly calculated ROI, Millcraft has the capacity and experience to help you create and operate your business more successfully with this new technology."

One Quick Click

Mere seconds from now, with just one quick click, you'll be introduced to revolutionary technologies for people who print – equipment that creates ROI 10x investment at lightning speed, wire-to-wire expertise that ensures success – Millcraft's newly rebranded Apparel Solutions.

More than a beautifully designed, sleek, and gorgeous website, you'll see in vivid color (and before your competitors, click quickly) the bleeding-edge opportunity that is now at your fingertips with Millcraft's Apparel Solutions, available at https://dtg.millcraftstore.com







APPAREL SOLUTIONS



Making Moves While Expanding

Rethinking your entire shop layout to maximize efficiency



Howard Potter has worked in the promotional industry for 20 years, from designing to building brands and a family-owned business. He is the co-owner and CEO of A&P Master Images LLC with his wife, Amanda. Their company offers graphic design, screen printing, embroidery, sublimation, vinyl graphics, and promotional items. Howard, his family, and the business reside in Utica, New York. For more information, please visit masteryourimage.com.

As we all know, moving a piece or two of equipment while keeping production going can be difficult enough during the best of times, but opening up a new building to supplement our current space as we did recently takes it to a new level.

Over the past months I have created layout plans for equipment and office and production space. For the most part everything has been on point. However, we were able to improve those plans as everything started to unfold.

Something I thought would take eight to ten hours has taken roughly two weeks. At first, I was getting a little frustrated with myself, because it was not moving along as I would have liked it to as it had in the past when I expanded.

A big part of the problem was that I was also conducting 80 interviews to fill two open positions. So, I sat in my office and just broke the plan out into smaller chunks so that it was easier to handle. We ended up moving our vinyl graphics, sublimation, a couple of designers, and laser engravers into the new building, which is just ten feet away from our current space on the land we own.

Unpacking DTF

Our new DTF machine from ColDesi also arrived during the move (the DTF-24H4),



This is the updated printing room, which holds a wide-format printer, two laminators, a plotter, and the DTF machine. Our expansion allowed us to build a logical, efficient workspace in our current shop area and the expansion building just adjacent to it.





which we expected. It was a huge help getting all our existing equipment into position before the DTF machine arrived.

When the machine arrived it was very heavy, but we could easily move the crates with pallet jacks; make sure you have one on hand when it arrives for this model.

The crate with the printer in it is easily taken apart with a drill, but for the other crate with the dryer and shaker in it you need needle nose plyers to fold back the metal clips to get the crate to slide off.

Plan for this to take up to two hours to unpackage, taking your time. Also, make sure you have about six people handy to help get these machines out of the crates. You can get the printer out with four people and both parts have the wheels assembled, but you have to lift them up and out onto the floor safely.

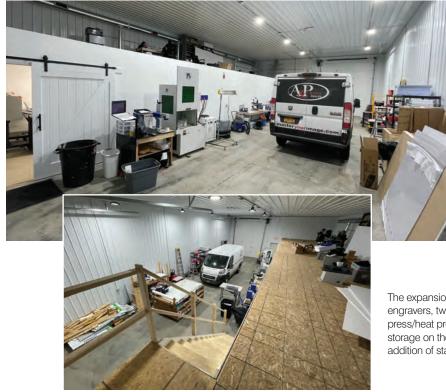
The dryer was a different beast to deal with since it has no real spots to lift, so we put 4x4s under the machine facing out from it, so we could grab the machine and lift it onto the boards to guide it to the floor onto its wheels, which worked out very well. We lifted one side at a time and walked it one side at a time with two people guiding in the front and back to be safe.

Once the machine was on wheels it was very easy for just two people to move it into position. You want to make sure you create a 48" opening if you can; it makes it much easier to get the machine in with zero hassle.

Creating space that works

During the process of moving equipment to our new building, we realized that the space we had created above the main office space was a lot larger than we

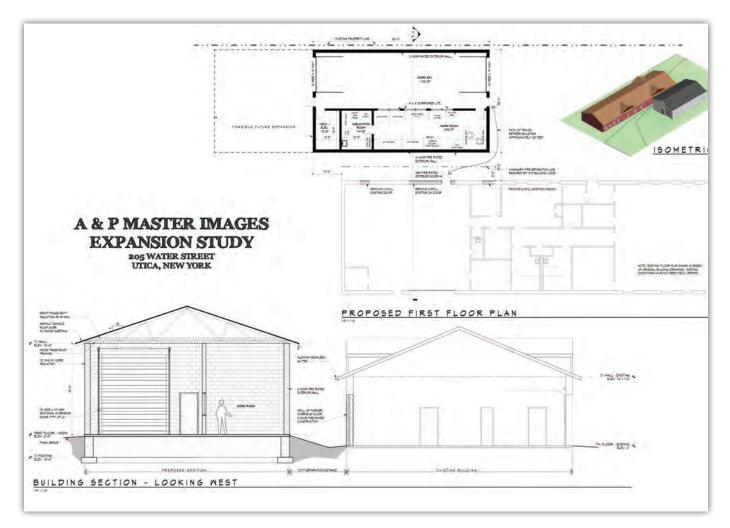
APPAREL DECORATING



envisioned, so we spoke to our contractor to have metal stairs built to access the space for storage and to move our company breakroom up there.

The stairs cost us about \$8,000, but they will help us gain access to 850 more square feet we did not have before. This additional space allows us to move our break room, sublimation supplies, vinyl supplies, laser supplies, and tools.

The expansion area now houses our laser engravers, two grommet machines, mug press/heat press, and install space with storage on the second floor, thanks to the addition of stairs leading to the loft-like area.



By breaking the expansion/moving plan into manageable chunks, working with my team, and adjusting plans on the fly as needed we are going to take this company to a whole new level this year.

Once we moved our two designers out to their new office it freed up space to create an office for our design manager up front next to our showroom. This was a huge bonus since at least once or twice a day customer service needs to ask him design questions.

After we moved the breakroom, we were able to create an office for our shipping and receiving manager. She will now have a quieter space to plan all schedules out and additional space to help organize mail-outs for the day, which is a huge help.

The room we used for sublimation in our original building was one we never thought we could move, but once we moved the lasers into the new building, we started moving all of the supplies out. All we had left then were the heat presses.

We quickly discovered we could move two of them out by the screen-printing area and reroute air lines to them and move the other press out into the new building. So, we plan on DTF taking over one-third of our current screen printing area, which means our screen printing crew will have less work and will be able to take on heat pressing as needed.

Then, all the plaques, name badges, mouse pads and more could be moved out to the new building to handle all of that out there. This now opened up another 200 square feet we did not plan on having.

I want to touch on something very important: how I was able to make this happen. Though I had a plan I was never truly alone during this process. While doing so I would bounce my ideas off our employees and we would come up with a better plan each time. Even though I am the boss I'm not the one working in their space every day, so it is important to always make them part of the process.

By taking a step back, breaking the expansion/moving plan into manageable chunks, working with my team, and adjusting plans on the fly as needed we are going to take this company to a whole new level this year.

Keep making moves, everyone! GP



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Cowboy Up!

When the horse apples hit the fan, it was time to turn to transfers

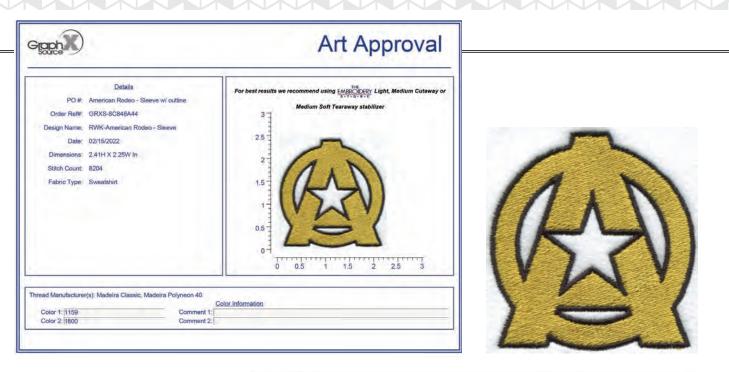


At 21 years old, Lon Winters was the production manager for Ocean Pacific and started his 30+ year career reclaiming screens. He's the president and founder of Coloradobased Graphic Elephants, an international consulting firm and apparel decoration studio specializing in screen printing technical advances, plant design, layout, troubleshooting, productivity, quality analysis, and complete apparel decorating solutions. Learn more at www. graphicelephants.com Teton Ridge is the legacy of the Western frontier. A world where cowboys roam free, guided by hard work, integrity, and grit. Where individuals blaze their own trail through sheer courage and determination, finding kinship through community and a deep connection to the land around them. Where adventure and sweeping beauty await around every corner.

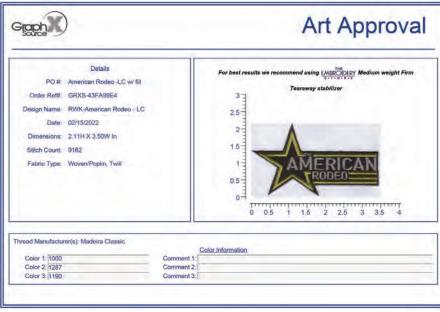
In today's rapidly changing world, the spirit of the West is more relevant than ever. Teton Ridge is more than a brand. It's a way of life that celebrates the spirit of the American West and all that it represents. Through delivering legendary Western experiences, entertainment, and lifestyle products, they preserve the legacy of the West while elevating its stories for a new generation of global audiences, captivating their imaginations, and unlocking the pioneering spirit in all of us. It's where tradition meets modernity, heritage meets high tech, style meets substance. The Teton Ridge Foundation is dedicated to providing invaluable funding for Western land stewardship and more. Donations help foster community through the preservation of the American West's unique culture and heritage. It also provides succession planning, ensuring the future of ranching and riding sports for generations to come.

The American Rodeo, known as the crown jewel of rodeos, is an annual western sports







Embroidery files.

and entertainment experience that occurs each year. An unrivaled celebration of western sports entertainment and the American West. It is all things rodeo, all in one place, all day long. The top professional and amateur athletes compete across rodeo and Western disciplines for the biggest payday in western sports. And we mustn't forget the live performances by some of the top American music entertainment icons as well. Owned by Teton Ridge, this iconic event is a true open competition and brings together top professional rodeo athletes and hardworking cowboys and cowgirls in a winner-take-all showdown, meant to crown the finest talent the world has to offer. Payout earnings have rivaled that of the Kentucky Derby, with an unmatched total purse of more than \$3 million last year.

As many of you know we have been writing Software to Substrate for well over 20 years. You also know we love tellin' stories about experiences involving decorated apparel. Screen-printed apparel to be exact, with nary a mention of other decorating disciplines. Been in the 'biz for 35 years. It's all we know, so we had better get good at it. It's fun to change it up every now and again. While Embroidered patch transfers were the answer. These patches would provide the classic look of embroidery without tying up equipment for hours.



come to us over the last year or so with one emergency after another. The first project had to be done in less than a week. It was about 100 woven Western button-up shirts with like 11 locations. If you watch rodeo, you have seen these sponsor shirts. Up and down both sleeves, full back, above and on both pockets, on the collar, and on the cuffs. Embroidery, right? Nope...not enough time and didn't have the bodies. Our solution was simply basic transfer gang sheets and some creative pillows for applications. This was really the only solution at the time. For the live event, we could hardly tell the logos were not embroidered.

After a few other projects, the client was looking for a couple hundred highend woven and denim dress shirts. Not quite as many logos, but embroidery was requested once more. Above both pockets and a full back. We had embroidered the small logos before. The back would be several hundred thousand stitches. This was simply not practical. Embroidery would not work once again, but the client wouldn't be satisfied with basic transfers this time. So, we had said no thank you. Tough to walk away, but this was the right move. The client took the work to another decorator. This is not the end of the story. Teton Ridge was back in a few weeks after their second choice missed the colors so badly that they could not wear the final product. What could we do for this client?





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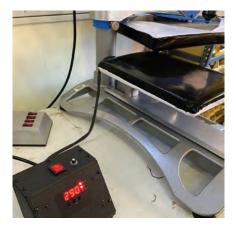




Patch applications.

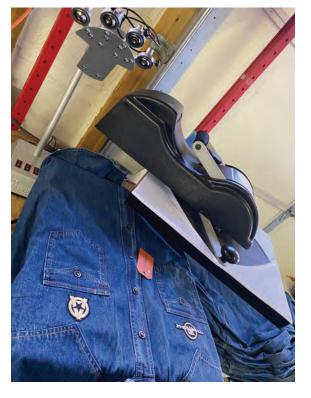












Embroidered patch transfers were the answer. These patches would provide the classic look of embroidery without tying up equipment for hours. This would be a high-end look and were a premium alternative to embroidery with adhesive backs ready to transfer.

First thing we had to do was rebuild the logos that were only available on the website. We traced the basic shapes and laid in the simple coloring in Illustrator and air brushed in the transitions in Photoshop. The sizes of the images had to be adjusted to fit above pockets and just under the yoke seams. The space was tight. The back was originally sized at 8", but was resized to 10". Once the art was approved and submitted to the patch provider, digital proofs were provided. We opted to have a sample made of the back just to be safe, as we had never sourced embroidered patches before. We showed the client and placed the order for all three patches.

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APPAREL DECORATING



Once the patches arrived, we were able to place them in appropriate locations and snap a couple pics for final approval before applying. We located the front patches by custom cutting some pillows to fit above the pockets. This kept the snaps and seams away from the heat. We used 1/8" foam over the patches to keep the heat and pressure from flattening them. For the back, we went a quarter inch below the yoke. Through research, we learned about a heated bottom platen. Brilliant! This cut our application time way down.

We chose thread over ink but in a transfer application. That's right, we said transfer. Who would have ever thought these old-school screen printers would embrace transfer technology? Doing more and more all the time.







