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CNC Router Substrates

- Holiday Gifts
- Fleet Management
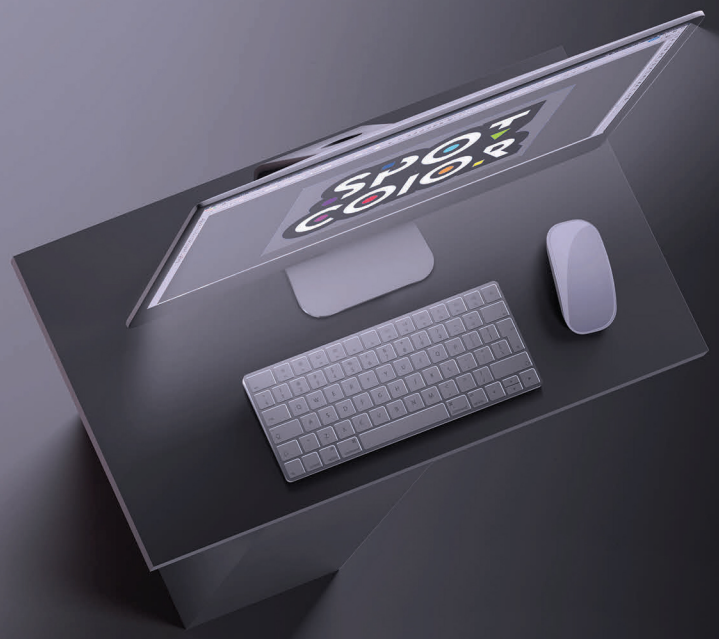- High-Volume Apparel Decoration

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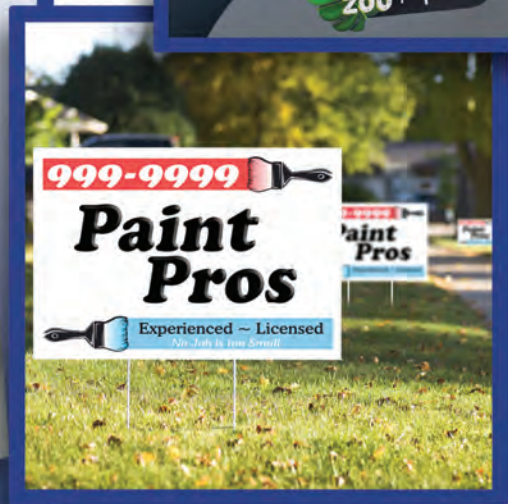
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ON THE COVER: Choosing the right substrates and bits can add life to your router, page 66. Image courtesy of Signarama Chandler. Bottom right: This month's GP+ is all about direct-to-substrate printing, page 33. Image courtesy of Epson.

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Business FOMO

In business, fear is a terrible mindset. It can prevent you from taking steps to succeed, such as making necessary adjustments just because you worry that the changes you make might not be the right move. This can especially be the case when it's time to grow your business or take on projects you aren't comfortable with.

But there's another kind of fear that can seem more dreadful than it actually is: the fear of missing out, or FOMO.

FOMO can happen when you see others in your industry succeed in areas you aren't involved in. Or they use equipment that you don't have. Or they engage in marketing practices that you don't.

It's entirely based on what your competition is doing or what people like me put in magazines like this about the "next big thing."

FOMO can lead individuals to feel a strong urge to stay connected to social media and constantly check for updates or make impulsive decisions in an attempt to avoid missing out on what others are doing. It can have both positive and negative effects, as it can motivate people to stay engaged and connected with their industry and get people out of their comfort zone to attend industry events and expand their knowledge, but it can also lead to stress, anxiety, and a sense of inadequacy if not managed well.

In the graphics industry, FOMO will lead you down one of two paths. You will be on the cutting edge of technology to avoid FOMO, or will you be biding your time and letting others do the beta testing of new equipment or services so that you can be sure the "next big thing" is actually the next big thing. Both can be stressful. Are you too eager? Are you too late?

Do you have FOMO? It's OK if you do. As long as you know you have it, it's easy to control, and you don't even need a doctor's prescription.

First, set clear priorities. If you define your goals, then you won't be as influenced by outside forces that don't align with those goals. Second, be mindful that you can't be everything to everyone and that there will be things in life that aren't in the cards for you or your business. And lastly, feel free to take stock of what you have and improve what you are already doing. Build up instead of out.

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Tee it Up

Keeping it simple, clean, and bold for a golf tournament church fundraiser

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 Colorado-based 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. Lon is also a presenter at GRAPHICS PRO EXPO (g-p-x.com).

Mesh-back hats.

We try to remember where it all came from, as we have been quite blessed. To do our part, as you may or may not know, we have a retail brand and outreach program known as Christian Edge Apparel. Tons of church, youth, school, and other programs fall under this umbrella.

We all are members of various churches across the front range here in Colorado as well. A couple of us have been members of Trinity Lutheran for over 30 years. Welcome to Trinity! These are the first words you see on the website as well as on the front door.

The mission of Trinity Lutheran Church and School is to connect our community to Jesus. 'Nuf said, don't ya think? Worship, Discipleship, and Partnerships. In its humble beginnings in 1981, a handful of families gathered in a local elementary school for worship. Today, Trinity has a thriving congregation as well as an accredited school, pre-K through 8th grade.

Recently, Trinity put on a golf tournament. It was a four-person team Shamble! Not a typo. We used the best drive, played our own ball in, and recorded the two best scores for that hole. Bet you didn't know we are golfers. We'll use that term loosely. Did not place was our official finish.

Trinity's Annual Golf for Missions is its No. 1 mission trip fundraiser. In 2023, the tournament helped support the 2024 Alaska Mission Team, High School Summer Mission Trip, and the Denver area Family Mission Trip. Other trips hoped to be supported include sending a team to Africa as well as a disaster relief and rebuild team. These mission trips wouldn't be possible without the Golf for Missions Tournament, the golfers, sponsors, and supporters.

Simple design and directions

Well, we can be a sponsor, right? Can't have a golf tournament without a swag bag. The organizers didn't even know that was a thing. We assured them that it is indeed a thing, and we had their back. We are apparel decorators, so we stuck to apparel.

We could get them a substantial value that would be right in our wheelhouse. Gotta have the bag to house the rest of the swag. We chose a canvas grocery bag (we all need them these days). We did the appropriate golf towel with grommet and clip and, of course, a T-shirt. These would all be screen printed. How 'bout a mesh back hat with a leather patch? Gotta have that. And the apex item, a hooded quarter zip rain windbreaker. Way cool!

We've said it before. There is something to be said for keeping things simple. Simple can be super clean and sharp. Since this was an event sponsorship and we weren't printing thousands of items each, more like 120, we kept it to one

Windbreaker jackets.
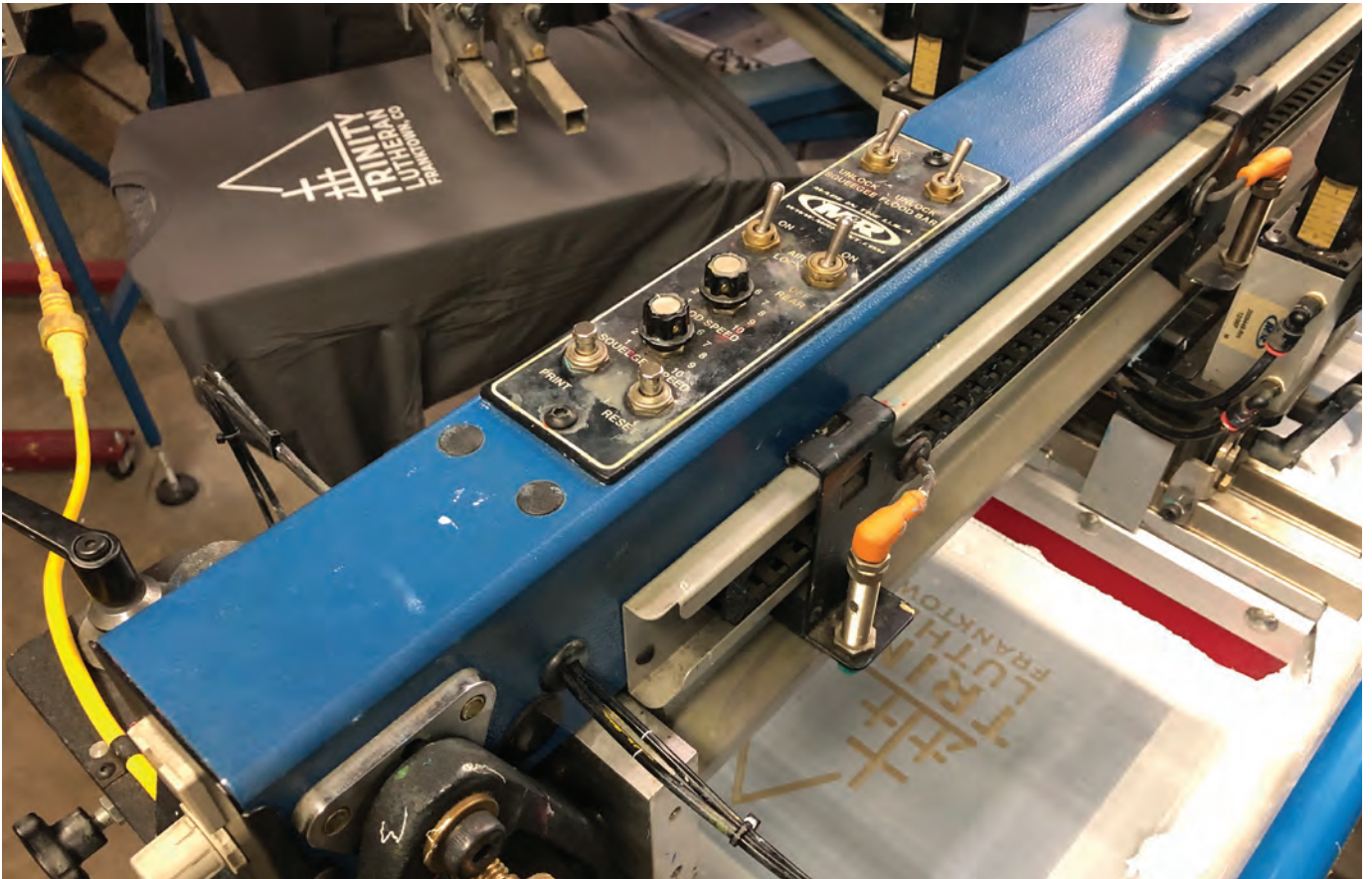
T-shirts.

color. You might be thinking, "One color? Boring!" So, how do you make one-color images interesting? Not sure you can, but we can really make them pop and merchandise well together.

We began with layout and composition in Adobe Illustrator for vector components. We would take the full-color logo used for marketing and simplify it further. A simple type and logo solution using the original's components.

All vector elements were set in place after some sizing adjustments. We opened a new document. Using the type tool, we set up Trinity Lutheran in the center of the template. With it selected, we could go through our fonts and choose the one we liked. We selected a thin, clean font. We also sized it appropriately.

Still selected, we changed our font to outlines so we could work with it further. We reshaped it a bit, manipulated it into place, and locked the original. With it still selected, we made it into a spot color. Trinity was looking for something clean. Certainly basic in its concept.

We created the triangle shape to simulate the multiple triangles of the original logo. The color pallet for Trinity is white, black, navy, silver, and an awful green. We'd stay away from the green but would incorporate all the other colors in one way or another.

A simple design using the garment for show-through and negative space, completing the images on each item. Once the art was approved and the apparel selected, it was time to move on to the separations. This single color was created in Illustrator using layers and spot colors. Done.

We placed the vector file in Illustrator and output on our template to CTS (Computer to Screen). We had multiple sizes plus darks and lights, so several screens were made. For a clean and or opaque print, our screens would be 156 tpi (thread per inch) stretched to 30 N/cm perpendicular and parallel on work-hardened retensionable frames.

A quick setup on-press using our pre-registration system and lasers for perfect location, and we were ready to run each item. Bags would get navy ink, and so did the
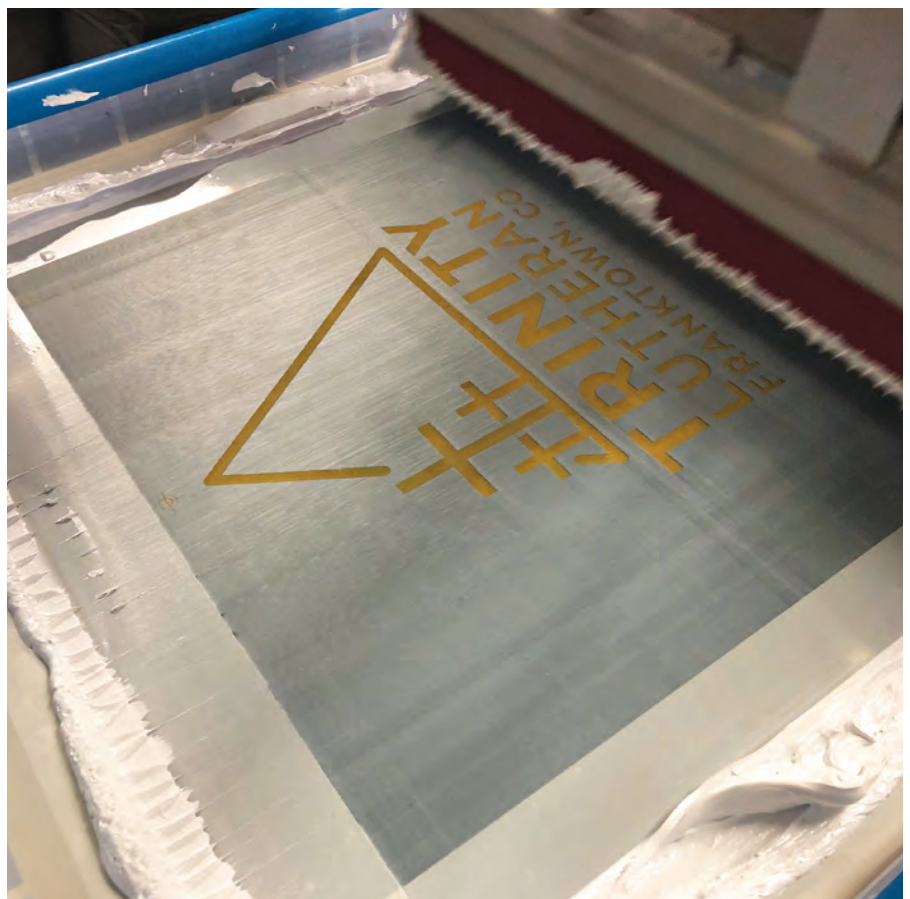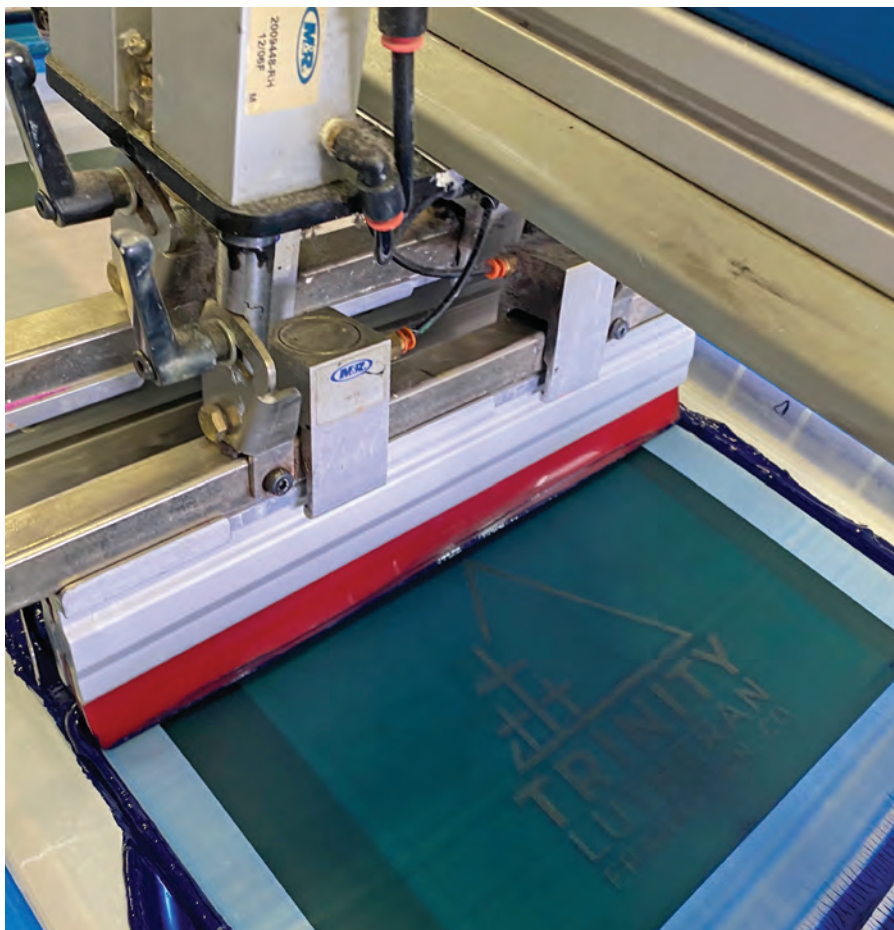
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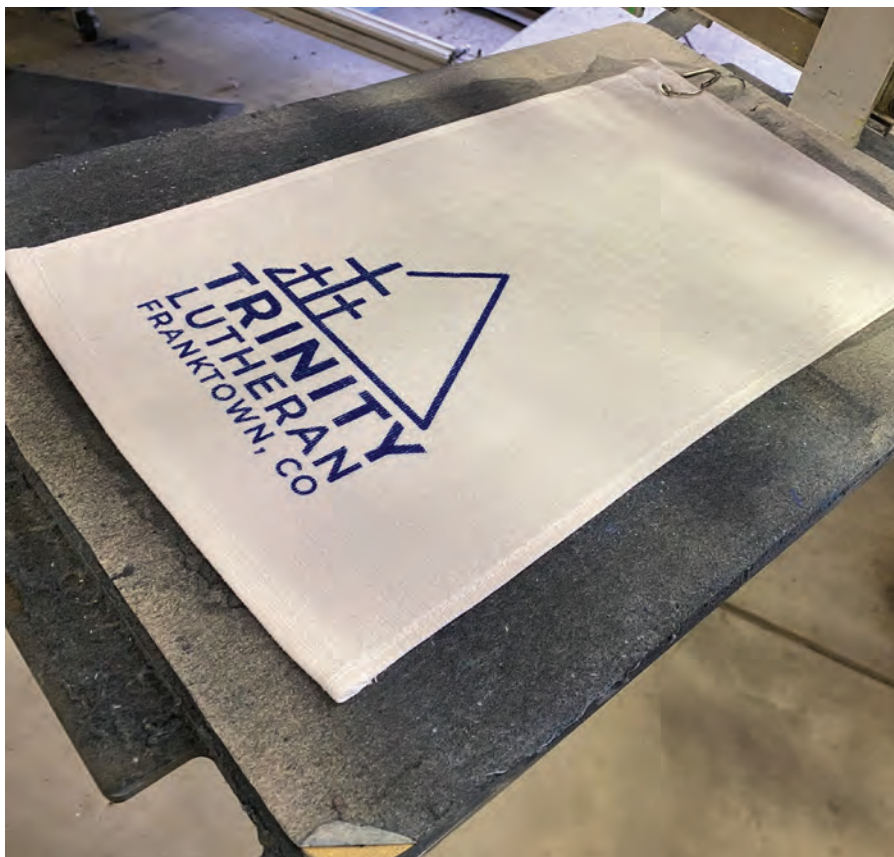
towels. We went with white flash white on the Heavy Metal Ts. Heavy Metal is our new favorite color, by the way. To keep the ink deposits thin and minimize any smearing, the squeegees were 75/95/75 triple-ply dual durometer at medium pace and 15-degree angles. Screen print portion complete.

We ordered some hybrid direct-to-film transfers for the jackets. We made them quite small as this is the trend. Placement was a little tricky, and we had to get creative with pads and pillows to prevent any heat press marks. We also ordered hat patches in simulated suede. Application of those is easy breezy with a heated lower platen. We used a pad on top to keep from mashing the patch. Mashing is a technical term. We love hat patches!

All the items were individually folded and bagged. Trinity was extremely grateful for our gift. A great time was had by all on a fabulous Colorado Mountain golf course. And they raised a big chunk of change for missions. **GP**

Totes.

Time to Raise the Roof (or at Least Your Prices)

Four strategies for getting the price you need to be profitable

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 jennifer@nnep.com.

I'm sure you have heard it before: "To increase your profits, raise your prices." Yes, this is the fastest and cheapest way to increase your profit, no question. However, it can feel like one of the hardest strategies to apply as it has a level of fear baked into it. What if I lose all my customers? What if they go somewhere else? What if they won't pay the higher price?

More than price

The fact of the matter is this: most of the time, your customer is not buying from you because of your price. Yes, there is a percentage of your customers that are price shoppers, and let's be honest, they are probably not your best or even most frequent customers. In fact, they often turn out to be some of your neediest and/or most demanding customers. Most people buy on price only when we have not been given a good reason not to.

Here is the proof… Look out at the street wherever you are right now. Everyone is not driving the least expensive car they could find, are they? If we all made our car selection on price, we would all be driving low end models, not the cars we are actually driving. Now, look around at the nearest homes. Are they all living in bare minimum housing? Probably not, they have decent houses, nice yards. Now, look at yourself. Are you wearing the cheapest clothes and shoes available? Probably not.

Price is only an issue when you have not given your customers a reason to pay what you are charging. Because we create custom products, by default charging a higher price is a sound business strategy. None of your customers can walk into a retail business and buy what you can create for them, because it simply does not exist until you put the product on your equipment and add their design to it.

Here are four strategies that you can consider to start raising your prices right now.

1 **Test:** This is the simplest strategy to apply. Increase your prices across the board, effective immediately. How much? That is up to you: 5, 7, 10, 12 percent, and even higher if you are feeling bold. You can always drop them again or offer a discount to your best customers if you get too much pushback. When is the last time you raised your prices, anyway? I suspect it is long past time.

2 **Sell benefits, not features:** People are not ordering from you because they need clothes. They have a closet full of things to wear at home, I promise. They are ordering custom apparel and products from you to solve a problem or meet a need they have. In your marketing and social media posts, talk about the environments, events, and situations in which your logoed and decorated products are used, not about the shirts or products themselves.

3 **Add bonuses to increase perceived value:** We've established that people do not buy on price as their main trigger. What they do want is value. You can outshine any competition by increasing the perceived value of the services and products you offer. The secret to pulling this off successfully is to make sure that whatever it is has a high perceived value to them but costs you little to produce or give. For this reason, information is great because all it costs you is the time to compile it once. Providing a size scale to your customers to help them determine how many of each size to order when ordering for a large group has high perceived value, as you will save them the expense of ordering shirts they will not be able to use (BTW, the current size scale for S-XXXL is 124421. Email me

if you need an explanation of how to use and provide this key information to your customers, sizescale@nnep.com). Another option is to offer a frequent buyer bonus, something like "Get a free shirt with your logo on every other order for 12+ shirts." You can afford to be generous here. Do not assume that cheapest (like a free cap) is best. Remember, your long-term customer value is where the profits are. You want to give these customers an incentive to keep coming back and placing orders with you.

4 **Overcome objections:** Earlier, I stated that "the vast majority of us only buy on price when we've not been given a reason not to." When you get an objection about the price of an order, it is because you have not given that all-important reason for them to pay you what you've quoted them. It is not that they are tight-fisted. It is your responsibility to ensure you have given them all the information they need to make the right decision. If people are not willing to pay the price you quoted, it is because you have not persuaded them of the value of your products and services. Do not be ashamed of charging high prices. In fact, it can increase both the success rate of your sales efforts and improve the quality of your customers if you wear your prices almost like a badge of honor. When pressed about your price, reply with, "Yes, I realize that our price is higher than our nearest competitor. I am glad you brought that up. Here are the reasons you are better off doing business with us and paying our prices." And then, go on to explain about your quality, that you have excellent design and digitizing services, that you will deliver, that your orders are always done by the deadline, and any other comparisons that you know your other customers value.

I absolutely agree that raising your prices requires steady nerves. People will tell you that they can get the "same thing cheaper down the street." This suggests two things: 1) they actually can't get it down the street; or 2) they don't want to. I know this because if they could and they wanted to, and low price was the most important factor in their decision-making, they would be down the street right now placing their order. What they usually mean is that they want your service, your quality, and the other guy's prices.

Value yourself and your business properly! To be successful as a business owner, it is necessary for you to have a strong sense of self-esteem. You cannot expect to earn the respect and trust of your prospects and customers unless you first respect yourself. Not to sound all *New Agey,* but it's true. All respect starts with self-respect, both your respect for others and their respect for you.

To charge premium prices for your premium quality products and decoration services, you need to have the self-confidence and self-respect to stand there and ask for them. You need to believe your services and products are worth the prices you're asking for them.