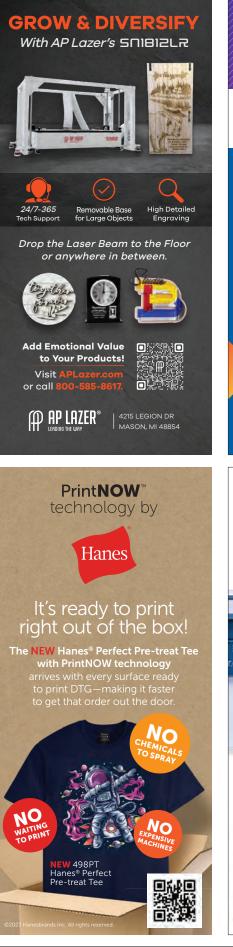
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PRODUCT HIGHLIGHTS

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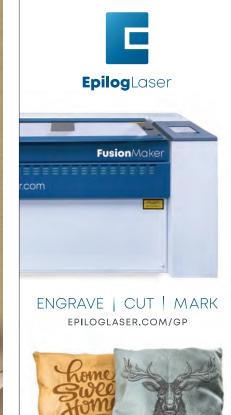
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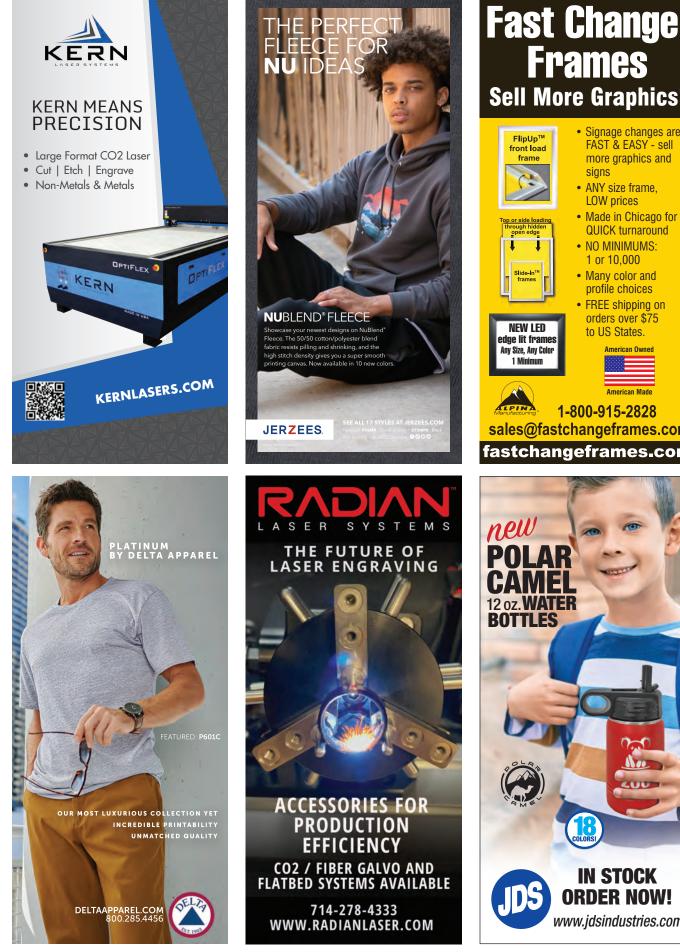


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Frames



Screens on the Scene Dirt track racer screen prints live at events

BY MARK VASILANTONE, PRESIDENT, VASTEX INTERNATIONAL, INC.

Scott and Michele Govertsen, owners of the Chatham Clothing Company. (Images courtesy Chatham Clothing Company)

> Micro-registration knobs on the rear clamp facilitate precise adjustments.

Scott Govertsen became interested in screen printing when he was a dirt track racer. While he was executing controlled drifts at high speeds, his wife Michele and daughters Jessica, Krissy, and Racheal, sold T-shirts in the grandstands for his sponsor, a race apparel company. When customers began asking for custom apparel, Govertsen decided to print his own.

After attending classes at screen printing trade shows, he purchased a manual press and founded Gfab Graphix, a clothing line catering to local race teams.

As he continued to attend trade shows and take classes, he observed equipment demonstrations that sparked the idea of staging live printing events.

"At the expos, big crowds would gather around the printer and dryer waiting for the shirts to come out," he says. "I thought if I could do that at car shows and other events, everybody standing there would want a T-shirt."

Winning ticket spurs live print venture

In 2017, he and Michele attended a trade show in Atlantic City, New Jersey where they entered a raffle for a V-100 one-station, one-color tabletop printer from Vastex International. Govertsen won the printer, and Michele won a \$200 voucher, with which they purchased another station and upgraded the press from one to four print heads.

"We chose to add three more heads so that we could have four different designs on press at once," Govertsen explains. "We also wanted the option of having two shirts on press at the same time."



Scott prints the official T-shirt of the Columbia County Fair.

Within a month of winning the press, Govertsen booked his first live event: printing and selling official T-shirts for a festival in Massachusetts. His booth accommodated the compact printer, which he set up in four minutes.

At live events, such as the Columbia County Fair in Chatham, New York, Govertsen uses $20" \times 25"$ screens and prints, T-shirts, hoodies, koozies, and bags.

"We want kids to be part of the live experience," Govertsen explains. "I show them how to hold the squeegee and help them print their own shirts. It's amazing how many kids think it's the coolest thing at the fair."

Because Govertsen focuses on the customer experience, he prefers to print one shirt at a time.

"Usually people order a shirt, and then take a photo of it being printed," he says. "That experience draws people in; they tell their friends about it, and soon everyone wants to come to our booth for a shirt."

Govertsen's prints are mostly one-color designs in black or grey scale on tie-dye and light-colored shirts. If he prints white ink on a dark shirt, he sets up the second platen to serve as a cooling station



Kids get early experience in screen printing.

between flashing the underbase and over-printing the top layer of ink.

He finds it easier to stay with one color so he can keep printing non-stop for customers.

Although the press has all-heads-down printing capability, Govertsen doesn't need it at live events as only one person works the press at a time. The four screens are attached to a carousel, allowing him to stand at one station and spin the print head with the next design to where he is standing.

He says "Thumb screws on the back of each screen head allow for off-contact and level adjustments without the need for tools."

After shirts are printed, they run through a small conveyor dryer while the customer waits.

APPAREL DECORATING

Chatham Clothing Company is the official garment printer at the Columbia County Fair.

> Scott Govertsen pumps out garments for customers at the Fair with his V-100 tabletop screen printing press.



Compact press opens doors for large orders

Today, Govertsen is the official garment printer for the Columbia County Fair Board. Since that first event, his live print business has taken off.

"We attend about seven or eight events a year, including festivals, fairgrounds, car shows, and Little League games," he says. "At some of the larger venues we print hundreds of T-shirts and make as much as \$3,000 to \$4,000 a day. I'm proof that you can take an entry-level press out in public, use it in a commercial setting, and be really successful."

Not only are live print events lucrative, but they generate new clients for the Govertsens' printing business, Chatham Clothing Company, which offers screen printing, embroidery, sublimation, and heat-transfer vinyl services.

"We don't advertise, but we attract business all month long from the cards we hand out at live events," Govertsen says.

In addition to printing Little League uniforms, Govertsen drives his live print trailer onto the field at games and takes orders from parents for hats, shirts, and other Little League-approved merchandise.

"Every businessperson within 50 miles of that field has a child in Little League, so it's great exposure for us," he says.

Printing on demand at live events also ensures that Govertsen isn't stuck with excess inventory.

"When you print shirts, sometimes you have to guess how many to order, and you may not sell them all," he says. "But with live events, there's no waste; if someone orders an XL for themself and a 2X for their dad at home, we can print those two shirts while they wait."

In 2019, Govertsen changed the name of Gfab Graphics to Chatham Clothing Company — a nod to a local textile company from the 1800s. The name change also reflects a shift in focus from primarily race car apparel to clothing for diverse businesses and community events.

Most of Chatham Clothing Company's orders are printed on an automatic press in Govertsen's garage. He also operates another manual press, as well as a conveyor dryer and three embroidery machines.

When Govertsen isn't printing at home or at live events, he works his day job as a plumbing and heating contractor. His goal is to transition to printing full time and move the family business to a commercial building that can house all of his equipment under one roof. GP

Chatham Clothing Company 518-956-1894 info@chathamclothingcompany.com www.chathamclothingcompany.com

WIDE-FORMAT PRINTING

GP+ is a monthly section of GRAPHICS PRO dedicated to taking a deep dive into a specific graphics market. This month's section is all about wide-format printing and where the future can take you.

FEATURING:

33 Roll-to-Roll Printers Maintain Momentum

Despite competition, these machines are still the kings of printing flexible substrates By Shelley Widhalm

37 Print on Canvas with your Wide-Format Printer Courtesy of Xanté Corporation

38 Flatbed Projections are Far from Flat

What to know before making the leap to this expanding field *By Paula Aven Gladych*

43 Digital Wallcovering New and profitable opportunities *Courtesy of Canon Solutions America*

- 44 Let's Talk Shop Shop efficiency By Charity Jackson
- 49 Installing Window Media: Wet or Dry? Courtesy of Mactac
- 50 The Rising Tide of Business Investing in wide-format sublimation By Aaron Montgomery
- 53 How to Choose the Proper Tool for the Job Courtesy of Lidco



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WIDE-FORMAT PRINTING



Roll-to-Roll Printers

Maintain Momentum BY SHELLEY WIDHALM

Despite competition, these machines are still the kings of printing flexible substrates



Shelley Widhalm is a freelance writer and editor and founder of Shell's Ink Services, a writing and editing service based in Loveland, Colorado. **R**oll-to-roll printing is on an upward trajectory with newer, more efficient technologies making it a great option alongside the other mainstay of flatbed printing.

"There's always going to be a need for roll-to-roll printing," says David Lopez, product manager of professional imaging for Epson America, Inc., in Los Alamitos, California. "Most of the materials and media comes in rolls. It doesn't make sense to stretch it over a flat bed and cut it."

Flatbed printers primarily are used for rigid materials, like glass, wood, or plastic, while softer fabrics like textiles, banners, vinyl, backlit film, floor graphics, and wallpaper are better suited to rollto-roll printing. These printers print directly onto a roll of material using a specialized ink, such as a solvent or an eco-solvent or resin-based ink that is more environmentally friendly.

"Roll-to-roll printing is the most reliable solution out there," says Sohil Singh, vice-president of StratoJet USA in Pico Rivera, California. "Flatbeds have taken a good market share, but with flexible printing, you still need roll-to-roll."

Advances in roll-to-roll printing

Roll-to-roll printing, which has a larger market share than flatbed printing, has become more automated, not requiring oversight once the rolls are placed on the printing bed, Sohil says. The materials can be changed out without calibrating for the next





"Print quality in comparison to print speed has gotten a lot better."

—Tony Simmering product manager of MUTOH



material and can be loaded and unloaded more quickly wrinkle-free, plus multiple rolls can be loaded at once, he says.

"Basically, in the past, you only could do one roll at time. Now with the new printers, you can load heavier mediums and not worry about it. You can hit print and leave for the day," Singh says. "It's leaner, and you don't need a lot of space for it. You can print a lot of applications on it."

Automation has improved roll-to-roll printing in other ways, such as automatic sensors that align and calibrate the printer without requiring a technician to come in on a service call to make adjustments, says Tony Simmering, product manager of MUTOH in Phoenix, Arizona.

"Print quality in comparison to print speed has gotten a lot better," Simmering says. "We're able to calibrate to print at a lower resolution for the same quality. Before, the limitation was a bump (up) in the resolution that killed the speed."

Sign shops and other printing businesses typically start with a roll-to-roll printer, which can be used to print directly on flexible materials and indirectly on harder substrates by first printing on the flexible material and then mounting the material on the hard surface. Printing this way, though, requires the extra steps and additional labor for the mounting, plus waste from cutting out the vinyl and using it underneath the top layer. "The future of roll-to-roll printing, of really any kind of printer, is always to go with faster printers and also better-quality printers," Lopez says. "Sustainability and the types of inks you use play handin-hand with that."

Roll-to-roll printing inks

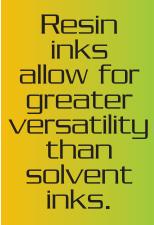
Using resin-based inks, which are water and not solvent-based, speeds up the printing process by allowing for immediate lamination, while also improving overall quality, Lopez says. For instance, using solvent inks on a vehicle wrap requires waiting three to six hours after printing on the vinyl and before the lamination step to allow for outgassing and the prevention of bubbles from forming, he says.

"Water-based ink goes through the vinyl and the post-heater dries it, and it's ready to laminate," Lopez says. "It goes through a three-tier heating system, and the post heater finalizes the drying, so you don't have to wait like you would have to for a solvent printer. The water just evaporates once it's done with the curing process."

Resin inks allow for greater versatility than solvent inks, which

require specialized materials that are coated specifically to act as a receptor for the solvent, so that printing on a canvas, for example, first requires a coating. With Epson's resin-based printers, an optimizer is used to act as a coating or glue with the ink placed on top.

"Then you can print to uncoated papers, canvasses, and textiles — literally whatever you can fit through the printer," Lopez says. "If you can lay it flat, you can print to it."



Eco-solvent ink is seeing improvements in reducing the outgassing before the lamination step — previously outgassing took 24 hours, Simmering says.

"A lot of it has to do with the type of carrier — the pigment of the

ink is bound by the carrier," Simmering says. "By playing with what the carrier is and the pigment size, we can require less of an outgassing period, or reducing it. Essentially, we can play with the carrier that carries the color and get that to outgas faster."

Improving the printing process

Another way to speed up the printing process is by using replaceable print heads that don't require a technician to install,

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Lopez says. The print heads also provide better quality with improved ink consistency and a wider range of colors, he says. On the solvent side of inks, ink bags are replacing cartridges to reduce the carbon footprint of plastic waste, and they contain more ink per unit—the result is the ink is less expensive, he says.

"Earlier, inks wouldn't adhere to different branded materials," Sohil says. "With the newer inks, they now are able to cure on more surfaces — you don't have to change inks. One ink can do all these, mesh, banners, vinyl, wall coverings. They're able to cure faster and work on different substrates."

Another improvement is replacing mercury vapor lamps with LED lights to cure the material, speeding up the time it takes and enabling work on heat-sensitive materials, Lopez says. The materials being printed can be viewed through a lightbox inside the printer through backlit controls, he says. White ink also is an option, available since 2019, even on entry-level printers, he says.

"What we're pushing at MUTOH is diversifying what's possible with the equipment you have and pairing it with complementary equipment," Simmering says. "Print quality in comparison to print speed has gotten a lot better." GP

HOW-TO/TUTORIAL

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Your canvas should now rest lifting the staples off the bed. Next, raise your printhead to get the correct head height. Once adjusted, direct the head across the canvas to ensure safe printing. Take note of the height on the control panel and select "Exit." Afterwards, place the canvas back on and slide your media to the starting position. Now adjust your job. Double click to open the job and select "Printer Settings." Select your desired resolution. For canvas, we recommend "Photo Quality" and set your head height to what you wrote down. When finished click "OK" and drag the job to your target printer.

Press "Start" on the control panel and let the printer take care of the rest. If you have multiple jobs, you can now remove the finished canvas and set your next canvas down on the support. As a final tip, to enhance your canvas border, try using canvas markers to shade the frame's outer edges. You've now created an amazing canvas print of that unforgettable moment that your family, friends, and clients will cherish for years to come.

Scan the QR code to watch our how-to video and see other cool videos.



Flatbed Projections are Far From Flat BY PAULA AVEN

What to know before making the leap to this expanding field



Paula Aven Gladych is a freelance writer based in Denver, Colorado. She can be reached at pgladych@gmail.com. The COVID-19 pandemic had a major impact on supply chains in the past couple of years, making the thought of investing in a wide-format UV flatbed printer that much more desirable. In the past, these more industrial printers were out of many small shops' price-range, but with labor costs and the price of certain substrates, like paper, rising dramatically, many are giving flatbeds a second look.

So, what does a commercial printer need to know before making the leap into flatbed printing?

The first thing they need to decide is what niche a flatbed printer would fill in their current operation. Do they need to handle smaller jobs more quickly or run their print operations with a smaller labor force? Do they need to be able to print on multiple substrates, including films, corrugated or three-dimensional objects such as mugs or water bottles? The answers to these questions will help determine what size machine is necessary.

Becky McConnell, marketing manager for Durst Image Technology US, says it is important for any shop considering such a large press purchase to research the many ways their current clients could benefit from a flatbed printer.

It is also important to have the right space for the machine. If a shop has no plans to move into a new building or make major investments in its current facility, it is imperative that the shop ensure the printer fits in the current location and that the proper conditions are met for facilitating printing with an inkjet flatbed printer, she says.



(Image courtesy of swissQPrint)

Another consideration is partnering with the right supplier. That means working with a company that doesn't just sell a flatbed printer, but works with the buyer to ensure they know how to use the machine correctly. Be sure to inquire about training programs as part of the printer purchase package.

Pro 30f

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Increased demand for flatbed

Jason Deluca, application specialist at swissQprint, says that the largest demand he sees for flatbed printers comes from "companies trying to get away from screen printing and moving into a situation where short run is viable in digital. It's mostly an ink and coating game at this point, but as new inks and coatings are being released, I see more and more companies being able to add digital into their portfolios."

McConnell added that there are growing opportunities in corrugated and packaging, currently, and if the "printer has performance capabilities to print those



Flatbed printers excel at producing graphic art, art reproductions, graphic overlays, and other specialty applications as well as overflow printing and projects where precision and finedetail are required. (Images courtesy EFI)



WIDE-FORMAT PRINTING



substrates, it is a great place for a print service provider to dedicate time to."

Another thing to consider when looking at purchasing a flatbed printer is the price. Most experts say that buying a machine of this type outright is the best option, but many smaller shops don't have the liquidity to do that, making leasing a better option. Costs can be reduced depending on the types of automation that are included.

If a shop has worked well with a specific company's printers in the past, it may be in their best interest to consider a flatbed model from the same manufacturer as what they are already using. That makes it easier when it comes to workflow.

"Automation in finishing is only getting more and more common, but with the right equipment and software solutions this is easy," says Michael Voight, application specialist with swissQprint. "Using the top RIPs, you can easily set up hot folders for specific jobs that not only send the file to the printer but also to the cutter."

A barcode can be printed on the substrate so that the operator of the cutter can scan it and the cutting software will bring up the correct cut file without having to search for it. "Nesting software also helps keep material waste down, saves time for prepress and the amount of time needed for the job," Voight says.

When choosing a flatbed printer, it is important to look for a manufacturer with





a good reputation and machines that are built to last, says Deluca.

"Most of our customers are looking for long-term solutions for their printing so for me investing in a machine that has a track record of consistent long-term durability seems like it would save you more money over the long haul by getting the right equipment upfront," he says.

Allegra and Image360 is a wide-format sign and print specialist in Lexington, Kentucky. The company upgraded its seven-year-old hybrid flatbed/roll-to-roll printer with an EFI Pro 24f flatbed LED printer from Electronics for Imaging in 2018.

Mark Stovall, COO and co-owner of the company, says that the "true flatbed design allows us to do more, especially more direct printing."

Stovall's business started as a Signs Now franchise in 1998 and converted to an AFB franchise of Image360 in 2014. From a return-on-investment standpoint, Stovall says that the Pro 24f printer "literally cut our monthly ink and substrate costs in half."

He added that there have been fewer machine operator and maintenance costs compared with other wide-format equipment he has used. The printer's throughput quickly handles small- and medium-sized orders as well as larger quantity jobs.

"We can do more with fewer people and haven't had to add more employees to get big orders of yard signs done," Stovall says.

The machine is also used to reproduce a variety of prints, including flat-panel signage and high-end acrylic prints. Because the LED imaging on the printer requires less heat, it uses less energy than traditional UV or latex printers, making it easier for Image360-Lexington to print on thinner and specialty substrates.

According to Electronics for Imaging, the EFI Pro 24f LED flatbed printer works well for producing graphic art, art reproductions, graphic overlays, and other specialty applications up to 2" thick as well as overflow printing and projects where precision and fine-detail, image quality and speed are critical to meeting customer demands.

Transition from printing to finishing

Erik Norman, president of swissQprint, says that for any print shop, their throughput is only as fast as their finishing capability and "with a continued increase in short run digital work, printers need to invest in finishing workflow that will keep up with the new demands. In short, it's a big deal. Any time a printer invests in new print equipment, there should be consideration to the impact this printer will have on the overall workflow."

With lead times getting shorter and shorter and specific jobs needing to take priority over others to meet deadlines, "companies need to increase their cutting capacity to keep up with the ever-growing list of faster printers coming out, more intricate designs and depending on what their current offerings are," says Voight.





Flatbed printers can greatly increase your production capability if you have the space and know how to make the most of its technology. (Image courtesy Mutoh)

Skipping the daily maintenance that takes five minutes will bring much larger problems with print quality down the road and will increase downtime.



"It's much faster to cut basic items than contour cuts around smaller images or with thicker substrates that require multiple cut passes."

McConnell adds that for entry- and mid-level production flatbed printers, digital finishing "partners well with output and efficiency of getting jobs out the door. As product development continues to advance, high-speed flatbeds and hybrids with automated handling are partnered with high-speed finishing equipment so that the production output doesn't cause bottlenecks."

Most shops won't experience a bottleneck between printing and finishing because they make sure they have enough finishing equipment to handle full scale production on their printers, Deluca says. "If you were funneling several presses into a single cutter, then that would certainly create a world of issues. If people find themselves in this type of a situation, they would be well served to calculate out their peak output on their print side and then use that to help define the amount of finishing equipment they would require under that circumstance and begin to build from there."

Common mistakes

Voight says that one common mistake small print shops make when first entering the flatbed printing market is not measuring the thickness of materials before putting them on the press.

"This causes misregistration of the print and ultimately print quality suffers," he says. swissQprint recommends customers use a micrometer to measure the thickness of materials. "With our printers we're able to adjust head distance to compensate for materials that might have an uneven surface or were damaged during handling stages that requires the print head carriage to be raised."

Voight also encourages new users to place scrap material around the four edges of a thick substrate to counteract problems with the UV light bouncing off the table or starting to cure the ink on the nozzle plate of the printheads.

"swissQprint also offers a stray light protection option that raises the drizzle station and allows the printer to keep all print heads in a print ready state while printing and while idle while at a higher head height," he adds.

Daily maintenance is another important step that many shops forget to do.

"It is extremely important to make sure the base plate of the printer is clean, the quartz glass beneath the mercury or LED lamp is free of debris or clouding and that the antistatic units are properly maintained," Voight says. "Skipping the daily maintenance that takes five minutes will bring much larger problems with print quality down the road and will increase downtime and the amount of time jobs take on the printer by having to increase pass count."

McConnell adds that it is important to consider how the addition of a flatbed printer will affect substrate inventory needs, finishing capacity and any additional shipping needs.

Another common mistake is "underestimating the application potential that you can offer your current clients or prospects," she says. "When you think about the true number of products that can be produced on a flatbed, a commitment to truly taking advantage of every aspect of production that printer offers can be a miss by many flatbed users. Helping a sales team understand how a flatbed printer works and all the different types of substrates that can be used will help your 'front line' aid in avoiding that." GP



Getting maximum production with flatbed printers: https://gpro.link/production

BUSINESS TIP

GPt

Digital Wallcoverings New and Profitable Opportunities

COURTESY OF CANON SOLUTIONS AMERICA

Some might shy away from a blank canvas and the enigma that emptiness creates. But for those with the creative capacity to think outside of conventional borders, all it takes is the right tools to produce a truly customized tapestry of impressions.

It's no different in the interior decor space where possibilities are plentiful and opportunity is endless. According to Smithers Pira, by 2024 the printed signage market will be worth an astounding \$54 billion. Dive in even further and you'll discover that the digital printed wallpaper sector is expected to rise from \$2.53 billion to \$7.74 billion by 2023. This marketplace is transitioning from classic analog wallpaper technologies to highly capable wide-format digital printing technology that excels at short and customized runs.

Before weighing out the options, though, there are certain factors that must be considered.

The modern marketplace counts on PSPs to deliver premium, luxurious-looking interior decor productions with dynamic color depth, distinctive embellishments, unconventional patterns, and abstract designs. Along with these features, the technology implemented must clearly meet the environmental needs of the commercial market in highly sensitive settings such as hospitals, schools, and other public places.

Yet, there's more to it when you dig beneath the surface. For instance, in the wallcovering space where multiple tiles are printed and installed side-by-side, strict panel-to-panel size and color







consistency, along with reliable and repeatable color production over time, is critical. Dimensional stability plays a crucial role as well in ensuring panel alignment and a smooth installation process, while ink durability — from abrasion and resistance to light fastness — helps maintain a high-quality print and reduces the need for lamination, additional costs, and job delays.

When producing interior décor, using ink and media that meets customer certification requirements is a must. These requirements include GREENGUARD GOLD, ASTM Type II, ISO Odor Testing, AgBB VOC, and even Prop 65.

Beyond meeting their requirements using a system that can add embellishments such as spot gloss can differentiate your services and lock in customers. Embellishments can take your creative endeavors a step further by generating a premium effect which create higher profits.

So, while you may have a firm grasp on your creative concept, access to highly capable technology can be the true facilitator in fulfilling your vision and putting the finishing touches on your original productions. GP

Shop Efficiency

Tips & tricks to improve efficiency



Charity Jackson is co-owner of Visual Horizons Custom Signs based in Modesto, California. She has been in business since 1995, and has worked in the sign industry for nearly 30 years. You can visit her website at www.vhsigns.com.

Efficiency in your sign or wrap shop is one of the most important ways to increase profits. Many ways to save time and perform tasks in a more streamlined manner can be found throughout your shop — in the workflow, the tools you use, and the way you interact with customers.

If you're a newer shop that is still establishing your business or you're going through a slow spell, inefficiency isn't always as evident. Still, unnecessary busyness can take away from marketing, cash flow management, and other ways you can build your business. If your shop is super busy, having an inefficient workflow and taking extra steps reduces your job turnover and cuts into your profits.

Walking through our shop, I noted a bunch of different things we do to speed up a task. Some of these are small steps, and some are bigger tools, but the point of each was that it made us more efficient in some way. These are just a few of the many things we do, but if even one sparks an idea for your shop, it's worth a mention.

After noting the different tasks, I grouped them into four areas of our business that they affect counter/customer interaction, workflow (how a job



moves through our shop), production, and installation. Mentally walk through each area of your shop and note ways a tool or process could make your shop more efficient.

Counter/customer interaction

We needed a way to track completed jobs once we called the customer. A simple custom stamp allows us to note the date, who called, and if we spoke to someone, left a message, or sent an email. (**Fig. 1**) After three attempts to reach a customer, we bill any balance to keep our cash flow on track. Other stamps, like our billed stamp, give us a line to note the date, and then we jot WWC (white was sent with the customer), emailed, or mailed. We also utilize a paid stamp and a deposited stamp in accounting for quick tracking.

We print three invoices — a white copy for the customer, a yellow copy for accounting, and a pink copy that we file with work orders and other paperwork. Unless we email a PDF of the white copy, we have to print three invoices for every job. Instead of stopping to collate the three sheets of paper each time, we have a dedicated laser printer at the front counter. In this printer, we have the white, yellow, and pink paper already collated, so we can send invoices to that printer from any computer in the shop without having to load the paper first. We have a second laser printer just for printing out proofs, emails, or other documents. This printer is also networked, and we can print to it from any computer in the shop. Each printer is near the front counter, so it's centrally located for everyone. (Fig. 2 & 3)

Near the front counter, we have some wall racks. (Fig. 4) Once a customer picks up their signs or vehicle, the processed yellow and pink invoices must go somewhere. One rack is labeled "Billed," and one is labeled "Paid." Above these are a couple of wall racks for packing sheets, supplier invoices, receipts, or other paperwork for accounting. We drop the invoices and paperwork in the correct rack

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	Proof Printer			
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	See more			
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More settings				

Having an inefficient workflow and taking extra steps reduces your job turnover and cuts into your profits.





and then move on to the next task. Our office manager then gathers the invoices and paperwork at the end of the day and files it accordingly.

2

This tip is all about making your time at the front counter more efficient. Handouts are a great way to avoid repeating the same info over and over while also ensuring the customer gets the information they need. (Fig. 5) We have a custom wraps maintenance door hangar we created for completed wraps that can be hung in the vehicle or given to the customer. We also have vehicle appointment cards printed with our logo, a line to note the installation date, and instructions for washing the vehicle before the appointment. How to care for magnets was something we noticed we did a lot, so we printed out a sheet to hand out. Since we don't do apparel, electrical signs, or sign repair, we created referral cards that list companies we recommend for these services.





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Workflow

I've written multiple articles on this topic since the way jobs move through your shop is so incredibly important to your shop's efficiency. In our shop, we use a folder system that is coordinated with an online task manager called Toodledo. (Fig. 6) There's a central rack that holds numbered legal-sized file folders. We enter the number on the folder and the customer's name into Toodledo. As the job moves through the shop, we update custom drop-down tabs so anyone can access the program to see where a job is. The tabs also track which printer the job will be printed on, what kind of material we're using, and who is in charge of the job. This allows jobs to be grouped by material and printer, and any questions can be directed to the right person.

Once a job has been printed or cut, and the graphics are in production for processing, the file folder gets moved to the production area and placed in a wall rack. Its location is also updated in Toodledo. We have a dry-erase board in production for listing the job folder number, the customer name, and a brief job description or other notes. While Toodledo is excellent for tracking the progress of a job through the shop, it's helpful to have projects in the actual production stage on a wall board since we're not accessing the computer as often in production. On the board, we note substrate sizes (to group cutting), job priority, notation for freshly printed jobs (we put a * and then erase it the next day), or to highlight any specialty laminates or materials. (Fig. 7)

The scheduling of installs is where it's easy to drop the ball. We also have five boxes for the current week's installs on the dry-erase board in production. At a glance, we know which vehicles are coming in each day with the job folder number noted. All folders for jobs to be installed also go in a separate rack in the production area, keeping the jobs in process separate from the jobs to be installed. We created a separate dry-erase board to track jobs ready to be installed, but the date scheduled is beyond the current week, or we're waiting for the customer to get back to us. This keeps the job folders visible, so we notice something languishing in the production area while getting the completed job off the production board. We also schedule all installs on Google Calendar, so everyone has an up-to-date schedule accessible from any computer.

Production

While workflow is how a job moves through the shop, production is how we produce the job. We've been progressively busier over the last few years, and we've found that keeping a bit of inventory has helped us be more efficient. With shortages across the industry, it's been crucial to plan ahead. We keep a healthy stock of printer ink, application tape, rolls of vinyl and laminate, sheet engraving material, and other products we go through. (Fig. 8 & 9)

While it's important to keep inventory on hand, it's also equally important to narrow down what materials you use. We've created an arsenal of wrap vinyl, calendared vinyl, reflective vinyls, perforated films, printable metallic vinyl, and the corresponding laminates. It reduces how much inventory we have to stock while also taking the guesswork out of knowing what media was used for a previous job. (**Fig. 10**)

We do little things in production to reduce mistakes or speed up a process. Our premium 3M wrap vinyl and the 3M calendared vinyl we use have the same backing paper, creating confusion about what media is loaded. We use engraved, magnetic signs on the back of the printer when the media is loaded to clarify what is loaded and avoid having a print sent on the wrong media.

Once printed graphics come off the machine for drying, we have the same problem with keeping track of the vinyl. A quick note on the back of the print tells production which corresponding laminate to use. It's also an easy way to group prints for laminating.