It all comes down to this: value yourself and your business. Be proud of who you are and what you do. You are the only one doing exactly what you do, exactly how you are doing it, exactly where you are doing it. **GP**

HIGH-VOLUME
Apparel Decorating Equipment

BY SHELLEY WIDHALM

A look at the decision-making process of adding high-volume equipment to the apparel-decorating mix

Shelley Widhalm is a freelance writer and editor and founder of Shell's Ink Services, a writing and editing service based in Loveland, Colorado. She has more than 15 years of experience in communications and holds a Master's degree in English from Colorado State University. She can be reached at shellsinkservices@gmail.com.

Photo courtesy Mendez Printing

Mendez Printing wanted to print more garments and to save time still using DTG, but that took an upgrade. The company updated its Kornit Storm II, purchased in 2018, into a Storm HD6 two years later.

"We upgraded the print head for a higher resolution print and to be more efficient," says Milton Mendez, co-owner of Mendez Printing. "It still has one giant print head. The actual dot is a lot sharper, you get better quality out of it, and you save on ink consumption."

Mendez originally purchased the Kornit, a high-resolution digital printer, when he had a 3,500-shirt order following an order of 105 tester shirts from the same customer. The equipment allowed him to provide complete fulfillment of small- and large-quantity POD wholesale orders.

Previously, he used a tabletop printer for one-off and small orders that operated at a slower speed and required pretreatment and pallets to be removed to pass each shirt through. The 105-shirt order took a week, and when Mendez learned about the Kornit, he made the $350,000 investment to be able to start taking larger orders.

The Kornit Storm HD6 has two pallets, allowing for two shirts to be printed at once. A blank shirt is placed on the pallet,
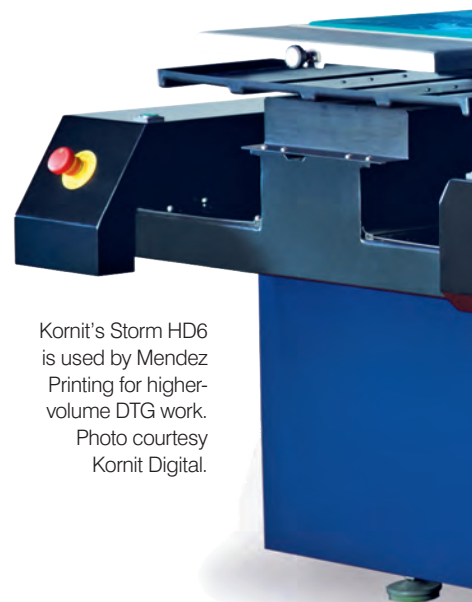
Kornit's Storm HD6 is used by Mendez Printing for higher-volume DTG work. Photo courtesy Kornit Digital.

and a water-based fixation is sprayed onto the shirt wet, and since the process is wet-on-wet, printing immediately initiates.

"You start printing right away. You don't have to dry that part," Mendez says. "That's important because with other DTG machines, you have to wait until that fixation dries." Depending on the machine, drying with a heat press takes a few seconds and with a conveyor belt a few minutes.

"It's just another step that takes time and money," Mendez said.

Mendez Printing uses the Kornit primarily for T-shirts, hoodies, zip-up fleeces and onesies — the printer does particularly well on 100% cotton, especially ringspun.

Milton Mendez, owner of Mendez Printing, says upgrading the company's DTG printing has improved quality and saved on ink consumption. Photo courtesy Mendez Printing.

Sandlot Sports was able to print 400 Final Four shirts per hour using its latest automatic press. Photo courtesy Sandlot Sports.

Sandlot Sports employs multiple embroidery machines to keep up with this important part of its business. Photo courtesy Sandlot Sports.

The company is able to print 10 to 15 percent more garments because of the upgrade and to save on ink. On the expenses side, the company had to hire and train an operator and to pay a higher gas bill to operate the dryer, as well as a monthly service fee.

"That's pretty hefty, but they do a good job with that," Mendez said. "It's amazing. We're the only guy in town with it. Screen printing has lots of competition."

Other companies are making upgrades, like Sandlot Sports, which started bringing in more apparel decorating jobs than it could handle with its existing equipment.

Going automatic

The Saginaw, Mich.-based company purchased a used automatic screen-printing press in 2010, selling it and buying a new one a year later, then invested in a new, higher-volume press in 2012. The company is in the middle range of high-volume manufacturing, producing 5,000 to 10,000 pieces a week.

"It had to do with time management. We were bringing in more jobs than we had capacity for," says Adam McCauley, co-owner of Sandlot Sports, which has two other locations in Bay City and Midland, Michigan., and provides screen printing, embroidery, and promotional services for sports and corporate clients. "If it's one busy week, it's a different story. Working around the clock to get jobs out the door, week after week, is not sustainable."

The automatic press enables Sandlot Sports to easily print 300 garments per hour versus 30 with its manual six-color screen printing press.

"Doing everything manually took so much longer," McCauley said. "The biggest thing was time. Did we have the jobs that justified spending the money on automatic machines?"

Sandlot Sports uses the manual press for lower quantity printing jobs up to 35 units for garments like T-shirts, crew necks, jackets, and hoodies, since setup time on the automatic machine takes longer. The manual machine is easier to control and can be used for trickier inks and jobs
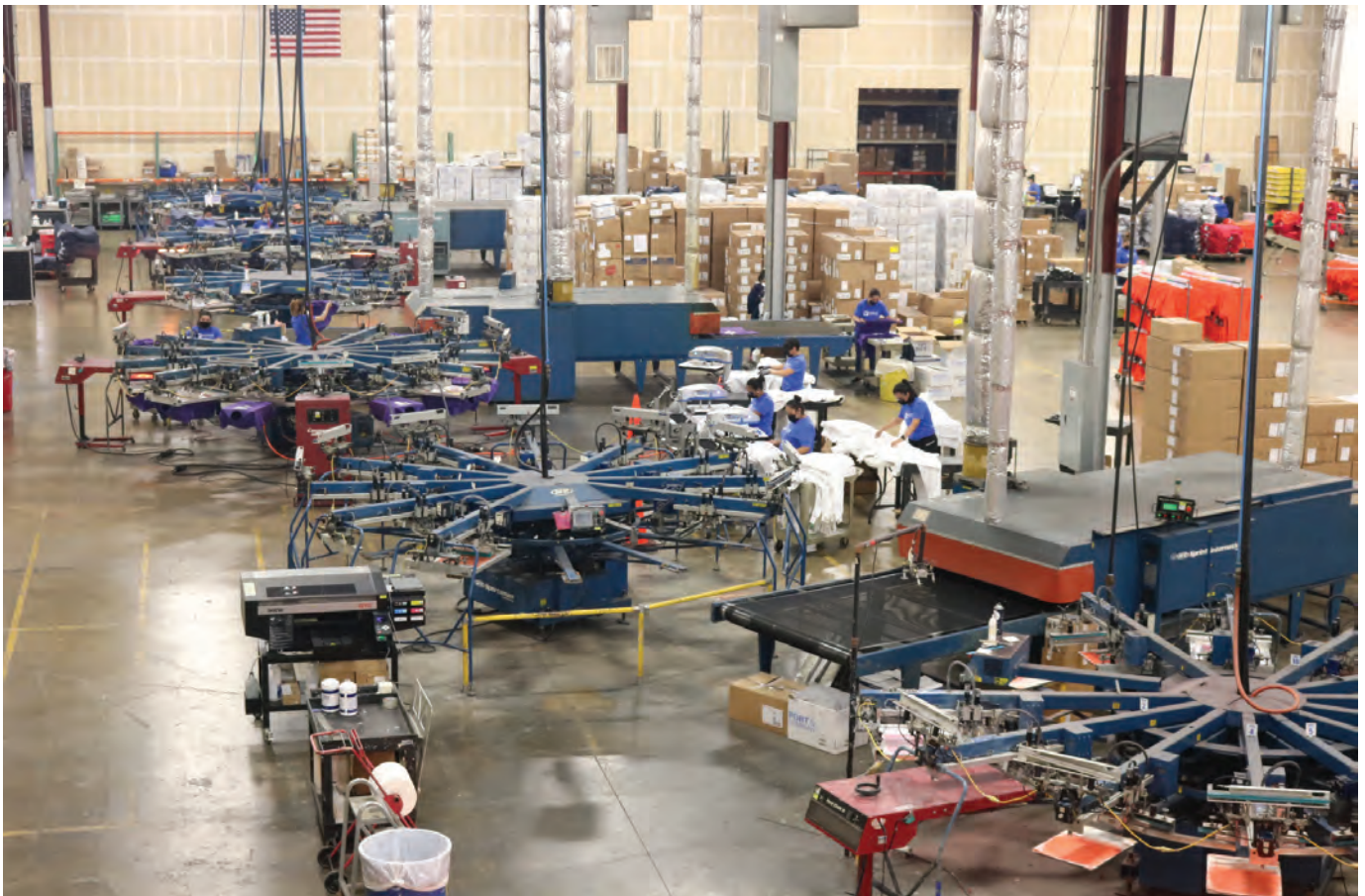
The production floor at Impress Designs, where the company takes high volume to the next level. Photo by Regan Dickinson.

requiring precise placement of the logo or other printed image, McCauley said.

The company's two automatic presses are designated for the larger jobs and include a six-color, eight-station press and an eight-color, 10-station press. The presses also are preferable for garments requiring lots of colors, since the stations have automatic flash, which is a drying process between color selections and indexing to the next color. The machines help with consistency with every stroke the same, which is more difficult to achieve manually.

"Having more stations allows for more options to flash in between prints, which can ultimately help the print quality on your garments," McCauley said. "If it dries, it's easier to print thin lines or thicker ink."

The print heads on an automatic machine operate at the same time, and every stroke prints a new color. Alternatively, on a manual machine, the operator has to print each color then physically rotate the shirt for the next color.

If there is more than one shirt, a color is printed onto the shirt, and it's moved over so that the next shirt can be printed with that same color or flashed then the screens are switched out for the next color, over and over, until all of the colors are in place.

"Once a shirt comes around to the end of the cycle, it's completed. You don't have to spin it around and print it again," McCauley said. "Once the final product is taken off the press, the shirts are completed."

Impress Designs, a contract screen print, embroidery, and application decorator in Carrollton, Texas, uses all high-speed automatic screen-printing presses. The company has 10 M&Rs at its facility for its medium- and high-volume work. Most orders are 300 to 500 pieces, but an order in mid-August, for example, was 1.2 million pieces. The orders are for licensed apparel, commercial apparel, and promotional products wholesale.

The company, founded in 1977, added equipment in its pre- and post-press departments to do things like reclaim the screens and auto coat and auto wash them, plus brought in larger dryers to be able to move more garments through the printing process.

"As you grow, there are different things that make the jobs easier and faster to do and cheaper to do," says Nathan Belz, COO of Impress Designs. Impress Designs took into account several factors before deciding which equipment to purchase to accommodate that growth.

"When you're going into something with volume, quality is a big thing because you're using machines eight to 20 hours a day," Belz said. "It needs to have a lot more rigor than other equipment. It needs to last beyond the quality."

High-volume embroidery

Sandlot Sports uses Tajima embroidery machines for its embroidered logos and other apparel decorating on shirts, hats, bags, coats, and sweaters, and has two 6-head machines, a 4-head machine, and two single-head machines. The number of heads determines how many shirts can be run through at once, and with more heads, the speed and volume of production can be increased. "It has added value.

It looks nicer to have embroidery than screen printing," McCauley says.

Impress Designs has 62 heads for embroidering with six heads for each piece of equipment, so that operators can operate two machines at once.

"In embroidery, what you're looking for is better-built equipment because they're actually similar in the way they operate. They hold up better, and they have better parts from suppliers," Belz says. "We're sewing at 20 hours a day, so it needs to last longer and be built better for longer runs. Better equipment will sew better and sew better longer. You can often sew faster with the same quality results as you can on cheaper equipment where you'd have to sew it slower to get the same quality."

Mendez Printing uses two Barudan embroidery machines for high-volume orders that employ multiple thread colors to sew onto garments like hats and polos.

Upgrade recommendations

To improve efficiency and to be more competitive, Sandlot Sports uses ShopWorks Business Software, a software management system to handle orders, which are input by customer service reps and scheduled out with production dates, artwork, and activity. "We have product specs and proofs we run through that software," McCauley says. See the sidebar on page 22 for McCauley's list of factors to consider when looking at upgrades to high-volume equipment.

Belz is sure to check that parts can operate quickly and efficiently and be maintained and repaired. He considers how often repairs will have to be made and how long the repairs will take before the equipment is able to function again.

For any equipment he's going to finance, he'll look at residuals. He also will consider the infrastructure for the install, plus operations so that there are spaces and processes for supplies coming in, as well as the raw materials before they hit the printer and are routed back out for delivery.