We've also created custom jigs for our laser engraver to hold multiple products so we can laser engrave a batch of mugs simultaneously versus doing them one at a







time. In our engraving area, we've also created organized shelves to stack sheets on end so we can quickly see what we have in stock. Clear bins, especially in the engraving area, are a great way to stay organized while checking inventory. (**Fig. 11**)











We have a large substrate rack storing different sheets vertically and horizontally. This rack is large and crowded with leftover cuts and substrates we don't use often. (Fig. 12)

We've replaced almost all our PVC, wood, and aluminum substrates with aluminum composite sheets, which are two thin layers of painted aluminum with a polyethylene core. Aluminum composite sheets are known by a number of different names like Dibond, Bebond, Max Metal, and many others.

We purchased a Signworld brand rolling substrate rack strictly for these sheets. It was \$549 on Amazon. When the sheets are delivered, we can roll the cart to the back door, unload directly onto the rack, and then roll it closer to the panel saw for storage.

Installation

Using the right tool during installation is an easy way to create efficiency. Squeegees, knives, blade snapping tools, knifeless tape, storage carts, and install stools all aid in the efficiency of your installation, but sometimes specialty tools are worth the investment too. We use an edge trimming tool from Yellow Tools for our windows, making trimming graphics along the edge of windows much quicker and neater.

We also invested in a metal platform from Werner that fits across two ladders. It creates a 9' wide walking platform that can be placed at different heights for more efficient installations. (**Fig. 13**)

Another handy tool that can speed installation is a laser level. (Fig. 14) This is an excellent tool for installing signs and graphics across a large space, especially when there isn't a uniform object or wall to measure to. On this project for Crystal Creamery you can see the blue lines from the laser; we used these lines to align the graphic panels. (Fig. 13)

These packout boxes are a great way to keep your tools organized and to load them up for installations outside the shop. (**Fig. 15**) The individual boxes can be organized by different types of installations, so you need to only grab the boxes needed. They also attach to a rolling cart for easy transport. **GP**



Installing Window Media:

Wet or Dry?

COURTESY OF MACTAC











G raphic installers who are in the business of applying window graphics have two key objectives in mind for every job they do: 1) minimize the time and effort it takes to get the job done, and 2) leave an image behind that looks amazing for their client. Material manufacturers work hard to help installers meet these objectives by supporting print service providers (PSPs) with innovative products that are easy to install and designed to produce visually stunning, eye-catching graphics. Some products utilize dry application methods and others require a wet application. The recommended installation method is typically dictated by the media used.

Dry application

Print media that features an air egress liner or a specialty dot patterned adhesive, should only be applied using dry application methods. Embossed patterns in these products' adhesives allow for easy removal of any trapped air bubbles by pushing the air out through the channels formed in the adhesive. It's an easy application process as it typically doesn't require any specialized application tools — and since no liquid is used, no liquid clean-up is needed, making the process fast. However, applying air channel products using wet application methods is not recommended. The same channels that allow air to easily escape from the graphic would also trap application fluid and create issues with graphic appearance as well as potential adhesive failure.

Wet application

Some window media calls for wet application. When using intricate patterns of cut vinyl or optically clear films, installers should opt for a wet application process. This method will allow the installer to float the graphic onto the surface. Liquid and trapped air can be removed by using a hard squeegee. An added benefit to using wet application methods is that 100% of the adhesive contacts the glass surface. This increases the durability and useful life of the finished graphic. GP

Investing in Wide-Format Sublimation

Sublimation is on the rise due to the explosion of compatible fabrics and products



Aaron Montgomery is certified by New York Times bestselling author Jack Canfield as a Success Principles Trainer and is the co-founder of OurSuccessGroup. com. Aaron has over 25 years of experience with personalized products and small business development and is the co-creator of the "5 Keys of Business Success." You can also find Aaron co-hosting the decorator's industry podcast 2 Regular Guys Podcast (2RegularGuys.com). Also, check him out on his podcast channel called Small Business Saturdays (SmallBusinessSaturdaysPodcast.com). As a business coach working with growing and start-up businesses, I have worked with many Our Success Group members who have experienced the constant battle between what they want in their print shop and what they can actually afford. Many of them know that upgrading to wide-format equipment could benefit their business, but they are worried about the cost and other factors. In this article, I would like to step away from the powerful mindset concepts and discuss factors to consider when looking to invest in wide-format sublimation equipment. Bonus, these same concepts are applicable to other techniques as well, like UV, DTF, and more.





(Image courtesy Durst)

Sublimation printing can be a great solution for short custom runs, photorealistic images, and a soft hand. Plus, the explosion of polyester-based fabrics and sublimatable products is making sublimation the preferred option for more and more applications.

Along with this increase in popularity has been a growing interest from within the decorated apparel industry for wide-format machines. Typically defined as units from 42" and above. But garment decorators are finding that the rising demand for all-over printing, as well as production efficiencies, are making wide format a profitable investment. And of course, it also opens the door for T-shirt shops to expand into signage and graphic markets.

Buyers like the feel of sublimation, and with wide format, you can print a roll of paper and apply it onto a roll of fabric to be cut and sewn. Wide-format printers allow not only for larger images, but also for more economical printing of smaller items, as well as an expanded range of substrates. In addition to things like blankets, beach towels, and scarves, they make it possible to print flags, fabric or metal photo panels, signage, and decorative pieces.

Wide format also can be used to boost production speed and decrease cost through batch printing. The dwell time is the same for printing 100 aluminum ornaments as for one, and you can print as many ornaments at once as you can fit under the heat press. Some substrates might require a little more time, but it is still substantially less than pressing one at a time.

In addition to supporting larger runs and faster production, wide-format

sublimation printers can offer variable data capabilities, making it possible to add personalization to products on a production level.

If you are looking to invest in wide-format sublimation equipment, there are several key factors to consider. Not just the nuts and bolts of the equipment, but the investment considerations.

1.) Print size: Consider the size of the items you plan to print and make sure the equipment you select can accommodate those sizes. All overshirts, for example, require a minimum of 44" wide printing technology, but larger sizes might even need bigger. Also, consider the print speed versus what you can produce. Even ganging up (or grouping) smaller items on a roll is a great solution for speed, but remember the other steps in the process. You have to cut the transfer apart, prepare, and then press, so you might end up with a lot of prints that are waiting to be produced. What is the sweet spot for your business?

You'll also possibly need a wide-format heat press. The number of presses in the range between $16" \times 20"$ and a 44" width is limited, but it is likely to grow concomitantly with the interest in wide-format printing. At the 44" and above size you are looking at a large piece of iron and the price tag that comes with that large heat press can be shocking to companies that are coming from small format. Because of the size of a wide-format heat press, it's preferable to get one that's air operated.

Plus, don't forget to take size into account relative to getting the units through the door, as well as with respect to floor space. It's also important to be aware of the electrical requirements of



- In various materials for different performance characteristics
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Posts

Customer sends in 72 dpi full color art for DTG or sim process. Requests for better art have been responded to with the same art. Do you:



How would you respond in this situation?

Wide-Format Considerations

Print size: Consider the size of the items you plan to print and make sure the equipment you select can accommodate those sizes.

Durability: Look for equipment that is built to last and can handle heavy usage.

Ease of use: Consider how userfriendly the equipment is and understand that not all wide-format systems are plug and play.



wide-format equipment and the type of outlets you'll need.

2. Durability: Look for equipment that is built to last and can handle heavy usage. When considering wide-format equipment for your business, it is good to remember that these printers like to be used and don't like to sit, as well as will most likely be running heavily in peak season. Are the printheads under warranty, and if so, for how long? Are the inks certified in that printer? You do not want to make this significant investment in equipment, run into an issue, and get caught in the middle of "Who's responsible for the repair between the ink manufacturer and the printer manufacturer."

3. Ease of use: Consider how userfriendly the equipment is and understand that not all wide-format systems are plug and play. There could be a need to do color profiling, learning a RIP software, and even the initial setup can be complicated due to the bulk ink system. This means you will need to check the availability of customer support, warranty, and training when purchasing the equipment.

I also mentioned the RIP software, so you must ensure that the equipment is compatible with the software you are currently using or planning to use for your design and production. Stepping into wide format should also include looking at your overall production efficiencies. As I said earlier, it is nice to have pranksters ready to press, but you will never gain the return on investment needed if you can't get the finished product out the door quicker. Sublimation ink is the "magic" of the process, and it is also the most expensive kind of small-format desktop unit that comes with a warranty. Cartridges for desktop printers are significantly more expensive than for wide-format units, while many wide-format printers have a bulk ink system which reduces the cost of the ink.

You have to be forward-thinking and weigh the initial capital investment, including equipment, materials, setup and training, operating costs, and production needs against your company's goals.

Beyond costs and ROI, there are other factors to consider when making the move to wide format. For one thing, you need to look at the footprint of the equipment. These printers are fairly compact, but they still require about a $6' \times 6'$ space. And you'll have to allow at least a $10' \times 10'$ area for the press.

Then there are environmental considerations. These are inkjet printers, and they work best and require the least maintenance if they are in a controlled environment with optimal temperature (between 60-80 F) and humidity (40-60%). When shopping, be sure to discuss things like this, as well as equipment features, with the distributor or manufacturer.

Wide format isn't for everyone. But as its capabilities become better understood and decorators become more aware of the potential value and return they offer, it is becoming a more accessible and viable option for a greater range of apparel-decorating operations. GP

BUSINESS TIP

WIDE-FORMAT PRINTING



How to Choose the Property I and the second second





- 1. Choose a tool that helps improve application speed.
- **2.** Choose a tool that allows your materials to be applied easily, accurately, safely, and comfortably.
- 3. Choose a tool that saves you time and money.
- **4.** Choose a tool that protects your materials in the process of installation.
- 5. Choose a tool that inexpensively adds value to your products.
- 6. Choose a tool that increases customer satisfaction.
- 7. Choose a tool that gives the final product a clean, consistent finish.

A single-curve profile with softip edge B. Econo-line, low indent-style profile C. Ribbed ergonomic profile D. Felt-wrapped Standard felt E. Felt-wrapped Heavyweight felt B. Big Blade Removal Tool profile C. The Chizzler profile

GP



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Classes are offered the day before the show starts, and throughout the show, in all-day and 90-minute sessions.

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Check off the classes you'd like to attend or plan to take to help you prepare!

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8-9:30 a.m.

- **Epilog Laser** From Theory to Application -
- a Practical Guide to Laser Engraving STARTMERE
- **JDS Industries** CorelDraw for Sublimation **START.MERE**
- **Transfer Express** Easiest Way to Print Apparel **STARTMERE**

11 a.m. — 12:30 p.m.

- SAGE Adding Promo to Your Business
- **GSG** Embroidery 101 **START HERE**

1:30-3 p.m.

- **Trotec Laser Inc** How to Start and Grow
- a Laser Business STARTMERE
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MAKING THE MOST OF

BY PAULA AVEN GLADYCH

IPRO



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<mark>5IGN</mark>PRO SERIES

PT-508

CNC routers can be used to create unique products such as shadow boxes, 3D statues, instrument panels, and more. (Image courtesy CAMaster) The material on the machine dictates what tool is used to cut it. (Image courtesy Antares)

CNC forever, but these days sign and digital graphics shops, and even other kinds of graphics shops, are getting more creative in how they use them. From three-dimensional signage to channel letters and point-of-purchase displays, companies are finding that the number of specialty items they can create with this versatile machine is only limited by their imagination.

There has been a merging of the print service provider (PSP) and the industrial sign shop over the past few years, meaning that sign shops are now offering digital printing and digital print shops are expanding into making more three-dimensional signage. Shops need to determine what specialty items they want to produce before deciding whether they need to purchase a full-size industrial CNC router or a smaller CNC digital finishing system.

Basic features

Both CNC routers and CNC digital finishing systems have "knife cutting capabilities and routing capabilities," says Russell From three-dimensional signage and point-of-purchase displays to custom items for the home, companies are finding that the number of specialty items they can create with a CNC machine is only limited by their imagination. (Image courtesy Multicam)

Boudria, Multicam. Shops wanting to get into this side of the business should look at the types of substrates they want to cut before making their decision.

If the shop wants to cut sheet material or dense, hard, or raw materials, they will want to purchase a CNC router machine. If the bulk of the shop's intended applications involve knife cutting materials, especially roll-to-roll, textiles, vinyl, and banner material, they should purchase a digital finishing machine, Boudria advises.

Chuck Donaldson, Antares Inc., agrees, saying that it is "the materials driving the industry more than the equipment." Antares manufactures cutting tools that are used for engraving and sign and mold making on both CNC machines and engravers. The biggest difference between engraving tools and tools for a CNC is their length.

"CNCs have better spindles than engraving machines, a tighter hold, and they turn faster," says Donaldson. "CNCs have become higher in precision, in speed, and volume and output than engraving machines — that is why people are spending three times more for a CNC than an engraver."

The material on the machine or what the customer wants the end product to look like dictate what tool is used. "If a customer wants bigger products, larger format, or multiple copies a CNC is certainly going to make life easier," Donaldson says.



(Image courtesy Multicam)



CNC routers have been around forever, but these days graphics shops are getting more creative in how they use them. (Image courtesy AXYZ International)

A business must balance what it wants to use a CNC for versus the space available in their shop. Another consideration is that CNCs use a higher voltage than smaller engravers or digital finishing systems.

Digital finishing systems versus CNC routers

Digital finishing systems can produce point-of-purchase displays and outdoor signage, but there has been "tremendous growth in interior design with wallpaper, pillows, and upholstery," says Mark Packman, also of Multicam. ADA signage, clothing, and textiles are also in huge demand, so it's important that shops that want to get into these markets invest in the right cutting system for their product line.

"For digital finishing, styrene, foam core, thin paper products, corrugate for packaging, rubber, or foam insulation board — if you are doing all that — the majority of your business should be digital finishing," says Packman. "The speed of knife cutting is faster on a digital finishing system." To cut through wood, non-ferrous metals, thicker aluminum, and composite materials, shops should look at a CNC with a larger spindle on it, he adds.

"The beauty of the grand-format and CNC marketplace has to do with invention — daily invention of new substrates," continues Packman. "That allows you to be much more creative with what you can manufacture. There is daily new product development for our industry. It is fantastic."

Technological advances in the grand-format printing industry have put some

WHAT TO KNOW ABOUT

BY NATHAN STROMBERG

We got the chance to talk to Buddy Warner, a member of the sales team at ShopBot Tools, Inc., about the capabilities, industry updates, and general things to know about CNC routing in 2023.

What are the most reliable substrates for outdoor dimensional signage that won't break the bank?

For the substrate material you mount to, it could be vinyl posts for smaller signs, but is often concrete or brick columns or structures. For the signs themselves, one of the less expensive materials for outdoor signs is Extira (Exterior Grade MDF). This material is very dense and heavy and must be painted with the proper primer and paints. Sign foam is particularly good for thicker dimensional signs (3D signage with more depth) but is more expensive. I personally love working with Sintra (Expanded PVC foam board) as it is less expensive than HDU (sign foam). It may not be practical for every application, but if painted and mounted properly, it's a great material. Color Core (two-color HDPE) is also a great material for park signs or applications where two colors are all you need.

When it comes to router bit longevity, what popular substrates put the most stress on router bits?

Denser or more abrasive materials like Alumacore or Extira would create more bit ware than Sintra, HDU, or HDPE.

If a shop is looking into purchasing a new router in 2023, what features are a must-haves?



Customers today expect to be able to go to one shop to get all of their graphic needs fulfilled. CNC routers and digital finishing systems help meet that demand. (Image courtesy Vision Engraving & Routing Systems)

That's a hard question, because it depends on the type of signs or letters the shop wants to produce. If lots of bit profiles will be used, then an automatic tool changer is a must, but not all sign shops really need an ATC, especially if they're stopping to mask or paint between bit changes. If channel letters will be cut, the shop will need a way to hold those letters during machining. If cut-toprint is involved, such as cutting-to-dye-sublimation, the shop will want manual or optical registration. For dimensional signs, a good selection of bits such as various degree V-bits, straight bits, soft spiral low helix bits, and ball nose bits will be invaluable.

What are the most important factors someone should consider when looking for an accompanying dust-collection system for their router?

That depends on the material being cut. If it's very dusty (MDF) or more toxic dust, they should get a collector with a lower micron rating or even a HEPA filter. Two-stage or cyclone collectors can help separate larger chips from finer dust. Be careful about mixing wood or plastic dust with metal shavings. This could create a fire hazard. Make sure the dust duct work or hose is grounded from the machine (the tool itself) to the dust collector. I've seen folks use PVC pipe, which can create a huge static charge if not properly grounded. It's recommended to run a bare copper wire inside the pipe and/or wrap the outside from tool to collector.

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COOL CNC PROJECTS

CODY SMITH, CAMASTER

One of the most unusual items a customer made with one of CAMaster's CNC routers was a life-size chess set, which is on display in downtown Columbia, South Carolina. Each chess piece is six feet tall and two feet thick. Shadow boxes are another unique thing, which are perfect for active-duty military or military members who are retiring but want to display their medals or branch insignia. They can make traditional boxes or get creative. One of CAMaster's clients made a shadow box in the shape of the Star Wars

One of CAMaster's clients made a shadow box in the shape of the Star Wars characters Mandalorian and Grogu.

CNC routers are also in big demand in the marine and mobile fabrication industry. Car audio shops use their routers to make custom subwoofer boxes, instrument panels, and speaker boxes. Custom boat shops use their CNCs to make consoles, instrument panels, and custom foam flooring for boat decks that are soft and waterproof.

Q&A with Kristina Vanderwater

To get a picture of how some shops use their CNC machines in unique ways, we sat down with Kristina Vanderwater of Bouncing Off The Walls in Alberta, Canada.

What does your shop do/what kinds of items and markets do you serve?

At Bouncing Off The Walls, we create meaningful, sentimental artwork and signs for nurseries, home decor, and businesses. We also supply sign backers and unpainted lettering to others' businesses and DIY crafters.

What do you use your CNC machine for?

We use the CNC machine to cut out all of the names and lettering for our nursery signs as well as the shapes/backers for all of my resin artwork and signs. We also





use it for engraving logos and designs into plaques or signs that require detail work.

How long have you been in business and how long have you owned your CNC machine?

We have been in business for 16 years and have owned our ShopBot CNC for 12 years.

What's your favorite part about creating projects with your CNC?

I love the transition of taking an idea from initial concept to a finished piece that someone loves, as well as the ability to create unique products. pressure on shops' ability to keep up when it comes to cutting. Instead of the print side of the shop being the bottleneck, now it is the cutting side. That's why Multicam believes it's seeing more customers purchase multiple cutting systems. Many are buying CNC routers and digital finishing systems or more than one of each type of machine to keep up with the speed of the printers.

"There are so many markets out there, it is amazing to see what our customers bring to us to help them with," says Boudria. "We've seen everything from making train batteries to ship building, (and from) cabinet shops to channel letters. It is amazing the products we're involved with and get to help make."

CAMaster's industrial CNC router can also act as a digital finisher, says Cody Smith of CAMaster. "We provide versatility for the customer. They can do aluminum dimensional letters but then on the same machine could direct print vinyl and cut out decals with the oscillating knife."

Cesare Magnani, Biesse, adds that most CNC routers can cut a variety of different materials from typical plastics like acrylic, polypropylene, and polyethylene to more dense materials like foam, aluminum, non-ferrous metals like bronze, wood, and composites. That means that shops can use their routers to cut out small components, machinery parts, covers or tops, and structural elements.

CNC machines have drag knives and oscillating knives as well as routing bits for carving. "We can not only work with a 3-axis machine carving vertically, but we have 4- and 5-axis solutions we can take to a different level of carving. They not only work vertically but inclined also. It has been a revolution. The machines today are not only more powerful but also more affordable than they used to be. They have more capabilities and many different sizes," Magnani says.

In the past, routers came with a 4' \times 4' table, then 4' \times 8', and then 5' \times 12'. Now there are huge machines — up to 7' \times 40' — depending on the application.

Specialty items made with a CNC

In looking at projects that are a bit outside the box, many CNC machines can produce specialty items. For example, Biesse's 5-axis machines can make intricate components for aerospace and automotive applications, says Magnani. Many CNC machines come with a vision system that can detect reference points on a print so it knows exactly where to cut. These systems work with just about any design software. "When we talk about quality of cut, quality of frame is important, tools are important, also the way the routing is executed is important," he adds.

For cutting plastic materials and even wood, it is important that the bits don't get so hot that the material melts or burns. Routers can also be used to score aluminum or plastic so that "we can bend it with precision," Magnani says.

The 5-axis machine makes it possible to cut out something that is truly three-dimensional. People have made 3D statues using a CNC router, depending on the size. Larger statues can be carved in pieces and then assembled.

The COVID-19 pandemic opened up other possibilities for sign shops. Demand for personal protective equipment (PPE) was high in 2020 with hospitals, schools, shops, and retailers looking for ways to manufacture face shields, sneeze guards, and plastic barriers to help keep students, front line workers, and customers safe, says Smith. Many sign shops stepped in to fill that void, producing PPE from the substrates they had available in their inventory.

Routers also can be used to make custom wood signs and dimensional sign letters; to carve HDU sign foam into the 3D marquis signs that are popular in shopping complexes; or to brand products instead of laser engraving them, Smith continues.

"Here's the magic secret: it is all in the finishing. Most good-quality CNC routers will create a good product, high quality, that looks good," Smith says. But it is really how a shop makes the end product look good that matters. That means having great additional skills, like painting and sandcarving. "That's what separates a good sign shop from an average sign shop. Anyone can print a decal and cut it out," he adds.

Donaldson notes that one of his company's customers uses their CNC to cut out wooden snowboard cores. Another shop is cutting acrylic for backlit signage. Customers today expect to be able to go to one shop to get all of their sign and digital graphic needs fulfilled. Having a digital finishing system not only helps them build a revenue stream from cutting but also increases their revenue potential in the digital printing market, says Packman. GP

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SIGNAGE & PRINTING

Verifying Substrate Colors in the Field

How painting by numbers can help with consistency



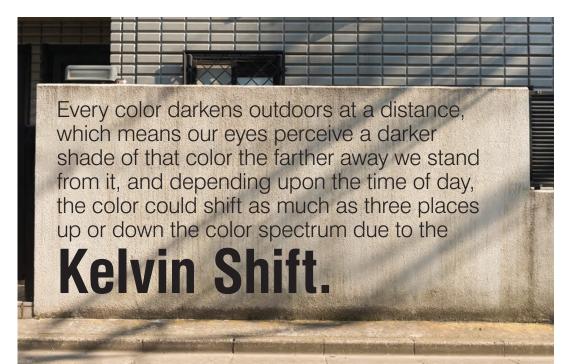
Matt Charboneau started his career in the sign industry in 1985 as Charboneau Signs, later changing it to Storm Mountain Signs. In 2017, he published the Pre-Sale Sign Survey Field Guide, and he also provides sign design training at his site: LearnSignDesign. com. Contact him at matt@ stormmountainsigns.com; LearnSignDesign.com or 970-481-4151.

t's late, you're late, and your Sherwin Williams Paint Code book and your Pantone book are both sitting on your desk, next to the folder you forgot to grab with all the code details, but you don't have time to go back for it. As you pull into the parking lot to meet the owner of the new liquor store at the strip mall, the overcast skies seem to be robbing what little available light there was left in the afternoon sky, and you panic just a little because one of the key points that you needed to establish was the existing color of the stucco wall. Without your SW paint book, you're stuck without any way to match the color by way of a paint code or color-referenced number.

Oh well, you decide to quickly snap a few shots of the stucco wall in hopes of figuring out the color later, back at your designer's office. It's overcast, it's late in the afternoon, the horizon is a bright orange and gray, and you are taking photos of the stucco wall in hopes of matching the wall color for the raceway that the sign will need.

I think this is where the big lever is pulled and the floor drops out from under you, and you fall into a tank of hungry sharks with laser beam guns mounted on their heads.

The next day you present your wonderful photo of the stucco wall to your designer. "I can't use this," your designer mumbles ... "I can't match this photo." This puzzles you, as it wasn't usually a problem in the past. Your designer then shows you an example of how the sun's light is affected by the atmosphere, which bends the light and turns it orange which is where our sunset and sunrise colors come from. That shift in the sun's color is





called the "Kelvin Shift," which occurs every single day and is visible on days when the clouds don't defuse the effect.

Here is the trick... and it's foolproof in winning the color-of-the-wall or substrate-matching game (when the paint is faded or no paint code or stucco color mix number is available — which is most of the time).

The beautiful thing about using a color book with a color number or paint code number is that no matter what time of day it is, the color that matches the stucco in the photo at that time of day is the same color number that will match that color at any other time of the day. The reason is that when the color book sample color and the wall or substrate color are both photographed together, side by side, as a match or close match, then no matter what, the paint color number that matches that wall at the time of the photo is the color number, no matter how different it looks in the photo.

It's not the color in the photo; it's the real color of the paint number you are matching to.

Having just the photo, without the paint code number and sample color, only gives you the "visual color" of the wall at that time of day, which has nothing to do with the color of the stucco, and there would be



Here we see the same building, with the same relative lighting during the day, yet the angle of the sun creates a different color for the sign band.

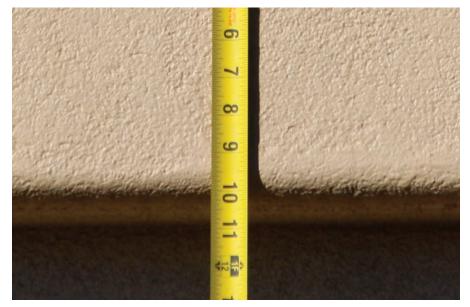
no way to duplicate the evening sky color. It's the color of the light that is reflecting off of the stucco color that is skewed by the Kelvin Shift.

Take a look at the photo arrangement I have shown here, which is also available via my Pre-Sale Sign Survey Guide and Training Course. In this example, the sun is making the color of the wall look much darker than it is in real life. Compare it to the other photo of that same sign band taken on a sunny day. The color of the wall is completely different in such a way that creating an illustration of the sign on the wall is nearly impossible and completely useless.

Here, we see the match of the stucco wall color in a photo that was taken in the

SIGNAGE & PRINTING





Imagine if you came back to the shop with these photos... and you had to paint a raceway the same color as the background of the sign band. Which photo or hue would you go with?

shade of the building on a sunny day. Why is this image any more accurate than any other photo? The reason is simple - it's the fact that the wall color was matched to the color book via how it looks at the wall site, as viewed by the survey person, with the color book laid against the wall to determine which color range it fits best.

And yes, there are limitations to this. You cannot expect to get the same color number match if you do this at night, in the dark. Nor will it work if you use a flashlight. This color match works during daylight hours and is even more accurate when the Kelvin Shift is in the 6,500 range, which is closer to the noon hour.

Paint colors vs. Pantone vs. anything with a color code

Sherwin Williams seems to be the anchor brand when it comes to the colors that architects and interior/exterior designers use. Pantone colors are listed with a set of build numbers (commonly referred to as the PMS number) which is used by print houses to verify color builds of ink on paper or vinyl. Pantone reflects a color designed to either float on the top of the surface (called "coated" in the book) or to soak into the paper or surface (called "uncoated"). The coated numbers appear shiny, whereas the uncoated numbers have a flat or matte finish.

The differences between coated and uncoated colors have caused trillions and trillions of mistakes and much confusion when a Pantone "uncoated" color book was used to document a glossy paint color. This has always created color match issues that most graphic artists are not familiar with.

Case in point: I was working with a graphic designer who was the creative director for a large rebrand of a company's signage. The creative director was nearly obsessed with the color we specified to paint the monument structure. "It must match the corporate branding guide and that blue must be the right blue or it has to be repainted because it must match

Charbo Notes

'True Colors" by Cyndi Lauper

I need the true color code from you,

I see your paint sample book and that's why I

Your true color, your true wall-color number,

So go do the survey, and let me know,

Sung to the tune of:

trust you,

dude!



No matter what you try to do, no matter how careful you are, you will never be able to record the real color of a wall via a photo alone. You must have boots on the ground with a color book that has a color for comparison that is very close to the wall color.

exactly." Well, we've all run across this type of life-or-death job, and in this case, I picked up the phone and asked the CD if he had planned for the Kelvin Shift for that base color.

Naturally, the CD went silent ... like I just asked him to name every Pantone color in order of hue. The crickets on the phone were deafening. I then kindly explained that painting the base in the color and sheen he had specified was all that we could do. I explained that "Every color darkens outdoors at a distance, which means our eyes perceive a darker shade of that color the farther away we stand from it, and depending upon the time of day, the color could shift as much as three places up or down the color spectrum due to the Kelvin Shift." The CD thanked me hesitantly, as he was bewildered. I had enlightened him on something he had never considered — and as he hung up the phone, I knew he was wondering why the Kelvin factor had never been discussed nor mentioned while he was in design school ... ever.

Just remember that every color is subject to its surrounding colors (that's a topic for another day), and that every paint color that is viewed outdoors versus indoors will be looked at with a much different eye and hue perception. Most viewers will take these factors into consideration and will provide a bit of wiggle room when it comes to color and sheen matching in an outside environment.

It's much different when a color doesn't match in a brochure or a business card. Print materials or screenshots can be compared side-by-side anywhere. However, seeing how a sign's color looks by viewing



Just as I have shown here, by placing a paint color book directly against the wall and capturing a photo of that, you can reliably count on the color number that matches the wall color in that photo. Both the color book and the wall are subject to the same lighting, therefore the number that matches the closest in the shade will also match in the bright sunlight, at any time of the day.

it outside and realizing it is changing hue by the minute affects the way we should communicate color-matching limitations to our customers.

Maintain your accuracy at all times, but explain to those who question it that even when it's correct, the big ball of light in the sky will determine how that color appears to the viewer's eye, so making that color appear accurate throughout the entire Kelvin range is basically impossible. **GP**



Charging for your design time A podcast with Matt Charboneau https://gpro.link/designcharge

HOW TO GET THE MOST OUT OF YOUR



BY RUTH L. DOBBINS

Don't judge by cost alone, because re-use is also important



Your decision of which abrasive to use depends on the cost effectiveness of each one for the job, your blasting equipment, technique, and use. (Images courtesy Rayzist)



With over 40 years in the glass business, Ruth Dobbins offers experience in all glass-etching techniques as well as in fused and cast glass. Ruth holds a master's degree in Art and has been a partner in an art glass wholesale

supply and studio company in Europe, which also placed great emphasis on a training, before joining forces with Norm. You can reach Ruth by email at ruth@ etchmaster.com, or by phone at 505-473-9203. © Ruth L Dobbins 2023, All Rights Reserved.

know that most of the time we talk about the more substantial materials in our line of business and often have a tendency to ignore the most crucial of our needed materials: abrasive. Yes, of course, you do need the equipment to work with and in. But let's face it, without the abrasive, all the other materials and preparations mean nothing.