He'll take into account setup and installation time, versus with a manual, which can be done quickly. He also has to take into account quality control so that output remains as error-free as possible.

"Especially with screen printing equipment and getting into these things, make sure you have a plan and know how to handle a break," Belz said. "You can look at strategic growth and decide based on projections of growth, when your ROI will get there." GP

Impress Designs' embroidery department. Photo by Regan Dickinson.

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Equipment Upgrade Factors

BY ADAM MCCAULEY

Adam McCauley, co-owner of Sandlot Sports in Saginaw, Michigan, offers a list of factors to investigate when considering an upgrade to high-volume apparel-decorating equipment.

What is your workload like? Assess your current and projected workload. Project workload is harder to account for, but if you've been in business a few years, you should be able to assess whether business is going up or down. We knew it was time when we were struggling to keep up with demand using our manual equipment. After two years of working all day and working all night, we knew it was going to be either turning down orders due to capacity limitations or considering automation.

How efficient are you? Evaluate the efficiency of your current manual setup. Consider the time and labor required for each job. An automatic machine can significantly increase production speed, reducing labor costs and increasing output. We wanted to maximize our efforts in an 8-10 hour day.

Higher quality. Determine the quality of prints you're achieving with your manual equipment. Automatic machines often provide more consistent and precise results, which can improve the quality of your products. The automatic machines don't get tired. The pressure is consistent from print 1 to print 1,000. The same goes for reclamation and screen prep automation. Your goal should be consistency, and with some automation, you remove variables that can slow or alter print results.

Labor costs. Calculate your labor costs associated with manual printing. An automatic machine can reduce the need for skilled labor and potentially cut labor expenses over time. Obviously, there is a skill to printing on an automatic, but we've found that most of the skill is in the setup.

How are you decorating? Consider the types of products you decorate. If you frequently print or embroider large quantities of the same design, an automatic machine is more suitable. However, if you specialize in custom or small-batch printing, manual equipment might still be cost-effective.

Budget and space. Automatic screen-printing machines can be a significant investment. Not only are you investing in an auto or a new six-head embroidery machine, for instance, but you'll also need support equipment soon, if not before. You'll need to evaluate your conveyor dryer. Can it keep up with your new capacity? Do you have a large enough air compressor? Do you even have an air compressor? What about power? Do you have Single-Phase or Three-Phase? Is there gas available to this new dryer, or is it still electric? All of those may affect your budget. Evaluate your financing options to determine if you can afford the upfront cost and if the long-term benefits outweigh the initial expense. Automatic machines tend to be larger than manual ones. Make sure you have adequate space in your shop for the new equipment and any additional accessories or conveyors required.

Timing and training. When purchasing new equipment, you may not get it as soon as you want. Some equipment may take weeks or months to get to you and be installed. Automatic machines may require specialized training to operate and maintain, and there will be a learning curve. Consider whether your staff is prepared for this transition and if additional training is necessary. It will be.

Maintenance and support. Research the maintenance requirements and availability of support for the specific automatic machine you are considering. Downtime due to maintenance issues can impact production schedules. Find out if you have technicians in your area or close by who can assist you quickly if you go down. Sometimes, the support technician can be a difference between this machine or that.

What is your return on investment (ROI) and future growth? Calculate how long it will take to recoup your investment through increased production, reduced labor costs, and improved quality. Think about your long-term business goals. Will the automatic machine accommodate your future growth, or will you outgrow it quickly?

See it live. New equipment is expensive, but it's more expensive if you get sold a dud of a machine. If you are looking for upgraded automatic machinery, a good salesperson should be able to give you a list of customers that are satisfied with their purchase. Ask for their contacts and call them. Ask if you can see their machines in action. On the show floor, every product is the greatest. Find someone that will let you see it "in the wild." Ask real questions or concerns to the operators and see if this machine can perform the way the commercial says it does. The best time to transition to automation varies depending on your unique circumstances. Generally, if you are consistently facing capacity constraints, experiencing increased demand, and have the financial means to invest in automation, it may be a good time to make the switch. However, it's essential to thoroughly analyze all the factors mentioned. **GP**

UV FLATBED PRINTER

MUTOH announces the launch of its XpertJet 1462UF UV-LED flatbed printer. It features a 55" x 27" table, which the company says allows users to to print on objects up to 5.91" thick. The company also says it can achieve multi-layer printing speeds of up to 41.8 square feet per hour. The product has a dual print head in a staggered configuration, and it is powered by MUTOH's VerteLith Genuine RIP software.

800-996-8864 • mutoh.com

MULTILAYER PRINTING

Roland DGA announces that its TrueVIS MG Series UV printer/cutters now support "One Pass Multilayer printing," which the company says allows for three layers of ink to be printed simultaneously. Current MG-300 and MG-640 users can add this function free of charge by upgrading their printer/cutter's firmware.

800-542-2307 • rolanddga.com

SCORED ADHESIVE LINER

Mactac Graphics & Signage Solutions announces the launch of Printvinyl Scored, which includes two pressure-sensitive adhesive (PSA) products with a scored liner for screen and wide-format printers. The liner has a 1.25" spacing, and the company says products are printable on the film face and liner.

866-622-8223
mactac.com

VINTAGE WASH TEES

LAT APPAREL announces the launch of its LAT APAREL Vintage Wash Tees, which the company says offer a soft, worn-in feel in a variety of colors.

800-414-5650
latapparel.com

AUTMOTIVE WRAP ADHESIVE

General Formulations offers the GF 830 AutoMark Cast with DRIFT Technology, which the company says has advanced air egress capabilities to enable easier application.

800-253-3664 • generalformulations.com

CONTROL KEYPAD

Key Digital announces the release of its first plug-in resulting from joining the Q-SYS Technology Partner Program. The company offers the KD-WP8-2 Plugin, which is an eight-button programmable IP, RS-232, IR control keypad that is now natively compatible with Q-SYS.

855-539-3444
keydigital.org

LAZY SUSAN

Laser Reproductions Inc. offers the Natural Wood Sublimatable Lazy Susan, which has a 14.5" diameter and will fit in a 16" x 20" heat press, according to the company.

877-795-1500
laserreproductions.com

VINYL CUTTER SOFTWARE

GCC America Inc. introduces the GreatCut-S software, which the company says is compatible with Windows and Mac systems. A plugin for Adobe Illustrator and CorelDRAW is available, and the interface allows for users to add registration marks and cut images to simplify workflows, according to the company.

909-718-0248
gccworld.com

GP

Reviving Customer Service

BY PAUL INGLE

The importance of the roles of salesperson and sales manager

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.

I have long contended that to set your company apart in our industry, you only must do two things:

1. Do what you say you are going to do.
2. Do it on time.

I am guilty of being old school and simplistic. As the years flash by, the more I aspire to simplicity. Many people in the branding world make things too complicated. They try to be all things to their customers instead of showcasing their core competencies. Or, they rush to judgement by offering every new product or service without surveying their client's needs, relying on their strategic plan, or just doing a good job of listening to their customers and their entrepreneurial instincts.

When you look at the internet, watch television, and engage with various businesses each day, you have probably concluded that customer service is on the decline. Some say it is on life support. Many think it is dead.

The digital revolution has decreased the importance of having actual humans at the front lines of business. Remember what Netflix, Amazon, Dollar Shave Club, Uber, and Warby Parker (designer frames/glasses via online) have done to differentiate themselves from the competition and enhance customer service experiences with limited customer service staff? These are all billion-dollar companies only five to 22 years old.

The pandemic did not help. We still have a shortage of people in the workplace. Young people want to be influencers and sit in front of their basement camera and hope for internet glory and riches (my teen grandchildren have already proclaimed this to me).

Many people have yet to discover a burning desire to work. Through welfare, our government helped enable those that wanted to get a check without providing work. It even created a subculture of under-the-table side hustles for cash and lack of accountability. And, those unique souls that have a great work ethic and personal pride are doing three co-workers' jobs with their pay not keeping up with inflation.

Sounds grim? There is hope! It is as simple as finding the best fit for the roles of the salesperson and sales manager. You may not get to the size of Amazon, but sales will always make up for a lot of ills. And, if you hire for attitude and use your team during the interview process, the customer service part will become as automatic as breathing.

Well-rounded salespeople

The fundamental duty of a *salesperson* is selling. This includes meeting prospects, presenting, and demonstrating products and/or services, inducing the prospects to buy, taking orders, and creating sales. Then repeat.

A salesperson should guide buyers in buying the goods they want. They must attend to complaints. A good salesperson should attend to the complaints of the customers immediately and try to settle their grievances quickly and sincerely.

Salespeople should be active in the collection of invoices. This gives them a vested interest in completing the sales cycle. The adage, "A sale is not complete until the money is collected," is more important today than ever. This can include the collection of the bills and remittance of the amount to the firm. (Nugget: tie their paid compensation/commission to the collection of deposits and final payments.)

A salesperson may be required to collect information about the creditworthiness of the customers. In such a case, they must

collect detailed information and submit it to the firm in a timely manner.

Salespeople should be required to send daily, weekly, or monthly reports to the firm, providing information about the calls made, sales effected, services rendered, travel schedule, expenses incurred, business conditions, competition, if any, etc.

People in sales are required to organize their travel. They must prepare the route and time schedules to systematize sales efforts. This travel may require pre-approval by ownership, the sales manager, etc.

Attending sales meetings convened by their employer at periodic intervals to discuss marketing problems, sales promotion activities, sales policies, etc., is an important requirement.

A salesperson must undertake travel regularly to cover the sales territories assigned. They may have to periodically arrange the packing of goods sold and delivery if required. This *is* a team sport! And, this will help build good customer service loyalty.

Every salesperson must build up a satisfied clientele for their employer and thereby promote the goodwill of their firm. This may include joining civic organizations, attending trade shows, etc., to increase the visibility of themselves and the company.

Often, salespeople should help recruit others for open sales positions. Having them accompany new sales trainees while making sales calls is beneficial for both parties. Our company offers a recruiting incentive, and it handsomely rewards the outcome of a new referral hire.

Salespeople should establish direct relations with vendors — distributors, wholesalers, etc., and collect market information to pass on to their firm. Knowledge is power, even today.

Sales manager characteristics

The specific responsibilities of a sales manager can vary from company to company. But typically, the tasks include sourcing talent, training and coaching the sales team, setting the sales strategy, and reporting on sales activities. What are their key areas of focus?

If you hire for attitude and use your team during the interview process, the customer service part will become as automatic as breathing.

1) Hires sales team members.
2) Trains and is a mentor for salespeople.
3) Oversees sales strategy.
4) Collaborates with other key departments.

What does an employer look for in a sales manager? To be a great sales manager, you must be empathetic. Empathy allows managers to identify underlying problems their team is facing and see challenging situations from their point of view. This understanding helps sales managers build better relationships with their team.

If you lack empathy, you may apply too much pressure, and this can negatively impact your team, leading to poor performance, unhappy culture, and employee churn. Not good.

Sales is a high-pressure job, but sales management is even more demanding. You need resilience to lead your teams through tough times and to motivate them day after day. To build resilience, you must set a clear vision of where you want to lead your team. This will enable you to "push through the challenges."

My experience is that to be a great sales manager, you must always keep things in perspective. Try adopting a more balanced and realistic thinking pattern instead of giving in to irrational thoughts when facing obstacles.

The sales manager exists to serve the customer and the sales team, not the other way around. Embrace this *servant leadership* mentality to make sure your team feels nurtured and appreciated. Develop this skill by being helpful and available. Take the time to listen to individual needs, questions, and concerns. You'll be better able to help the team overcome its roadblocks.

Being a sales manager means you'll be communicating with a lot of people: marketing, customer support, management, ownership, and your team. You must be able to convey messages clearly and compassionately. Learn how to find the appropriate tone of voice for each type of situation. For example, you might use an assertive tone while giving out instructions, but a reassuring voice while speaking to a disgruntled customer.

Practice active listening. It pays to focus your attention on the other person, be it a teammate or a prospect. Wait until someone is done speaking so you don't talk over them and miss important information. Strong public speaking skills certainly come in handy, too. You'll need to make frequent sales presentations to other departments or companies, so confidence is key.

Sales management involves putting out fires that pop up during sales cycles, whether it's a stalled deal or a disappointed new customer. You must be skilled in anticipating problems and reacting accordingly and calmly.

The first step is to remember you aren't alone; get help from others to resolve complicated issues. It also helps to think outside the box when problem-solving; creativity can do wonders in a tight corner. Use critical thinking to come up with ideas that will turn chaos into order.

Finally, develop a process that helps you determine the best solutions in high-pressure situations so you can make quick, well-informed decisions.

Salespeople often need an extra push to continue closing deals, especially after facing rejection. A great manager can step in to lift their team's spirits and get everyone excited to go after their next lead.