Manufacturer of Gantry & Galvo Lasers, CNC Rotary Machines, Cutters, Accessories, Laserable & CNC Rotary Engraving Sheet Materials for the most efficient production Engraving & Traceability.



Types of abrasive

This is a relatively short list for the work most of us do on either glass, stone, or wood. It basically boils down to: sand, Aluminum Oxide, and Silicon Carbide. I have covered the types of abrasives in quite a few previous articles, so I won't go into a lot of detail here. The bottom line is that sand is the least desirable of them all because of its softness and coarseness. In general, it produces a very rough texture, can be used only once for a blasting process, and needs to be replaced frequently.

Aluminum Oxide is a harder abrasive than sand but also has a tendency to round off its particles during re-use and has to be replaced with fresh material in certain time intervals, depending on the frequency of blasting. It also creates quite a bit of dust and static electricity during the blasting process.

The top-of-the-line abrasive is Silicon Carbide for several reasons. It has a crystalline structure and always breaks down into smaller pieces that stay sharp during the blasting process. This property allows for the re-use of the abrasive many times over compared with Aluminum Oxide. In other words, the particles get finer but not duller through blasting.

If you compare Aluminum Oxide and Silicon Carbide simply by cost, then you are comparing apples to oranges. You can recycle Silicon Carbide so many more times than Aluminum Oxide that the per-pound cost does not do it justice; it is the cost per use cycle that gives the real comparison. We have used both abrasives many times, and in the end established that Silicon Carbide may cost just around 40 cents more per use hour than Aluminum Oxide because of the many re-uses.



AWARDS & CUSTOMIZATION



The size of grit you use has a lot to do with the way your finished etchings look. For a finer finish on trophies and glassware, and use of photoresist, 180 to 220 is used. (Image courtesy IKONICS Imaging)



Again, you may want to look up one of my earlier articles for those specifics. All of this assumes that you are recapturing the spent abrasive within your blasting setup.

How to get the most out of your abrasive:

Dryness

The biggest challenge for all of us is to keep our abrasive dry and uncontaminated. The keeping-it-dry issue is totally dependent on the climate zone you happen to live in. For us in New Mexico, with an average humidity of about 20%, moisture is not our biggest concern. However, if you live in an area where the humidity level is over 50%, then you need to concern yourself with a way of keeping your abrasive dry enough so that it won't clog up your blaster. Any clog in your system leads to down time, when you must take equipment apart and dry out the abrasive, which will increase your labor cost. You need to make sure to use highly efficient water separators on your airlines as a bare minimum. In high humidity areas, you want to use a refrigerated aftercooler for your airline to eliminate the possibility of such occurrences.

Recapturing abrasive

Also, you want to recapture as much of your abrasive as possible during and after the blasting process. In this case, you do not just want to rely on the interior of your cabinet catching the spent abrasive. Many of the finer particles will fall prey to the exhaust system attached to your cabinet and simply get sucked out by it. In the early years of blasting, that's the way it was. Then came the cyclone separator onto the market, a gadget which is placed between your cabinet exhaust port and the dust collector or vacuum system, whichever term you prefer. This gadget will spin the extracted abrasive/air mixture, causing the heavier particles of the abrasive to fall into a receptacle, and then only evacuate the dusty air. The regained abrasive can be refilled into your blaster and used for further blast cycles, saving you money.



One version of a free-standing reclaimer that can be retrofitted onto any blasting system. If you have a good blast cabinet or blast room in which to etch, you can use any of the abrasives that can be recycled. (Image courtesy Ruth Dobbins)

Cost Effectiveness of Abrasives

Type of abrasive	Etching speed	Number of cycles
Brown sand	Medium slow	2
White crystal silica sand	Medium slow	2
Garnet	Medium	4-8
Aluminum oxide	Medium fast	60-80
Silicon carbide	Fast	80-100

Contamination

This is a problem for various reasons, with the most obvious being that anything in your abrasive will clog up your blaster. The least serious concern is something lodging itself in your nozzle, preventing you from blasting. This is an easy fix if you catch onto this being the problem.

A much more serious issue is getting contamination into your blaster. Some of us who engage in multi-stage blasting often use peel resist in the cabinet to eliminate the task of taking the object to be blasted out of the cabinet and putting it back in after every stage. At times, a small resist piece escapes into the hopper of the cabinet and can get through the screen and into the pressure pot. If that happens often enough, you end up with an obstruction in your pot which will ultimately prevent the abrasive from flowing, and you end up having to take the pressure pot apart.

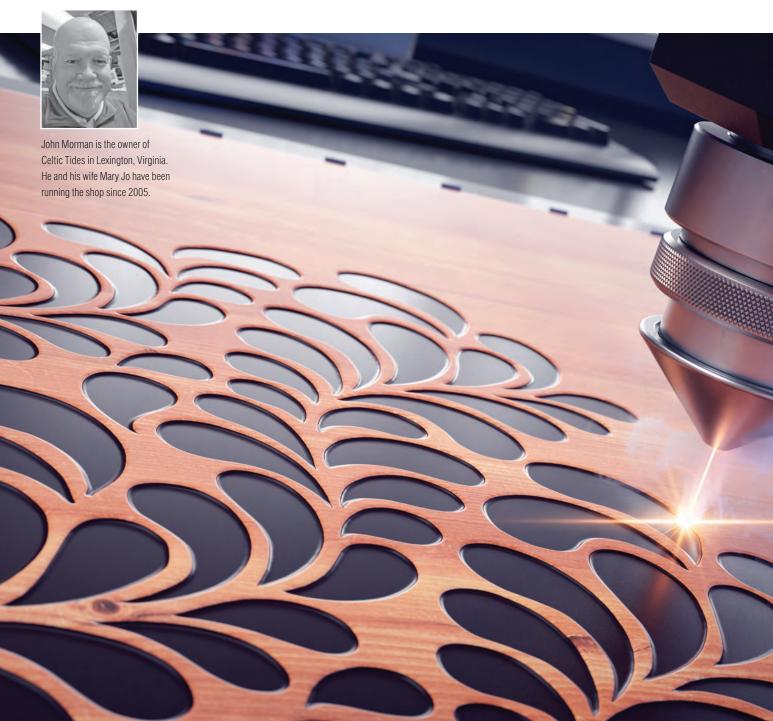
Contamination is also a problem if you are in the habit of blasting a variety of substrates with the same abrasive: one day you blast wood, then stone, then glass (which is not recommended). Residue of stone or wood particles within the abrasive will be a problem if you then blast on glass. These particles may "eat through" photo resists and chip the glass. If you have an attached pressure pot, there is a screen built into the system that covers the entry port of the abrasive into the pressure pot. Make sure you check that screen once in a while, as it can be damaged during cleaning of the inside of the cabinet, and then any contaminant can fall straight into the pot. If you have a free-standing pressure pot, you must always screen your abrasive while refilling. **GP** The biggest challenge for all of us is to keep our abrasive dry and uncontaminated.



STARTING A Laser Engraving Business

The importance of understanding your equipment

BY JOHN MORMAN





As you can see, this is a well-used table, currently set up to do name tags. Using a factory-supplied table only makes sense — it is designed to fit; the machine knows it's there; and alignment of your work pieces fits directly with the parameters of the machine, i.e., zero on the table makes it a no-brainer to get the work piece in line with the zero position for the head.

A fter investing in a laser engraver, store rental (unless you've cleaned out the garage to install your equipment the way I did to start with), a bunch of wood, plaques, leather, glass, and everything else you think you're going to be selling, you've spent a lot of money to get to the point where you can hang an "Open" sign. And now comes the time for hoping that orders are going to start rolling in.

To restate what I said in the February issue of GRAPHICS PRO — orders probably aren't going to just appear. Regularly visiting potential customers is key. Don't email them unless they've asked you to or you're confirming an appointment, for example. The personal touch with personalized items is not only appropriate but, in my opinion, essential. When you're visiting, remember to take samples of your work with you.

In my usual "round all the houses to get to your front door" approach, that brings me to my first point. Spend your first few weeks, or a month — whatever time it takes — to become comfortable with what you think your core business is going to be. Your machine supplier may very well supply you with a database, a



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I cut this out of sheet stock. I found this a much more consistent "tool" for focusing than the piece furnished with the machine. However, be very careful if you use something like this. Make very small adjustments when raising the cutting table so you don't force the head out of position.



control system — anything that provides you with settings for each material type.

I'd begin by running trial pieces using the factory's recommended settings. Regardless of the result, try experimenting with different settings for power, ppi, and speed, and try running a second pass with the beam slightly out of focus. You are likely to be surprised at the different effects that you can achieve. On top of that, each laser tube has its own set of characteristics, so make adjustments until you think you have the optimum end result for your machine. This will also be true when, as frequently happens, you have to replace the tube. Try out some pieces on scrap material and make sure you're happy with the new tube. Hopefully, you negotiated with your rep and got the factory to include a rotary adaptor and a cutting table. Of course, there may be some costs associated with that, but you will recoup what you may pay to get the most out of your machine.

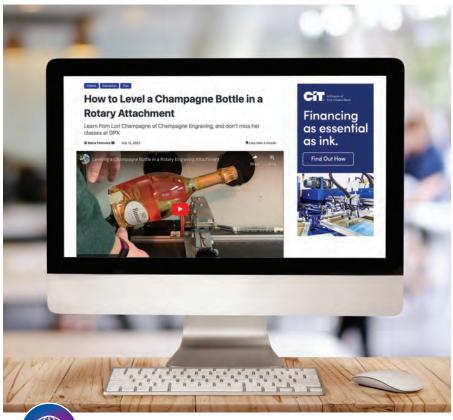
My first machine came with the rotary adaptor but not the cutting table, so I "made do" for seven or eight years using different "gridded" materials in lieu of the honeycomb cutting table. Did they work? Well, yes — but there is no substitute for the depth of the cutting table.

Speaking of focus — your machine may have come with a focusing tool. It may have come with software allowing for "automatic" focusing. I began trying both, but ultimately cut out my own focus tool. As always, this is my choice based on my experience. Among other things, I made the piece to be more useful for focusing curved pieces where you may have to account for curvatures to get a consistent result.

The cutting table and rotary adaptor? While you can get by with a substitute for the cutting table, a factory cutting table provides an exact fit for your machine and the depth necessary for adequate smoke extraction. Always remember you are working with delicate optics, and they need to be looked after. If you plan on engraving anything with pronounced curvature, a wine glass for example, the rotary adaptor is absolutely essential. There are also devices available to assist in "leveling out" a tapered piece, but — and you didn't hear this from me — it's not that hard to make a simple device yourself.

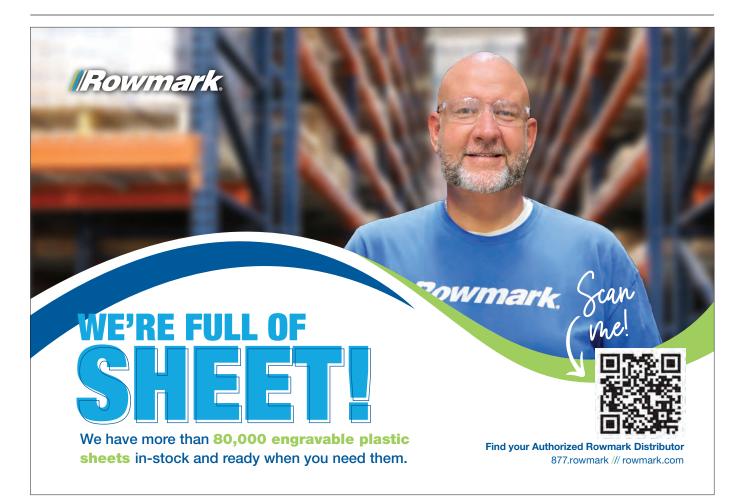
As you experiment with the machine, take note of how different materials work. As an example, it took me seven or eight years before I found a glassware supplier who could be consistent enough that I didn't need to remeasure every piece on every job. There are several options for almost every material you'll work with, so try them all until you're happy. Product consistency is very important to your customers, and one piece of crisp engraving is of no use if a second piece is difficult to see.

Happy engraving! GP



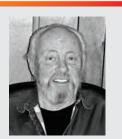


How to Level a Champagne Bottle in a Rotary Attachment https://gpro.link/leveler



Keeping Up with Your Program

How to keep your design skills sharp



Doug Zender has used CoreIDRAW extensively since version 4. His goal is to minimize the intimidation of the program and give users the sense that CoreIDRAW is a friend, not an adversary. Doug began as a design artist, then moved into the sign industry in 1992 doing vinyl graphics. You can contact him at dezender1@gmail.com.

have always been amazed at how quickly one can forget some of the functions of a program if they are not frequently used. One of the ways I have learned to stay current on my skills with CorelDRAW is to spend some time drawing objects that commonly exist around the house or in the shop. I have included some of those drawings as possible inspiration for others to just create drawings that are intended to enhance one's skills with the program. Most of these images were drawn at my leisure for amusement, but all of them have helped me learn how to keep sharp with the program. I will not do a detailed description of each, but I will give a brief explanation of them and how they helped me enhance my skills and stay current with them.

able to draw the various shapes involved using mostly the Bezier tool. When all the basic shapes were completed, I began adding the details to each with fountain fills and contours for a realistic look. This particular wrench had a black anodized finish, so I used darker shades of gray throughout. If it had a chrome look, as most wrenches do, the colors would have been lighter tones to show that. I later drew the hex nut with some fountain fills. Oddly enough, though intended for my own amusement, I was able to use this image for graphics on a maintenance department's vehicle.

scanned it into CorelDRAW. I was then

Adjustable wrench

Figure 1 depicts an adjustable wrench. I put the wrench in my scanner and



Utility knives

Figure 2 was a fun exercise in drawing a collection of the various utility knives in my shop. Each of these images were drawn separately, and I paid close attention to the differences in the details of each. Most of them began with a rectangle which was converted to curves and nodes edited to get the necessary shapes. Then details were added with a major reliance on fountain fills. Also, the Weld, Trim, Intersect and Combine tools were largely used to create these images.

Coil spring

Figure 3 began by drawing a coil spring wrapped around a shock absorber. When I was happy with that image, I chose to add some additional details to it. The fun of this kind of drawing is that you can include as many or as few details as you wish because it is intended for your own advancement, not for anything else.



Camera

Figure 4 is a made-up drawing of a camera. It was created purely from my imagination to use some of the different tools available in the program, such as fountain fills, transparencies, and other

drawing tools. This camera does not actually exist and was drawn strictly for my own amusement. This kind of thing can easily be something that enhances one's drawing skills.

BUSINESS STRATEGIES



Colt 45 pistol

Figure 5 is a drawing of a Colt 45 pistol. I downloaded the image from the internet and chose to redraw the highly pixelated bitmap image into a vector image. Each part of the image was manually drawn, and I tried to be as accurate to the original as possible. It's just another example of how to use the various drawing tools in CorelDRAW to depict an object with as much detail as one chooses.

Derringers

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HIGH CAPACITY LITHIUM

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Figure 6 is much like the previous drawing... images downloaded from the internet, then redrawn into a vector image. In this case, two different derringers, one a flintlock style and the other a more modern over-and-under two-shot .41 caliber standard Colt model. On the flintlock image, to get the woodgrain look, I used a bitmap woodgrain fill from the X5 fills included with the program, then duplicated it on top and used a mesh fill to add the necessary highlights, transparencies, and shadows to get a somewhat realistic image.