Share uplifting sales quotes with your team on a hard day to encourage them, or take a junior salesperson or two under your wing and have regular coaching sessions to help them develop resilience.
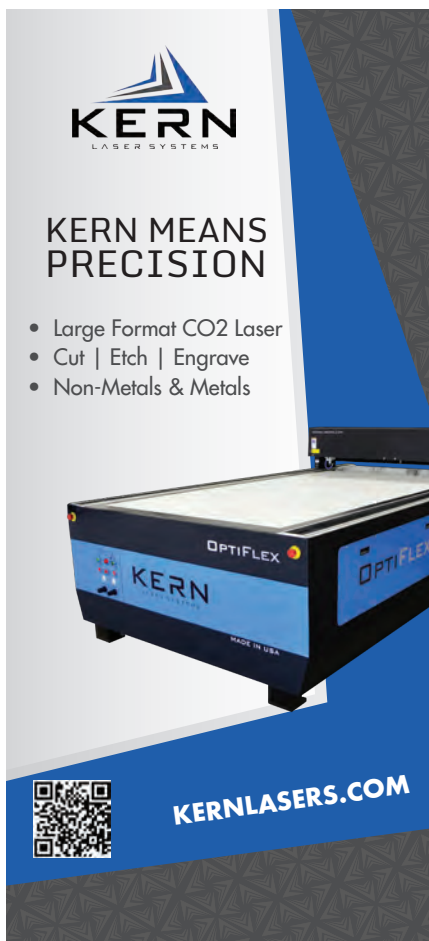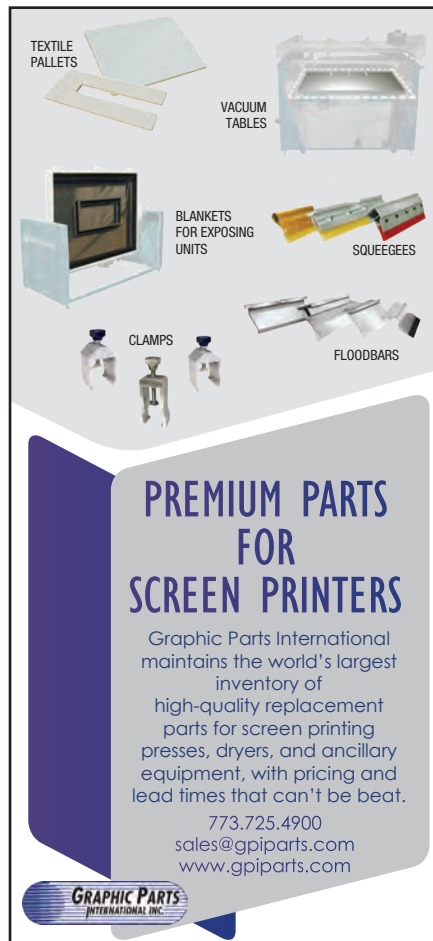
Being a sales manager means you wear many hats. But sometimes, you must take them off and entrust certain tasks to members of your sales team. Delegation frees up your time to concentrate on the most important parts of your job and allows team members to assume more responsibilities and grow their skills. This might not come naturally to you, but it'll become easier as you build trust in others. Try assigning some extra work to junior salespeople who want to take on more responsibility. Support them and track their progress, but avoid micromanaging. You want to inspire everyone to stick to the sales plan, not force them.

I learned the hard way this next bit of advice. Do not assume a great salesperson will be a good sales manager. Often, a top-tier salesperson (a rainmaker) is a natural self-producer, and they do their best with team support and little to no micromanagement. This personality type often does not manage others well because they assume every salesperson should be like them. But, those types of superstars often do 80 percent of the sales in your organization, so let them fly.

Remember, you want a sales manager that has emotional intelligence (EQ), which is often more important than IQ. If they are self-aware, can self-regulate, have empathy, and are intrinsically motivated, they can make all the difference in your sales team. The synergy of a good sales manager and sales team can rocket your firm forward in revenue, profits, and customer service.

Customers deserve better service, even if they do not expect it in today's world. This gives your business a golden opportunity *right now* to differentiate your offerings from the competition by surprising and delighting customers with the quality of your service. An investment in customer service through good sales and sales management is an investment in your future. **GP**

The Color Closet

Little-used adjustment techniques that pop your color

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.

Brightness and Contrast

Levels

Curves

Hue and Saturation

I refer to the most frequently used color correction techniques as the *Big Four*. Brightness and Contrast, Levels, Curves, and Hue/Saturation are the nuts and bolts of color and contrast adjustments that refine an image and make it pop.

It's important to know how to use these features because they are crucial to producing quality images that are void of color casts, have superb contrast, and are rich in tonality. You'll find versions of the Big Four in many software packages, and even on some scanners and digital cameras.

There are, however, lesser-known features in Photoshop that I'd like to pull out of the dusty old color closet. These tools aren't used as often as the Big Four, but because they approach color manipulation a little differently, they are well worth exploring with the expectation that they will extend your capabilities even further.

Calibrate and measure

Before you begin applying any color modification features, determine what the colors on your monitor represent. Calibrate your system using built-in software or, better yet, hardware devices such as a colorimeter and a spectrophotometer to create an ICC profile that displays accurate color and contrast

qualities of your monitor and printer before performing color adjustments.

With a reliable image displayed on screen, view the image's histogram to determine the range of colors in each image and measure a specific white point or black point with the Color Sampler tool and the Info panel. Adjustments are more accurate and better controlled when applied in a calibrated workspace.

Adjustments panel

The 16 different icons in the Adjustment panel enable the manipulation of the color and tonal properties of an image (see **Figure 1**). When you click on an adjustment icon, an Adjustment layer is automatically generated, and the Properties panel displays specific controls.

A layer mask is also generated so that the opacity and position of the adjustment can be designated. The obvious advantage of using Adjustment layers is that they can be accessed and edited at any time to maintain the all-important non-linear workflow throughout the image editing process.

Exposure control

Had enough preliminaries? Let's get started with the actual techniques! One of the most common miscalculations when an image is captured with a digital camera is the exposure. Usually, photographers guard against under- or over-exposure by *bracketing*.

Bracketing consists of shooting a series of pictures with a variation of exposure of one half to one full stop. This works well when a picture is planned, but it isn't possible for one-of-a-kind candid shots. Indeed, it can be quite frustrating if the picture is taken exactly at the right moment with perfect composition and the exposure is too light or too dark.
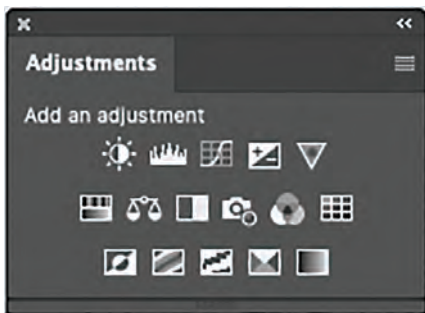
Figure 1. The Adjustments panel displays icons that represent a variety of color correction features.

The *Exposure* adjustment is designed to lighten under-exposed images and darken over-exposed images. It was originally developed to correct a bracketed series of images being converted to 32-bit HDR images using the automated Merge to HDR Pro command, but it works equally well with 16- and 8-bit images.

The panel consists of three tonal sliders:

Exposure adjusts the highlight end of the tonal scale with minimal effect in the extreme shadows.

Offset darkens the shadows and midtones with minimal effect on the highlights.

Gamma Correction: Gamma is the relative bright and dark value of the image. It defines how the numerical value of a pixel relates to its actual brightness. It affects how a digital image looks on a computer screen. If an Image appears flat and lacks punch, drag the slider to the right to enhance the overall gamma.

Eyedroppers: These little icons adjust the luminance (brightness) values.

- **Black Point** eyedropper sets the Offset, shifting the pixel you click to black - zero (0).
- **White Point** eyedropper sets the Exposure, shifting the point you click to white - (255).
- **Midtone** eyedropper sets the Exposure, making the value you click middle gray - (128).

You can see the results of an exposure adjustment in **Figure 2**. This underexposed image was completely transformed with a robust Exposure and Offset adjustment and a modest Gamma tweak. The results are dramatic but quite different than applying a simple Levels adjustment. Specific areas of brightness in the overlapping ranges of highlight, midtone, and shadow have been targeted and modified.
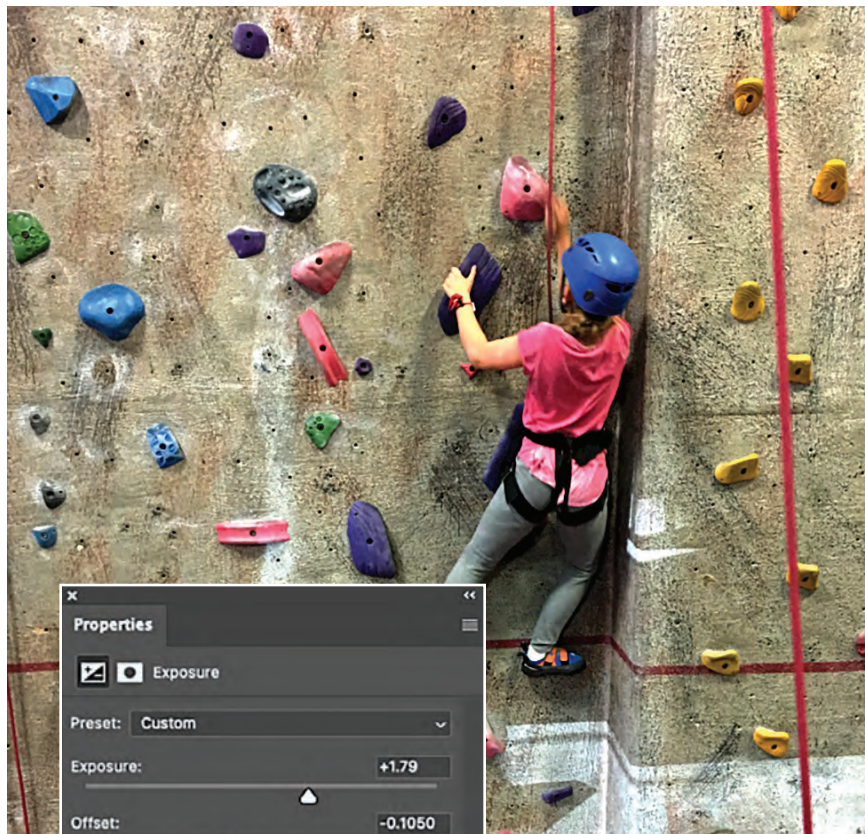
Figure 2. Dramatic results are achieved when the Exposure adjustment is applied to an under-exposed image.
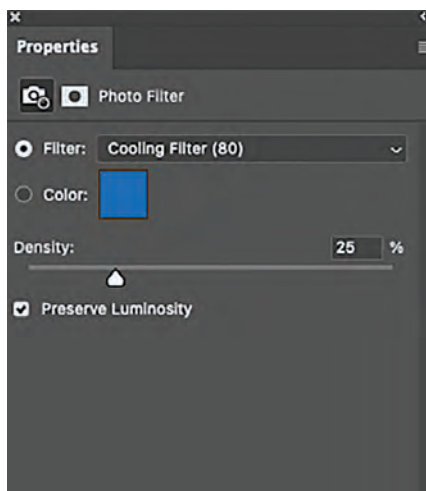
Figure 3. The before and after results of applying the Photo Filter's Cooling Filter 80 at 25% density to an image photographed in a very warm light.

Photo filter

Warming or cooling an image might just be what is required to smooth its overall tonality. The *Photo Filter* lets you apply the effects of traditional photographic filters by producing results that are commonly used by photographers to warm or cool the colors of an image, reduce glare, or simulate a specific atmospheric environment (see **Figure 3**). In the panel, choose a specific filter from the menu or a specific color by clicking the swatch. Control the amount of the color by moving the density slider between 1 and 100 percent.

Within the menu are specific color filters. For example, Warming Filter (85 and LBA) and Cooling Filter (80 and LBB) are color conversion filters that target the white balance. If an image was photographed at a lower color temperature of light, it will appear yellow.

The Cooling Filter (80) moves the colors toward the higher temperature range

so that they appear bluer to compensate for the lower color temperature of the ambient light. Conversely, if the photo was taken at a higher color temperature of light, it will appear blue. The Warming Filter (85) will reduce the blue by adding yellow.

If specific filters aren't what you want, any color can be specified by clicking the swatch and choosing it. Individual Colors apply a hue adjustment to the image depending on the color preset you choose. Your choice of color depends on how you're using the Photo Filter adjustment.

If your photo has a color cast, you can choose a complementary color to neutralize it. You can also apply colors for special color effects or enhancements. For example, the Underwater filter simulates the greenish blue color cast in underwater photos. Check the *Preserve Luminosity* option to apply the filter without affecting the tonality.

Good vibrance

Click the triangular-shaped Vibrance icon to adjust color intensity with minimal *clipping* as colors approach full saturation. Vibrance increases the saturation of less-saturated colors proportionally more than the existing intense colors. It also guards against oversaturation in skin tones.

Note: Clipping occurs when the color values of a pixel are higher than the highest value or lower than the lowest value that can be represented in the image. For example, the *Saturation* control in the Hue/Saturation panel uses clipping to hyper-saturate colors at the extreme of the adjustment. Overly bright RGB values are clipped to output white, and overly dark values are clipped to output black. The result is a spiking of color intensity and a loss of image detail.

Vibrance enhances color without clipping. Drag the *Vibrance* slider to the left to increase or to the right to decrease color saturation. To apply the same amount of saturation adjustment to all colors regardless of their current saturation, move the *Saturation* slider. In some situations, this may produce less banding than the Saturation slider in the Hue/Saturation Adjustments panel.

To decrease saturation, move either the Vibrance or the Saturation slider to the left. You can see the different results in **Figure 4**. Diminished vibrance produces soft pastel-like colors. Increased vibrance intensifies colors without the harsh intensity of hyper-saturation.

Balancing act

The Shadow/Highlight command quickly corrects over- and under-exposed areas of an image. Unfortunately, because of its complexity, this adjustment is not represented by an icon in the Adjustments panel and therefore does not produce an adjustment layer.

Access the dialog box from the Image > Adjustments >Shadow/Highlight menu. Shadow/Highlights is a tonal balancing act. It uses an adaptive algorithm that controls luminance by assessing the RGB values of neighboring pixels. This enables the
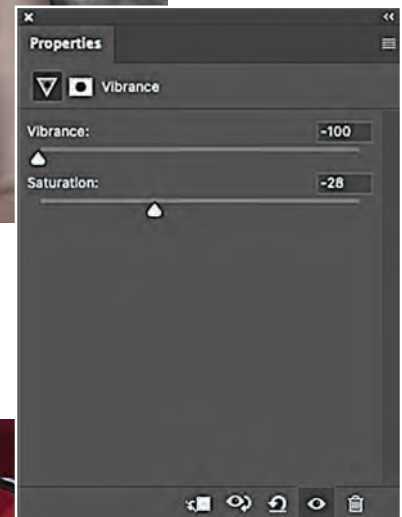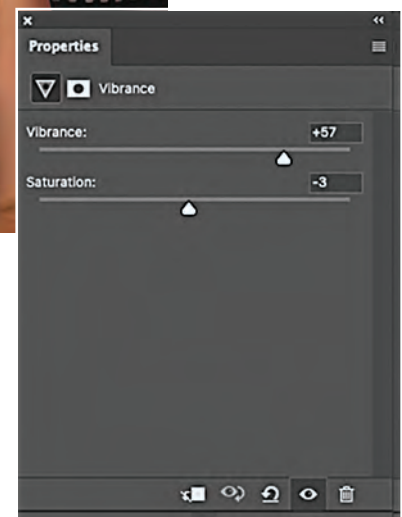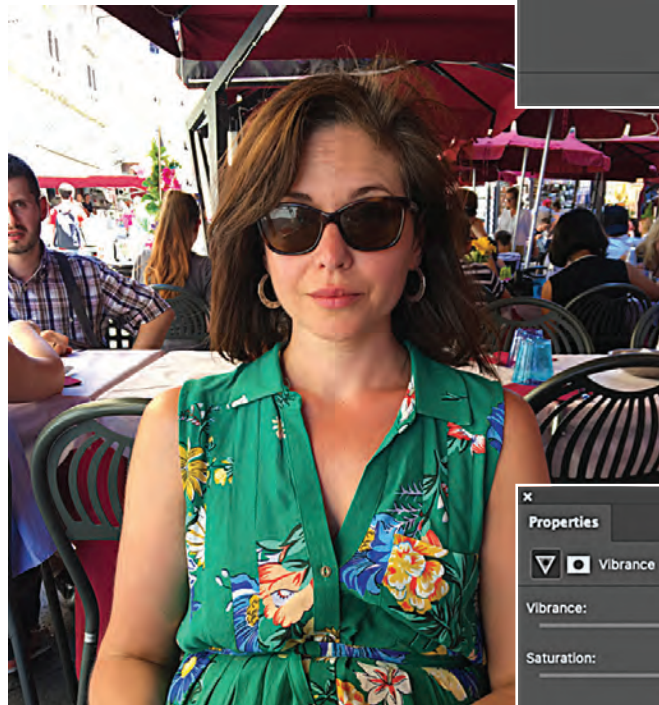

Figure 4. Results of the Vibrance feature: -100 % vibrance, and -28% percent saturation produces a muted pastel image.

The same image with + 57% vibrance and -3 % saturation pops the colors.

image contrast to be increased in the shadows or highlights without significantly sacrificing contrast in the other tonal regions. It's especially good for restoring detail in over-exposed or backlit images.

The sliders represent several aspects of the adjustment. It's best to check the *Show More Options* box to access all the controls.

Amount

This slider controls the strength of the adjustment to each pixel. Larger values provide greater lightening of shadows or greater darkening of highlights.

Tonal width

The Tonal Width slider sets how much modification will be applied to the different tonal regions. For example, you may want to darken only the lightest highlights, or lighten only the deepest shadows. When correcting shadows, small values of tonal width emphasize the darker regions and larger values include more of the midtones and highlights.

Radius

The size of the neighborhood over which the luminance is averaged depends upon the Radius setting. Every pixel is modified depending upon how dark or light its neighbors are. The larger the radius, the larger the extent over which the neighborhood luminance is averaged.

Color adjustment

After you've applied the Shadow/Highlight command, you may find that the image has acquired an undesirable color cast or has significantly reduced saturation. Drag the Color Adjustment slider to the left to diminish the over-adjustment. Moving the slider to the left decreases the saturation of the image. Moving it to the right increases the saturation.

Midtone contrast

Increasing or decreasing the midtone contrast produces an overall contrast adjustment that may be just what you need to really pop the image as in **Figure 5**.

The Black and White clip percentage fields enable you to enter a value for the amount that absolute black and specular white will modify. By entering a value of 5%, for example, the value of 95% black will be increased to 100%, and all other colors will be remapped accordingly so the image will appear darker.

Out of the closet

The four under-used techniques I've pulled out of the color closet in this article are powerful, direct, and easy to perform, and they usually produce great results! They are typically employed under very specific conditions. The challenge is to assess the image and find the best solutions for color correction.

Often, it's a matter of combining multiple techniques. Knowing about these special features will expand your abilities so that when confronted with a problem image that doesn't directly respond to the mechanisms of the Big Four, you can experiment and find the perfect solution. **GP**
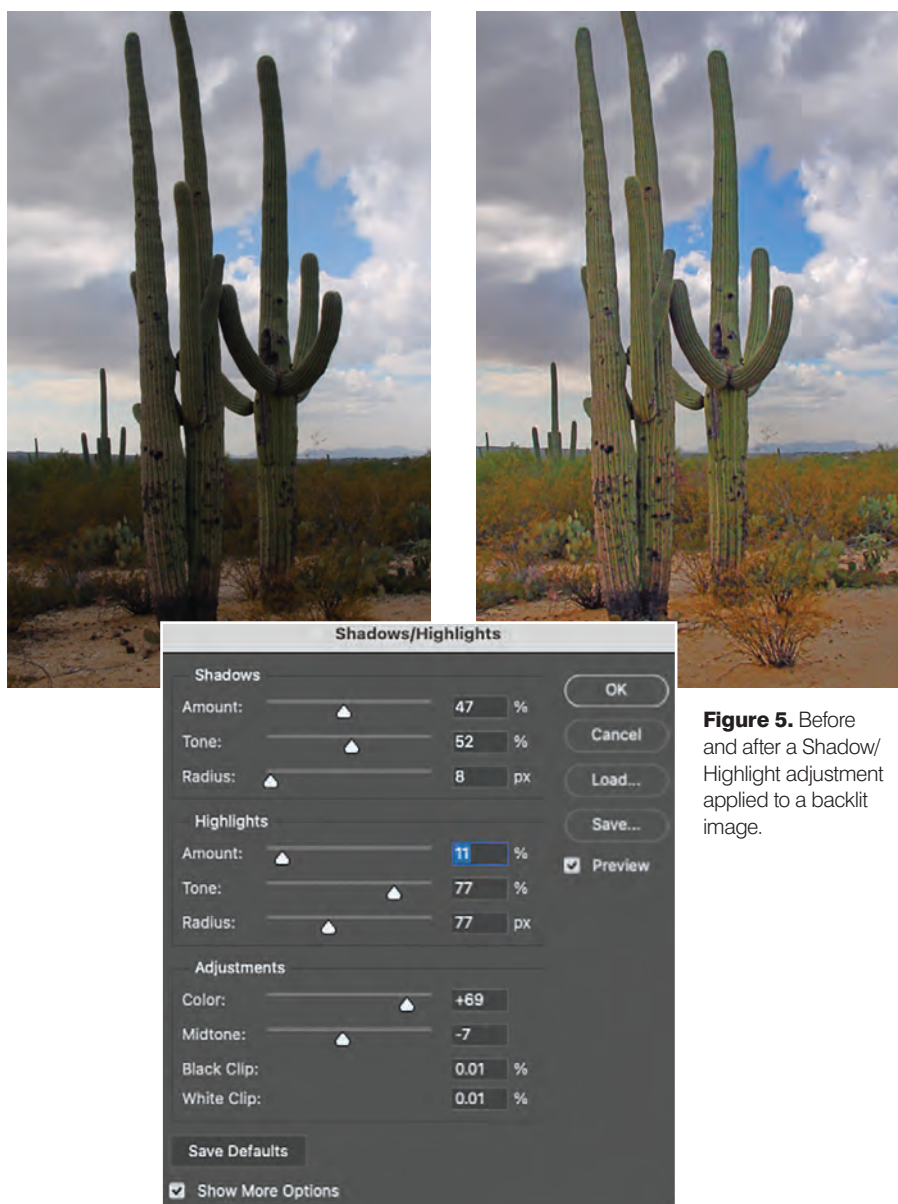

Figure 5. Before and after a Shadow/Highlight adjustment applied to a backlit image.

GP+

Direct-to-Substrate

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 direct-to-substrate.

DIRECT-TO-SUBSTRATE PRINTING

DTG TO DTF

Guidelines for using a DTG printer for DTF transfers

BY MATTHEW RHOME

Matthew Rhome has been in the decorated garment industry for over 40 years. He is the inventor of the world's first commercially available direct-to-garment (DTG) printer, the Revolution. He was awarded US Patent 6,095,628 on DTG printer technology in August 2000. Matthew was a member of the development team that produced the first DTG printer offering from Brother International and currently works for Epson America in DTG Business Development.

DTF images can be gang printed and cut apart to apply to a variety of substrates.

DTF transfers can be applied to more difficult substrates such as twill caps.

Many direct-to-garment (DTG) printer owners are discovering they can produce high-quality direct-to-film transfers on their existing DTG printers. This hybrid approach has many advantages, and regardless of the printer type, the post-production process of powdering and heating the film is the same.

First, it's critical that the ink being used is safe to be worn close to the skin for extended periods of time. Most major DTG printer manufacturers have ink safety certifications, such as Oeko-Tex, which tests for harmful chemicals and substrates and can provide Safety Data Sheets (SDS) as required by law to customers on request. This is an important process that most DTG manufacturers complete to ensure ink safety and can provide the documentation if requested.

Ink compatibility and maintenance

The majority of purpose-built DTG printers are designed and manufactured along with a corresponding ink set. This ensures the printer and ink complement each other to help ensure high-quality, sellable output.

In some cases, DTF printers are cobbled together desktop or wide format paper printers not specifically designed to print on film, and many do not have the ability to accept white ink.

White ink has a very specific chemistry, which can clump together if not maintained properly, and can affect the ink delivery system and printhead, which can lead to problems occurring more

A bottom heat element heat press can cure the ink and melt adhesive powder on a DTF transfer in about 90 seconds.

DTF transfers can be applied using either a clamshell or swing away heat press.