> The other, later-model derringer mostly required fountain fills for the visual details it included.

Cordless drill

Figure 7 is another imaginative drawing. It is drawn from the memory of my cordless drill and is not a true representation of the actual object it pretends to depict. Actual details are at a bit of a variance to the actual drill. Nevertheless, all the tools used CorelDRAW to create this image are valid. Tools used here were mostly fountain fills and a mesh fill for the handle.

Steering wheel

Figure 8 began as a simple drawing of a steering wheel. When it was completed, it occurred to me that I could add more details. The steering wheel image quickly evolved into a more complex drawing of the entire dashboard of a fictitious race car as viewed from the driver's seat. I used several fountain fills and texture fills to reach this final image. As with most of these kinds of drawings, the intention was not for production, but only to enhance my skills with the program. Other details could be added ... maybe a fire extinguisher and a gas pedal or some such thing... the limitations are only in the imagination of the designer.

Many years ago, while traveling in Europe, I visited a lot of the great European art museums in Austria, Germany, France, Belgium, Italy, Spain, and other countries. Viewing all the artwork of the masters was

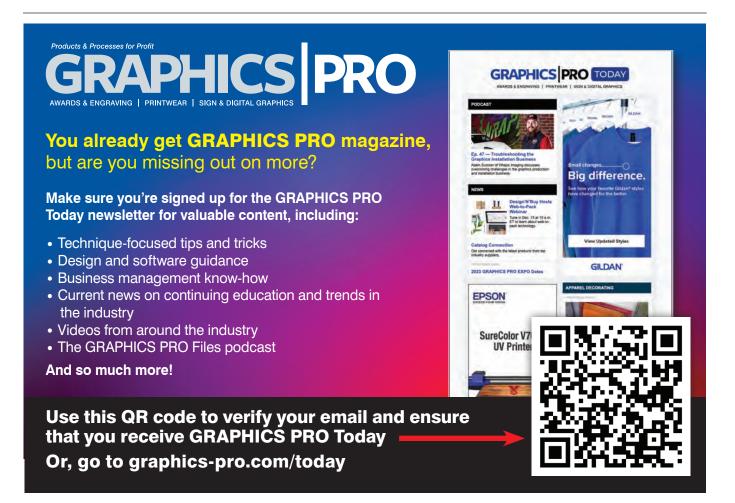


an inspiration for me to strive for excellence in my artistic endeavors. Though not on the same scale as their fine art, as graphic artists, we have a certain legacy in the art world. My hope is that the images I have included here inspire some to reach a new level of creativity in their production of the visual arts.

For many years, I painted signs and designs by hand. When I first encountered

CorelDRAW, I found a whole new way to create the drawings that had previously taken hours to produce. It seems only prudent to take advantage of the numerous tools available in the program to enhance one's creative abilities.

As always, I appreciate hearing questions, comments, and insights at dezenderl@ gmail.com All questions will be answered as soon as possible. GP



DON'T SETTLE FOR ODOO AND LEAVE ON THE TABLE

BY PAUL INGLE



Paul Ingle started selling signs in 1985 and has worked with regional, national, and international accounts with custom, architectural and production manufacturing firms. He has held various

positions in sales, sales management, and marketing since 1973. From 2006 to 2017, he and his wife Nita owned Design Center Signs in Tyler, Texas (A Comet Signs Company.) Comet Signs is now part of Stratus, the leading facilities and branding implementation firm. Paul is a past president of the Texas Sign Association and its regional chapter the Greater DFW Sign Association. Contact him at paul.ingle@cometsigns.com.

y last career in the 1980s, before I started my long journey in the sign industry in 1985, was working for the prestigious Bock family-owned jewelry store chain Bachendorf's in Dallas, Texas. Four generations and over 100 years of tradition are the underpinning of this still important and thriving Metroplex business.

There, I learned how important values such as loyalty, honesty, and quality were in a family business. The Bock family survived the Holocaust and concentration camps during World War II. They were a tight-knit, but very generous family led by Harry Bock and his sons. Harry was quite a character (and the only person I've ever known that flew on the Concorde supersonic airliner) to Belgium to buy diamonds each year. He was a fair man, and he treated his employees like family. It was an honor to work for him.

We sold gemstones, jewelry, and luxury timepieces, as well as did repair work. I saw firsthand rare, precious diamonds and rings that few people on the planet will ever see. And these became works of art created by the jewelry makers, which are probably now adorning a second or third generation of wealthy Texans.

We had celebrity clients and elite customers who wanted the very best. The gold glass commercial building (one of a pair) where our store was in the lobby, was in the flyover music opening of the series Dallas which ran from 1978-1991. In our parking lot, we saw exteriors being filmed and got to meet (and sell to) stars and guest stars from the show. One of my most enduring friendships to this day started while I worked there with David Ecker. When you spend about 5,000 working hours with a teammate, you get to know them very well.

A few days ago, David called me about an idea for an article from a sermon he heard at church. His catchy phrase became the title of this piece. And with that phrase, it opened the floodgate of my memories and what I learned in the jewelry business. I had forgotten about their impact and how they carried on through my career in the sign industry. Let's blame age.

"We are the sum total of our experiences. Those experiences—be they positive or negative—make us the person we are, at any given point in our lives. And like a flowing river, those same experiences, and those yet to come, continue to influence and reshape the person we are, and the person we become. None of us are the same as we were yesterday, nor will be tomorrow." — B.J. Neblett

Working at Bachendorf's was my second jewelry job. During high school, I worked at a Zales in nearby Irving Mall. Hired as a stocker, it was at Zales when I got my first taste as a salesperson when the company offered 1% commission to any employee regardless of job description to boost lagging sales. 1973 was not a great year; we had a stock market crash, inflation increased and was followed by a recession, an oil crisis, and unemployment. Sound familiar? Where did 50 years go? Obviously to repeat itself.

Each day, I expedited restocking shelves, helped cleaned glass counters and positioned myself to assist the assistant, general and store manager sell something. I figured that 1% of anything was better than the \$1.60 per hour minimum wage I was getting. Ironically, Hamilton had released the first LED watch, the "Pulsar" a few years earlier and it quickly became America's biggest watch success story ever; over 10,000 per month were sold. It is considered one of the "Top 20 Watches of the



Century" and was featured in the 1973 James Bond movie, "Live and Let Die." If I sold one, I would earn \$2.95. So I did what any visionary salesperson would do, I figured out how not to leave great on the table. That month I sold 77 Pulsars. We'd been averaging about three per month.

When you give a 16-year-old a check for \$227.15 and his entire 20-hour weekly earnings for a four week month are only \$128 gross, it changes your perspective on life and your vocation. I became the fastest stocker in history so I could get out behind the counters for as long as possible each evening. I started selling watches, rings, necklaces, pins, pen sets, and silver serving sets.

There were three months total of these incentives. The assistant manager complained because in month two, I was outselling him and he worked 40 hours a week. I even got recognized in the chain for sales volume. By the middle of month three, I was outselling the general manager. Then the store manager called me into his office. Uh oh.

It was good news and bad news. I got a plaque and congratulated on my sales volume. He even shook my hand. He then sat down, shook his head and sighed. "I'm afraid this has put me in a delicate position. You are part time in high school and making my managers look bad. They tell me you are not doing your stocking duties well and stealing their sales." "Untrue," I said with passion and pride. "Please look around the store. It is the best it's ever looked. I'm just better at sales than they are. Plus, they get a lot higher base commission than my 1%." (Remember, I was only 16 so not so well versed in diplomacy yet.)

And so, I got "laid off" that day even though all store employees had been given the same incentive to increase sales. Supposedly, the reason for my reduction in force was cutting back on payroll. It was my first lesson in politics. But I realized in those three months that some type of sales was the key to my future despite some other retail positions for the next few years.

So how does jewelry translate to signage? Fast forward to my years at Bachendorf's. I learned by selling Pulsar watches at Zales that it was easier to sell something that was unique that no one else had. Selling is an emotional transference of feeling. That always happens best when you are face-toface. (Buying a \$20,000 engagement ring over the phone doesn't work well.) That was my approach to selling loose diamonds, especially to about-to-be newlyweds. Even today, I always get face-to-face if possible to sell a custom sign, a campus identification project or a global branding program. Trust me; your competition will always take a shortcut and try to do everything over email. That's the shotgun approach. I like the hypodermic needle option.



How does a jewelry salesperson sell a \$20,000 engagement ring? What I found that worked best was to start with the diamond itself. When you isolate several diamonds in a price budget range to present to a couple or buyer, you find three that meet their cut, carat, color, and clarity. But you have one of the three that slightly exceeds their expectations; one with a wow factor. The one you'd select if money was no object. And you show it last. But only after you talk about the rarity of their investment. What is your wow factor in your sign business?

All diamonds, like a custom sign, are unique. When you do a rendering, show two or three options (and always show a free-standing sign with an electronic message display option whether they asked for one or not.) People like choice. And they really like it when they feel you are on their side of the table with their interests in mind. When they favor or choose one option from several they like, they are often already making a buying decision based on their inner vision.

When I showed a loose diamond under a gemology microscope, I pointed out flaws and glorified them. These inclusions were going to make the diamond unique among any other in the world. When you point imperfections such as feathers, cavities, crystals, clouds, needles, chips, etc. you are being transparent (pun intended) to the client. It builds trust and the discussion can lead your customer to understand that they are natural, unique, and part of nature's fierce process of creating a diamond. Internally flawless diamonds are a sight to behold. And they carry a hefty price tag because they are one in 5,000 jewelry-worthy diamonds.

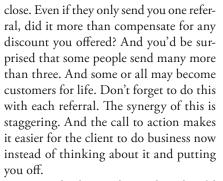
When you talk about a quality of a custom sign, do you prepare your client on the industry standards of viewing for finish, fit, and graphic registration? Signs are made to be viewed from feet away, not inches. For an ADA sign, there is a closer eye standard than for a high-rise highway flexible face sign that is 75' from grade. But it is incumbent that you set the stage before they see the finished product. During my career, it's viewing from 15' minimum for a wall or free-standing sign to evaluate finish, fit, and other quality measurements. You are the expert; you must educate your client on what to expect. Tell them upfront that if they want a monument sign that must pass all physical inspections from a foot away, it will cost 3-4 times the industry standard. Can one be built like that? Sure, just like a flawless diamond and just as rare and expensive.

One of the greatest lessons I learned in selling expensive diamonds (the ring mounting always comes last) was the easiest way to close. When we found THE ONE diamond that was clearly the favorite and made pupils dilate, I would quote the standard price. It was usually more than their budget upper range. But one or both clearly wanted THE ONE.

Learning how to read your customer's body language is critical. Eye contact will tell you how engaged they are. It is probably one of the most powerful nonverbal clues. Body posture will reveal how comfortable they are. I never started a sales interview, demonstration, unveiling of artwork or proposal until I knew the client was comfortable. Facial expressions will let you know how they feel, so play close attention. Dynamic hand gestures will let you know if they trust you. And don't forget to mirror body language to build rapport; it is a powerful tool and makes they feel relaxed and at ease.

I also learned a jewelry closing technique that I use now for custom signs 40 years later. I discounted the stone and offered a percentage off predicated on one favor from the customer. "I will sell this for you today only (call to action) for "X" if you will do me one simple favor," I said very earnestly. "Sure! What do we need to do?" they asked as they leaned forward. "Can you send me three customers? We build our business on referrals, and I know you will love this so much you will gladly tell your friends, coworkers, and family." I smiled. And it worked more than 80% of the time.

Do you currently close 80% of your custom sign sales? If you are above 50% you are in the minority. If not, try this



So once the diamond was selected, we'd start the process all over with the setting and wedding band. And then the other's band or ring. It was like finding the right shoes for the perfect outfit. After adding in a great setting plus the loose diamond (THE ONE) it was uncanny that the average increase over the highest possible budget was another 20%.

How did I resolve that, so it was palatable to the customer? I broke the extra amount down into small pieces over the lifetime of ownership. Example: if the couple was 25 years old and you conservatively took them to 70 years of age (or life expectancy), that is 45 years of ownership. If you take \$4,000 extra dollars over their budget and divide it over that period, it cost them \$88.89 per year or \$7.41 per month or roughly \$.25 per day. "Isn't your soulmate worth a quarter per day to have a one-of-a-kind unique piece of jewelry that shows your love?" In fact, it doesn't cost you a quarter at all. Because the data shows that the price of a diamond has increased by a minimum of 4% every year. It pays to know your product.

Cost of ownership works with signs the

same way. Learn how to break the investment into bite-sized chunks over a conservative life expectancy of seven years for an electronic message display, ten years for a wall sign, and twelve years for a pylon sign. Or pick your own depending on what part of the world you live since climate, days of sun, environmental issues, nearby irrigation, and other factors vary. Get creative but realistic.

In retrospect, I wish I'd had known the saying "Don't Settle for Good and Leave Great on the Table" as a close in the jewelry business those many years ago. But it opens a fresh perspective now that I'm in the sign industry. Would you want the love of your life to go around and show off their new engagement ring to their friends and family and say with a frown, "Look at my new ring. I settled for good." Of course not. You would want them to say, "Look at my new ring! Isn't it great! I got exactly what I wanted!" This is how you create raving fans. And you can do this in your sign business because the principles are the same.

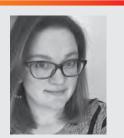
My wife (and business partner and best friend) Nita has mentioned more than once over the years that some of the special signs we designed and produced were like jewelry. I never connected that to my old career until my friend David made a random connection possible with a great phrase.

So, don't forget to educate, be great at reading your audience, glorify your wow factor, break down life of ownership, and ask for referrals. You'll have more business than you can handle. Now, let's go out and sell some jewelry. GP



Are You Going to Do the Same Thing?

Increased growth and profit doesn't come from sitting still



Jennifer Cox is one of the founders and serves as president of the National Network of Embroidery Professionals (NNEP), an organization that supports embroidery and apparel decoration professionals with programs and services designed to increase profitability and production. You can contact her at iennifer@nnep.com. A new year is often presented as a "reset" or a "fresh start." What we eat, how we plan to get more active or fitter, what we will do in our free time, and even how we intend to improve, advance, and grow our businesses.

The kicker, however, is that if we do the same things that we did in the past year, why do we expect to see any kind of change, even an incremental one, moving forward? Last month, I encouraged you to pick one thing and practice that one thing until it becomes a habit, a routine that you do not even have to think about anymore. Now, you just do it, whatever it is, in the different, new or better way so that over time, you accomplish some level of change in that area.

This time, I want you to dial your thinking out, big, instead of dialing into one small and specific thing. This kind of thinking is called the 30,000-foot view, big picture thinking, or other terms along those lines. In order for you to take your business where you want it to go, you need to know at least two things: 1) where you are right now and 2) where you want to be. You can measure these two points in any number of ways: annual sales, business location, how much you pay yourself and/or your staff, number of locations, number of employees, number of customers, number of jobs completed, number of units produced, etc. Every business owner has their own key metrics, the numbers by which they measure themselves.

What are your key metrics? Grab a post-it note and write down your current number (where you are right now) and then write your target (where you want to be). If you have more than one metric that you measure your business by, fill in the current value and the goal for each identified metric.