Polyethylene resin adhesive powder can be applied to wet ink onto a single sheet of film.
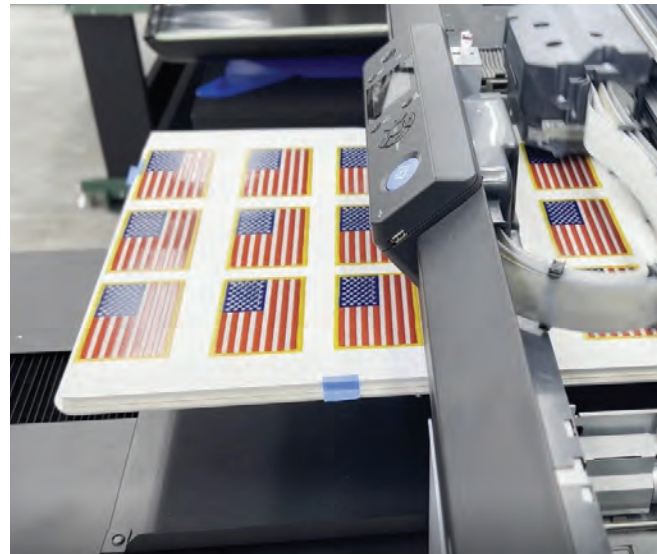
For DTF transfers, the printing order is reversed. CMYK goes down first, followed by the white underbase.

Painter's tape is used to hold the polyethylene terephthalate (PET) film in place on the shirt platen.

frequently than with a purpose-built printer with white ink compatibility.

As mentioned, DTG printers are designed to maintain the trouble-free flow of white ink. Most have a white ink circulation system and a maintenance station designed specifically for white ink formulations. Although most DTF transfer printers are designed for white ink, not all are, and therefore not all integrate these types of white ink management systems. Because of this, they could have maintenance issues, such as clogging.

Creating DTF transfers on a DTG printer increases the number of substrates that can be decorated.

Additionally, most DTG manufacturers have automatic maintenance procedures built into the printer that keep it running with no issues. Ongoing ink management and regular maintenance ensures reliability and reduces down time, which can help a business meet and potentially exceed output and revenue goals.

Warranty/repair

Most DTG printer manufacturers offer some type of limited warranty on their printer, and some offer extended service programs that cover the printer for up to five years. These warranties and service programs give the printer owner peace of mind against an expensive repair bill and in some cases offer a time frame for on-site repair in case the printer's repair issue is beyond phone support. This helps ensure businesses are covered, and the printer can be back up and running quickly.

A majority of DTG printer manufacturers have a reseller channel with printer parts and consumables, such as ink and media, readily available. A reliable DTG manufacturer will be established and carry a sufficient inventory themselves or through a dealer network.

A 14" x 16" platen is most common for garment printer, but many DTF decorators opt for the larger 16" x 20" platen.

A DTF transfer can be cured using a standard heat press by preheating the bottom platen for 30 seconds and then laying the transfer on the heated platen.

No special inks are required. In fact, you can switch back and forth between direct garment prints and DTF transfer sheets.

A decorator can create an adhesive application kit with commonly found items such as ladles and baking sheets or small plastic tubs. Adhesive powder is applied across the film and then rolled across the wet ink by listing one end. Afterwards, any excess adhesive falls back into the container. Remember, when working with the powder, use gloves and a ventilation system.

After pressing for about 15 seconds, the film is removed. For best adhesion and feel, a second press of about 5 seconds is recommended.

Workflow

A primary difference between DTG and DTF transfer printers is that DTG printers print on cut sheets of film and most DTF transfer printers print on rolls of film. When looking at the workflow analysis of a DTF transfer printer, there must be time accounted for cutting the images on the rolls of film and the time spent matching the image to the order.

Overall, printing a cut sheet could save time in post processing, and if leveraging a unique automation system, a printer could attach a bar code to the film sheet to facilitate order tracking and to speed print management.

If you already own a DTG printer and are proficient with both the printer and software, the DTF printing process is very simple and not much different than printing a shirt. Today, many DTG printer manufacturers have DTF printing software available that reverses the print layers, moving the white layer from being printed first to it being printed last, to create the film.

With very little additional training and overhead, employees can learn to print film on the DTG printer, further expanding business opportunities.

The right DTG printer will have all the same advantages of a DTF transfer printer, with the ability to also print directly on to a garment. Using DTG to print DTF and transferring that image produces a great feeling print on cotton, tri-blends, 50/50, and other natural fabrics; it has a transfer-type feel but offers great adhesion to fabrics that are troublesome to print with DTG, such as polyester and other synthetic fabrics.

Both DTG and DTF transfers have their distinct benefits in the apparel decoration process, and by using a hybrid printer, print shops can take advantage of both processes. **GP**

DTF TRANSFERS

The top 5 benefits DTF transfers offer apparel decorators

COURTESY OF STAHLS'

In today's dynamic world of custom apparel, staying ahead of the competition means embracing cutting-edge technologies, and direct to film (DTF) transfers are the latest print method to take the apparel decoration industry by storm. Compared to traditional methods like DTG or screen printing, direct to film transfers have more versatility for T-shirt decorating businesses. DTF transfers are without color limitations, priced more economically, ship fast, apply to a variety of items, and produce less waste than DTG or screen printing. With so many benefits, decorators now have a solution for on-demand printing and easily profiting with their heat press.

DTF Transfer Benefits:
1. No Color Limitations
2. Cost Effectiveness
3. Detailed & Vibrant Designs
4. Quick Turnaround Time
5. Decorating Versatility

1 No color limitations

Say goodbye to color restrictions! Unlike other methods of decorating apparel, DTF transfers have zero limitations when it comes to the number of colors in your design, and that includes gradients. You can even print photorealistic graphics and bring your boldest ideas to life. The color is truly unlimited and doesn't require any clear outlines, so even the most difficult logos come to life with DTF transfers.

2 Cost effectiveness

Running a successful T-shirt business means managing your expenses and staying efficient everywhere you can. Direct to film transfers provide straightforward pricing, so it's easy to establish a pricing grid and instantly quote customers. There's also no need for production expenses like inks, screens, or print heads. With just a heat press, you can offer customers full color designs without investing in expensive DTG or screen-printing equipment. Minimizing your setup costs allows you to offer competitive pricing and generate more profit from every order.

3 Detailed & vibrant designs

Forget tedious weeding, ink coverage, or dulled prints! With DTF transfers, even the most intricate and detailed designs can be printed, and there's no need for any outline or borders. Save valuable production time and allow your creativity and custom branding to shine! With such exceptional detail and color vibrancy, your logo is sure to leave a lasting impression on your customers.

4 Quick turnaround time

Deadlines don't wait, and neither should your printing process. DTF transfers allow you to fulfill orders fast and meet even the tightest of timeframes. There's no setup or prep time, meaning your production cycles are quicker so you can keep pace with ordering demands. With a speedy turnaround time, you can set your business apart from the competition, fulfill more orders, and scale your brand while boosting your profit.

5 Decorating versatility

From T-shirts and hoodies, to jackets, hats, and bags, DTF transfers apply to a wide range of apparel types. Whether it's cotton, polyester, or tri-blends, the most popular fabrics are covered. You can even apply to cardboard and brand your boxes for that extra decorator's touch! This extreme versatility opens endless potential for your business, making DTF the simple go-to solution for creating customized merchandise.

The direct-to-film effect for your business

Direct-to-film technology has been revolutionary for apparel decorators. With so much potential in just one finished product, it's easy to see why this print method is trending in the industry. Understanding the top benefits of DTF allows you to maximize your potential, decorate confidently, say *yes* to more orders, and keep your business trending. So fire up your heat press and start printing on demand with DTF transfers! GP

ELEVATE YOUR DESIGNS

Direct-to-substrate printing on Just Hoods college hoodie

COURTESY OF CITADEL

If you're looking to create eye-catching, high-quality prints, direct-to-substrate printing is a technique that can really elevate your designs. Just Hoods by AWDis offers a fantastic canvas for this technique with their JHA001 College Hoodie, a blend of 80% ringspun cotton and 20% polyester known for its exceptional printing capabilities.

The JHA001 College Hoodie boasts a 100% cotton face, a crucial factor when it comes to direct-to-substrate printing. The ink adheres splendidly to cotton, ensuring vibrant and detailed prints that stand out. This hoodie's fabric is a result of tight knit ringspun cotton, providing a smooth and even surface for ink application.

The 20% polyester content in the hoodie also plays an important role. While the cotton face ensures top-notch print quality, the polyester blend helps maintain the garment's shape, guaranteeing that your prints remain intact even with repeated washing.

Step-by-step guide:

Heat Press Fabric: Before printing, heat press the fabric. This step removes moisture from the fabric, allowing the cotton to absorb the ink effectively. It also flattens any protruding fibres, creating an even smoother surface for printing.

Apply Pretreatment: Apply a pretreatment solution to the fabric. This solution prepares the fabric for ink absorption and acts as a barrier, ensuring the ink adheres to the top layer of the garment.

Cure Pretreatment: Use a heat press to cure the pretreatment solution. This process sets the barrier in place, ensuring that the ink adheres precisely where intended.

Print the Garment: Begin by printing a white layer. This base layer enhances the vibrancy of subsequent colors. Once the white layer is cured, proceed to print the colors on the reverse side for optimal results.

Cure Ink: After printing, cure the ink using a heat press. This step permanently sets the ink, making it resistant to washing and ensuring longevity.

Finished Product: After curing, your JHA001 College Hoodie is ready! You've successfully transformed a blank hoodie into a vibrant canvas for your designs.

The JHA001 College Hoodie isn't the only canvas available for direct-to-substrate printing with this exceptional fabric. Several other Just Hoods styles share the same high-quality material, including JHA003, JHA009, JHA011, JHA016, JHA030, JHA035, JHA050, JHA046, JHA074, and JHA080. These styles offer consistent print profiles, giving you a range of options to bring your creative visions to life. GP

DTG IN THE MAINSTREAM

A look at the process after years of being put through its paces

BY KRISTINE SHREVE

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 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-garment (DTG) printing was, like DTF has now become, once the decorating technique that had everyone buzzing in the industry. When DTG was new, it was touted as the perfect solution for every shop, a way to print *directly on garments*, in *full color*, and *on black!* For those who had been looking for a way to do all those things, DTG seemed heaven-sent. Fast forward a number of years, and what DTG is and what it can do has become more mainstream. A lot of shops are now successfully offering DTG printing to their customers, and some shops have been wrecked on the shoals of the complications DTG can offer. Like any garment decoration discipline, there are pros and cons to adding direct-to-garment printing to your shop offerings. Before we discuss those, however, it's probably best to go over the basics of DTG printing.

First, as the name implies, Direct to Garment printing is a means of printing designs directly onto a fabric surface. That fabric could be a garment, a tote bag, a pillowcase, and so on, and the fabric generally has to be at least 50% cotton. Pretreatment is required for the garments that will be printed with white ink, and as many designs have a white base, that effectively means most, if not all, garments. Some fabric items can be bought pretreated from certain manufacturers, or shops can buy pretreatment fluid and pretreat the garments themselves. Pretreatment helps keep the white inks close to the fabric and provides a smooth surface, which ensures accurate colors and clarity when printing detailed graphics. Pretreatment for light garments is not always indicated but can help with making colors more vibrant and extending the washfastness of a print. Prints are finished with a heat press or some sort of drying system like a conveyor dryer. DTG ink is textile pigment ink, and generally is sold in CMYK and white. Industrial DTG printers will use six colors plus white, and the additional

Image courtesy of Epson.

colors may vary, although light magenta and light cyan are common. Printers vary from entry-level printers, which are compact and probably best suited for an event site or retail store where there will be limited printing. Commercial DTG printers would be the next step up, and are faster and capable of creating crisper, higher-resolution prints in full color on both light and dark garments. This type of printer will also have more sophisticated software for print management. Finally, there are industrial DTG printers, which are made for larger runs, have faster print times and lower print costs. Industrial DTG printers may have multiple platens and expanded ink sets.

One of the things that most excites decorators when they think about DTG printing is the capability of printing with white ink, and that is exciting, but it also brings its own set of opportunities and challenges. When DTG was first introduced, white ink was often a problem, causing clogged printheads and necessitating frequent printhead cleanings. White inks require a rigorous maintenance schedule and one that will need to be adhered to strictly to successfully print. As the technology and inks have improved, those issues are not as prevalent as they once were, but it does pay to keep in mind that this is not straightforward inkjet printing or printing on paper. There are more opportunities for issues, and it may take more time to get the ink, printer, and substrate dialed in to get the optimal print. White ink will also require pretreating garments, which adds time to the production process. The one thing white ink

Images courtesy of Equipment Zone.

Image courtesy of Epson.

Images courtesy of Equipment Zone.

does give decorators, however, is the ability to print on dark shirts, which can be a huge selling advantage. So, for many decorators, the potential challenges or additional expense of white ink can be offset by the expansion in their ability to offer dark color products.