Right here is the place where I want you to pause and take a big look at what you just put on the paper. Is this the key metric or





Image courtesy Swanik's Embroidery, Nancy Swanik

metrics by which you really want to measure yourself and your business this year? Here is the thing — you can change these metrics any time you want! There are no right or wrong metrics. There are only the metrics that matter the most to you as a business owner. It is easy to default to what you think should be your key metric, for example, annual sales. But what if that is not really what you want to base your decisions on this year? What if you really want to be sure you have time off for an honest-to-goodness vacation this summer? What if you are interested in finding someone to buy your business this year? What if you want to get a bookkeeping system in place so that your paperwork is not such a hassle every week or every month?

Right here, right now — what is it that you really want to use as the measure of your business in 2023? Decide this today, knowing that you can make a different choice at any point.

Once you have a clear target for this year, stay zoomed out, or up, at the 30,000-foot level, way above your business, if you will. You are at the first point, and you want to get to the other defined point. What is in your way? If you were on foot, and wanted to cross a river, you would have to find or build a bridge, boat, fallen tree, or some other way to get around or across the water. It is no different in your business. What do you have to go through or around to make it to where you want to be? What do you need to stop doing? What do you need to start doing? What do you need to do more of, or less of?

If you want higher annual sales, yet you do nothing to attract more business, you are probably going to find it very difficult

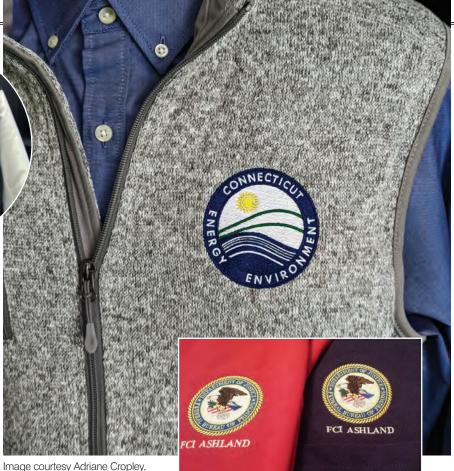


Image courtesy Adriane Cropley, Rocking My SewJo, LLC

Image courtesy Amanda Ferguson, Your Name Here Embroidery

to move from your starting point to your specified destination. If you want to move your business from your home to a retail location, yet you do not explore what kind of space is available, what it will cost, or even consider the commute, odds are high that at the end of the year, your business will still be exactly where it is. If you want to hire someone, but do not understand what is involved in hiring an employee, how can you even begin to post the job opening?

Maybe your goal for 2023 is to increase your pay. In order to do that consistently, you need to have higher profits or more sales volume, or both. You can leave that up to chance, what I call "IFcome," as in IF a customer walks in, you might be able to get some income. Or you can take a different approach and intentionally do marketing and sales to attract new business and generate more business from existing customers. That is much more likely to increase sales, which will then make it possible for you to increase your pay.

I have listed several rather basic examples

so that you see what I mean about the 30,000-foot view of your business. Take a beat and see where you are and where you want to be, and how you intend to measure that progression in 2023. Put it in writing, in ink, somewhere that you will see it daily. As you make decisions in and for your business over the coming months, use that as your litmus test for any given decision. Will doing *this* or *that* help you achieve your desired goal? As often as you can, choose the option that supports the direction you want to go, the destination you have set for yourself, and your business.

Just like building up your muscles, the key is repetition. The more times you exercise, the stronger you become. In business, the more times you make decisions based on the desired level of success of your business, the more successful your business becomes. If you have any questions, or want to connect to discuss where your business is, and where you are headed, you can email me directly at jennifer@ nnep.com. GP

Al's IQ

Artificial Intelligence is finding its way into the graphics industry



Stephen Romaniello is an artist and educator who has taught computer graphics since 1990. He is Professor Emeritus and the founder of the Digital Arts program at Pima Community College in Tucson, Arizona. Stephen is a certified instructor in Adobe Photoshop, Adobe Illustrator and Adobe Premier and the author of numerous books, articles and media on the creative use of graphics software. Stephen is the founder and CEO of GlobalEye systems, a company that offers training and consulting in graphics software and creative imaging.

Recently I saw a rather astonishing headline: Art Made with Artificial Intelligence Wins at State Fair. Jason Allen, a video game designer from Pueblo, Colorado, entered an image to the Colorado State Fair's digital arts competition. Judges awarded him the Blue Ribbon and the first-place prize of \$300.

Allen's submission went viral when he revealed online that he'd created his prize-winning art using an artificial intelligence program that can turn text descriptions into images. He spent more than 80 hours to produce the piece titled Théâtre D'opéra Spatial (**Fig. 1**).

Allen created Théâtre D'opéra Spatial by entering various words and phrases into an online software program which then produced more than 900 renderings for him to choose from. He selected his three favorites, then tweaked them in Photoshop until he was satisfied. He boosted their resolution using a program called Gigapixel and printed the works on canvas.

His victory has sparked an impassioned debate about what constitutes art. "We're watching the death of artistry unfold right before our eyes. If creative jobs aren't safe from machines, then even high-skilled jobs are in danger of becoming obsolete," commented @Omnimorpho on Twitter.

Allen said he believes the criticism of his work stems from fear. Artists are concerned that technology will one day replace them. Cartoonist Matt Bors, founder of the Nib, in an interview for Atlantic monthly said, "To developers and technically minded people, A.I. is a cool thing, but to illustrators, it's very upsetting because it feels like you've eliminated the need to hire the illustrator."





Fig. 1: Théâtre D'opéra Spatial, the image created by Jason Allen with artificial intelligence that won first prize at the Colorado state fair. (Images courtesy of Stephen Romaniello)

What is Artificial Intelligence?

5

Artificial intelligence, or AI, is the field of computer science that focuses on creating intelligent machines that can perform tasks without explicit human instruction. These tasks may include learning, problem solving, decision making, and other activities that require human-like intelligence. AI systems can be trained to perform a wide range of tasks, from simple tasks such as recognizing patterns and making decisions based on data, to more complex tasks such as language translation and self-driving cars. AI systems can be classified into several categories, including narrow AI, which is designed to perform a specific task, and general AI, which is designed to be able to perform any intellectual task that a human can.

Fig. 2: The ChatGPT AI interface allows a user to ask a question from which the program will write a well-researched answer.

few paragraphs in an AI writing program called ChatGPT available at http://CHAT. openAI.com. My question was simple: "What is Artificial Intelligence?" After a few tries rephrasing the question each time to extract more detail, this is what it wrote. (**Fig. 2**)

Artificial intelligence, or AI, is the field of computer science that focuses on creating intelligent machines that can perform tasks without explicit human instruction. These tasks may include learning, problem solving, decision making, and other activities that require human-like intelligence. AI systems can be trained to perform a wide range of tasks, from simple tasks such as recognizing patterns and making decisions based on data, to more complex tasks such as language translation and self-driving cars.

B

3

AI systems can be classified into a two general categories; narrow AI, which is designed to perform a specific task, and general AI, which is designed to be able to perform any intellectual task that a human can.

Fear Vs. Reality

I remember the fear in the graphics industry in the late 1980s when computers became user-friendly and graphic software programs such as Quark Express, Illustrator and Photoshop emerged on the scene. In their minds, new technol-

ogy threatened to replace the jobs of graphic technicians, designers and production artists who pasted up "mechanicals," operated huge process cameras and stripped negatives on light tables.

In reality, however, their jobs were not replaced. Their job titles and descriptions changed. They had to relearn their craft. As technology advanced new hardware and software had to be mastered. Graphics became less manual and more automated and the entire workflow was reinvented. Today,

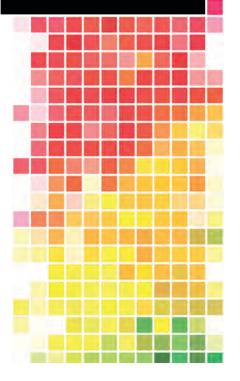
as graphic technology has more-or-less stabilized, there are still fears. Now the trepidation is about total automation. If it can be imagined and stated, it can be generated automatically, untouched by human hands. What I'm talking about is Artificial Intelligence (AI) taking over the world!

IQ Test

Putting the fear of new technology aside, I wanted to test the power of artificial intelligence to see for myself how smart it is. In essence I performed an AI IQ test.

To create a better understanding of AI for this article, I generated the next

One of the main goals of Al research is to create machines that can reason, learn, and solve problems.



One of the main goals of AI research is to create machines that can reason, learn, and solve problems. This requires the development of algorithms and models that can analyze and understand data and make decisions based on that analysis. Some of the most common applications of AI include machine learning, natural language processing, and robotics.

AI has the potential to revolutionize many industries and has already had a significant impact in areas such as healthcare, finance, and transportation. However, the development and use of AI also raises ethical concerns, such as the potential impact on employment and the potential for misuse. As a result, there is ongoing debate about the appropriate role of AI in society and how it should be regulated.

Not Bad

As a writer, I must admit this text is pretty good. In fact, given the amount of time I put into generating it (less than two minutes) it's quite brilliant. It even has ethical concerns indicating that the artificial brain that researched and generated this information may be self-aware and has the capacity to reason and reflect on the moral implications of its own character. Pretty amazing! Pretty spooky!

Graphics Connection

Let's cut to the chase and see how AI has influenced the graphics industry. Here is what ChatGPT has to say about it on my first try and with a little bit of editing.

The question I asked is: "How has AI influenced the graphics and the large-format print industry?"

Artificial intelligence (AI) has had a significant impact on the graphics and large-format print industry. One of the main ways in which AI has affected this industry is through the use of machine learning algorithms to automate and optimize various tasks. For example, AI-powered software can be used to analyze and understand images and graphics, allowing for more efficient and accurate image processing and manipulation. This can include tasks such as color correction, image resizing, and image enhancement. AI can also be used to automate the design process by generating design concepts and layouts based on certain parameters and preferences. This can help designers save time and effort and can also enable them to create more personalized and effective designs.

In addition, AI can be used to improve the accuracy and efficiency of print production. For example, AI-powered software can analyze and optimize print layouts to minimize waste and maximize efficiency. This can help reduce costs and improve the overall quality of the final printed product.

With another try ChatGPT continued:

Overall, the integration of AI into the graphics and large-format print industry has the potential to significantly improve productivity and efficiency, while also enabling the creation of more sophisticated and personalized designs.

• Automated design: AI-powered design tools can help automate the process of creating graphics and layout designs for large format prints. These tools use algorithms to analyze user preferences and create designs that are visually appealing and coherent.

• **Personalization:** AI can be used to personalize graphics and large format prints based on the target audience. For example, AI-powered marketing tools can help tailor advertisements and promotional materials to specific demographics and interests.

• **Predictive analytics:** AI can be used to analyze data and make predictions about customer behavior, which can help businesses in the large format print industry optimize their marketing efforts and improve their return on investment.

• Image and video analysis: AI can be used to analyze images and videos and extract useful information, such as identifying objects and analyzing their position and movement. This can be helpful in the large format print industry for tasks such as image editing and video production.

I think you'll agree that the above text certainly is an accurate, articulate and thorough analysis of the state of AI in the graphics industry.

Midjourney

Let's take a quick look at what imagegenerating AI can do. Midjourney is the software that Jason Allen used to create the blue-ribbon image at the Colorado state fair. According to its website, Midjourney is a research lab that explores new mediums of thought. Its goal is to expand the imaginative powers of the human species.

Midjourney uses an interactive bot that employs machine learning to create pictures based on text that is input. A bot is an autonomous program on the internet or other network that interacts with systems or users. Essentially, the program interprets written concepts and visualizes them.

The Process

Generating an AI image has a lot to do with the user's ability to put into words what they want to create. The description can include details such as the style of the image (for example: surreal, impressionist, painterly, photographic, etc.) the placement and character of figures, the type of landscape or background among other details. For example, Fig. 3 was created by prompting the software with the words, "John Oliver in the style of Picasso." The bot reviews the millions of images on the internet and finds ones that fit the description's parameters and combines them uniquely and artistically. The bot even produces multiple versions of the image. In most cases a bit of post-production editing in Photoshop is required to tweak the image to its ultimate glory.

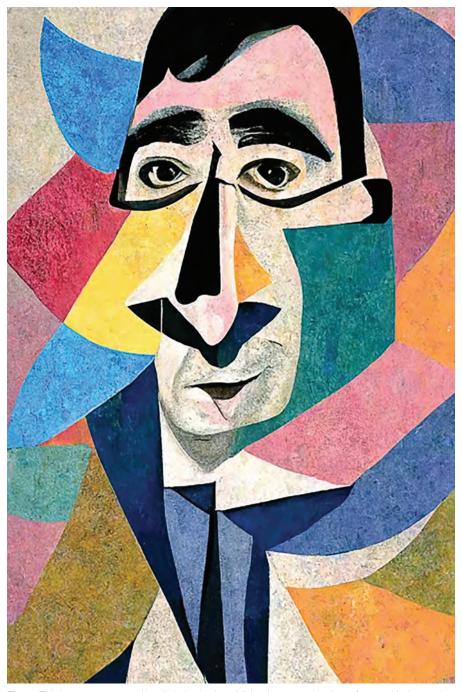


Fig. 3: This image was created by digital artist Jenn Mishra by prompting the software with the words: "John Oliver in the style of Picasso".

Al has the potential to revolutionize many industries and has already had a significant impact in areas such as healthcare, finance, and transportation.

BUSINESS STRATEGIES







Fig. 4B: Jenn Mishra is a photographer and digital artist who uses Midjourney, an Al image generator, to create these stunning images.



Fig. 5: The comic book industry has recently distanced itself from AI generated art.

The Comics Industry Takes a Collective Stance Against AI Art Usage Comic editors and artists unite in expressing their distaste of AI art, which has caused som...

A new breed of digital artists and designers have emerged that employ this cutting-edge technology. Jenn Mishra (jennifermishra.com) a photographer and digital artist from Saint Louis uses the Midjourney AI system to create images. She prompts the software with text and lets Midjourney find appropriate data from the vastness of the internet. The software generates a configuration of the source pictures and composes them into the final image. (**Fig. 4A,B**)

Sci Fi

AI is revolutionary! For the first time in the history of human existence machines can be taught to replicate complex human behaviors. They can, in essence, think! Is this the stuff of science fiction?

I suspect that AI will, in the not-sodistant future, work its way into many aspects of production and manufacturing. At this point in the graphics profession it's not quite state-of-the-art but eventually it will be utilized for its efficiency, accuracy, cost savings and creativity.

The Shock of the New

AI certainly has its advantages. It does, however, bring up certain questions about ethics and the inevitable impact on employment and the potential for misuse, so much so that the comic book industry has recently distanced itself from AI-generated art (**Fig. 5**). I suspect that will change when the fear subsides and they realize

> AI's potential. Back in the '80s and '90s we had these concerns when the graphics industry was radically transformed. But as a profession, we landed on our feet. Ultimately even more jobs were created as technology advanced and new types of artists and technicians who were trained in the new discipline of "digital art" emerged. I predict that the same is true of AI as it becomes a regular part of the graphics workflow. GP

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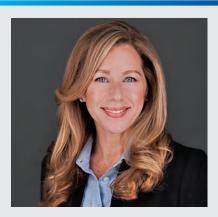
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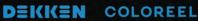














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