Screen printing has historically been the method of choice for those who wanted to put prints on dark garments, so DTG seemed like something of a game changer when it first appeared. Like screen printing, it does offer the ability to put graphics on dark colors and the ability to use white ink. Also, like screen printing, it may require time to dial in the proper techniques in order to get the best print. Certain types of shirts may accept a print better than others. Different methods of pretreatment or different types of pretreatment solutions may work better with different fabrics or items. Ramping up production speeds when doing DTG printing may be a process of trial and error as well. The size and type of printer will dictate production speed. The ability to prepare designs quickly and accurately in the designated software will also dictate how fast designs can be printed.

So, one of the things to consider when considering adding DTG to your shop is that there will be a learning curve. Even if you're an experienced printer and have been using a variety of methods for a number of years, it will still take time to dial in the printing process and to learn how to produce salable product print after print. DTG is also, as a general rule, not a high-volume printing discipline. It is more suited to one offs and small print runs than it is to doing hundreds or thousands of shirts. That needs to be taken into account as well.

Another aspect of DTG that shops should take under advisement is price. DTG printers are not cheap, and the cost of entry into this decoration space is not one every shop can shoulder. An entry-level DTG printer will run a shop between $5,000 and $10,000. Mid-range printers generally cost between $15,000 and $25,000, and industrial-level DTG printers can go as high as $50,000+ in cost. Add to that the cost of pretreatment, pretreatment application equipment and/or a pretreatment booth, and a conveyor dryer or heat press, and the costs to set up in DTG printing can rise quickly. Now, granted, the cost can potentially be offset by the prices that can be charged for dark shirts printed in full color and white, but it still needs to be

considered. DTG printing requires a fairly substantial investment to get started, so it's worth being sure that your shop is up to the challenge.

One of the questions any shop considering DTG printing needs to ask is whether this type of printing will be suitable for the types of garments they want to produce and the customer base they want to serve. DTG, as noted above, can produce dark garments with full-color prints, and that's attractive to a lot of print houses. It can't, however, produce a lot of full-color prints on dark garments all that quickly, and certainly isn't the ideal process if you need to do a large number of garments. DTG is best suited to smaller print runs or one-off prints. DTG printing can also be a better option when printing designs that have lots of detail and a wide variety of colors. One area where DTG doesn't always take the crown is durability of

prints, although advances in inks and pre-treatments have helped in that area. All these things should be considered when deciding whether or not DTG is right for your shop, especially since, as was already discussed, setting up to print DTG may require a significant financial investment.

Back in the day, when DTG was first becoming an option, the company where I was then Director of Marketing contemplated selling DTG printers and inks. In those days, the inks clogged the printers often, the printers were mostly repurposed inkjets and didn't work all that well, and the whole process seemed to have a steep learning curve. After doing some tests, sourcing, trying some printers, and trying an ink that ultimately didn't work out, we passed on DTG and moved on to other options. Things have improved exponentially since the days I was involved in DTG, and the products and processes are

better now than they were then. DTG is still not for every print shop, but it's probably more accessible for more shops than it ever has been. DTG, like every other decoration discipline, is not universal, and won't be for every shop, but it does have potential for many. The trick is to make an informed decision, one that is well-researched and takes in the entire spectrum of DTG printing, both the pros and the cons. Talk to others who offer DTG. Do some testing, if that's possible. Don't get swept up in the lure of white ink and prints on dark garments and all the potential income that could result from that marriage. DTG printing can definitely come with financial gain, but it also can require a substantial financial investment. Make sure you've done your due diligence and know what will be required to be successful in the DTG space before you make a commitment. **GP**

DTF PRINTERS

15 questions to ask before buying a DTF printer

COURTESY OF EQUIPMENT ZONE

By now, you've probably heard the buzz from the growing excitement surrounding DTF transfer printing. Making an investment in a Direct-To-Film printer requires careful consideration. There are a lot of choices, and DTF technology is advancing quickly. Spare yourself the disappointment and regrets of a hasty decision. Before making any DTF printer investment, take a moment to assess these 15 crucial questions.

1. Can I see completed samples before I purchase? What about samples with my artwork?

2. Are the machines in stock? How long of a timeline from the day I order the printer until the day it arrives?

3. How much help will I need, and what is required to unload the printer and move into my location?

4. How many square feet can I print in an hour, or approximately how many full-size transfers can I print in an hour? (Full size = approx. 10 x 12 inches)

5. What is the cost per square foot including: film, ink and powder?

6. Is the printer a purpose-built, integrated system designed for commercial production?

7. How much training and set up assistance is provided?

8. How do I get service on my printer after the sale? When I need support — who will I call?

9. What does the warranty cover — and not cover? What are the limits or exceptions?

10. What about parts? Are there any consumable parts I should know about and how often will they need to be replaced? If a part breaks and a new part is needed, where are the parts stocked and how long will they take to ship?

11. Is there an onboard filtration system or will I need to vent the printer to the outside?

12. Does the printer preheat the film prior to printing?

13. Does the printer have a white re-circulation and ink filtration built-in to ensure a consistent, smooth flow of white ink?

14. Is there a pause feature or other built-in technology into the dryer to prevent the transfer film from melting and prevent the scorching of the belt?

15. What RIP software comes with the printer, and does it include color management features?

HEAT PRESSES

Heat presses for all applications

COURTESY OF GEO KNIGHT

There are a lot of different styles and types of heat presses depending on the application. The standard 16" × 20" T-shirt press can come in swing-away or clamshell styles. Then, there are automatic air-operated presses, label presses, specialty presses for caps and mugs, and large-format presses. Be sure to find the right one for your business.

CLAMSHELL PRESSES: These are the most popular with DTG curing when used with an Auto-Release POP-UP feature, and for traditional garment printing. A singular opening motion of the handle combined with front loading ease makes for quick turn around and smaller footprint for freed-up bench space.

AUTOMATIC PRESSES: Automatic presses feature simple, quick, and easy push-button activation, with automatic opening and closing of the press. That makes these machines perfect for all-day higher production usage. These presses remove operator fatigue, and increase output, and make pressure a much more repeatable setting compared to manually adjusted hand-clamped presses.

LABEL PRESSES: Label presses are needed for pressing small patches, labels, left-chest logos, and bar coding of garments. The presses allow precise placement of small labels, without pressing large areas of the garment or material with a full-sized heat platen. Normally having top heat only for most applications, label presses can sometimes be combined with a bottom heat platen. Thicker patches and appliques can be applied without heat effects and stamp marks to the top surface of the material, since the heating is from the bottom.
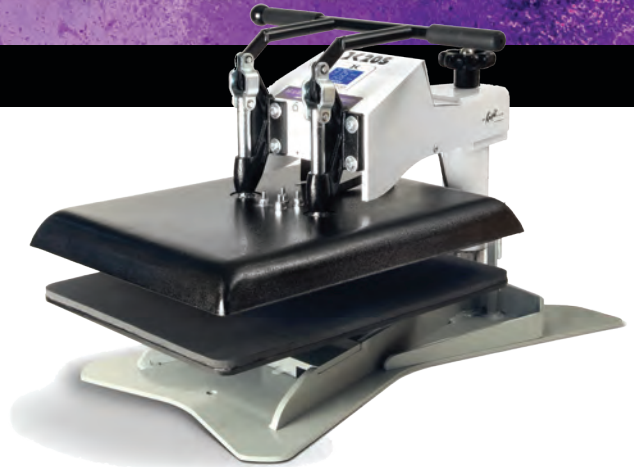
SWING-AWAY PRESSES: Generally the most popular, these machines are perfect for full visibility and access to the bottom table, with the head swinging fully out of the way. Due to the parallel-pressing position of the heater, very thick materials can be presses, as well as traditional textiles.

CAP PRESSES: Headwear needs its own curved heat platen, that will conform properly to the cap. Interchangeable bottom tables allow for different sized caps with different profiles to be pressed. Normally having top heat only for most applications, cap presses can sometimes be combined with a bottom heat platen. Thicker patches and appliques can be applied without heat effects and stamp marks to the top surface of the material, since the heating is from the bottom.

MUG PRESSES: Drinkware such as mugs, steins, thermoses, water bottles, and other cylindrical rigid items need their own flexible heater to wrap around the product and apply the transfer. Typically, adjustable for a range of diameter products, Mug presses are an example of specialty machinery for non-standard non-flat products that can be heat transfer printed.

GP

DTG/DTF

These digital processes enable incredible flexibility, quality, and efficiency

BY AARON MONTGOMERY

Aaron Montgomery is certified by New York Times best-selling author Jack Canfield as a Success Principles Trainer and is the co-founder of OurSuccessGroup.com. Montgomery 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 him 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).

Direct-to-garment (DTG) and direct-to-film (DTF) printing are cutting-edge technologies that are changing the face of the printing industry. While DTG has been around as a standard way to print garments since 2006, it is still evolving, and the technology is better now than ever before.

DTF has really hit its stride in the last few years and, like DTG in its day, has been called the screen-printing killer. I don't believe that is the case, just like DTG was not back in 2006. Each potential tool in your printing toolbelt serves a purpose. To me, saying DTG/DTF will kill screen printing is like saying the cordless drill will kill the chainsaw. Two different uses.

But, unlike traditional printing methods, these digital processes enable incredible flexibility, quality, and efficiency. What I want to discuss is how to best utilize DTG/DTF capabilities to revolutionize what your printing shop might become.

First, what are DTG and DTF, and what is the difference? DTG involves printing directly onto the fabric, typically one with high cotton content, using specialized inkjet technology. For any garment requiring the use of white ink (typically dark shirts), a pretreatment must be applied or the garment must come DTG-ready. The resulting prints are vibrant, soft to the touch, and capable of replicating intricate details. DTF, on the other hand, prints onto a transfer film first, then an adhesive layer is added so that when the transfer is applied to the fabric, that adhesive layer bonds the inks to the fabric. The same ink is used for DTF as is used for DTG, but no pretreatment is needed for garments requiring white ink with DTF technology. While DTG offers an exceptionally soft hand, DTF allows for the application of various materials in a wider range of fabrics.

Both technologies bring new opportunities to the table. Let's explore how these opportunities happen.

The importance of personalization

In today's world, personalization is not just a trend — it's an expectation. Consumers crave products and services tailored to their unique tastes, and this extends to printed apparel. Think of it this way: Yes, I could get the exact same design being used by everyone else produced in mass for cheap, which shows I support autism awareness. But with the use of technology

Nice generic design

like DTG or DTF, I can purchase a shirt that features a cartoon character created by my son to show how his autism is part of his superpowers. Imagine the difference in perceived value to me.

Utilizing personalization offers unique value, but personalization requires technologies that can adapt and respond quickly. The upfront costs might be greater than with traditional methods, but the level of customization and speed that modern consumers demand justifies that cost quickly.

Here's why DTG/DTF printing technologies are revolutionizing the industry with their ability to provide customization and speed like never before:

• **Full-color photographic images:** With these digital technologies, you can produce vibrant, photorealistic images without the need for a complex setup. Most systems utilize a CMYK-plus-white printing setup, allowing you to achieve 16,000,001 colors.

• **Short runs—as few as one piece:** Since each color doesn't have to be broken apart and then squeezed back together, DTG/DTF technology is ideal for short runs. In fact, it shines in this realm as there is not as much economy of scale. Once you are tackling large numbers of the same image, moving to a traditional printing method is more cost-effective.

• **Instant gratification:** We live in an on-demand world. If I find something I want, I want it right now. Speed is a large deciding factor in purchasing decisions. If a customer can come to you with an idea in their head, and you can make it into reality while they watch it come to life as

Personalized design

your printer prints or the heat press opens, that is immediate satisfaction. It changes the perceived value.

What excites me is that these benefits aren't merely theoretical; they're being employed by business owners every day. These owners are building businesses they are passionate about and proudly serving their target customers. Here are some examples of how:

Online stores

Inventory management can be a nightmare in the apparel space, especially with a pre-printed line of goods. This has put limitations on what can be done with online stores. However, with DTG/DTF technology, you print the exact design, size, color, and style, plus some or all levels of customization upon receiving an order. With digital technologies like DTG/DTF, the process can be managed seamlessly. Your customers will be amazed at how you can create something unique to their styles and tastes and have it to them in a matter of days.

On-site events

The ability to print instantly is transformative for event marketing. Yes, having transfers available on-site is a great tool for screen printers to manage inventory challenges and bring some excitement to the event as the heat press opens, but customization is still a challenge.

With DTG especially, thinking about the opportunities at a car show or pet parade should boggle your mind. With some planning up front and the creation of a few good templates, you could provide pictures of a car enthusiast's exact car, or a picture of a loving cuddle between an owner and their pet on a shirt in minutes.

From bland to grand

While online stores and on-site events might seem a little daunting to a decorator who is not ready to tackle the back-end complexities of eCommerce or the front-end planning and management of on-site events, this opportunity is suitable for everyone: If you think about traditional apparel, the focus has always been on the

creativity of the design, the number of colors, and how that interacts with the customer's budget. Most of the focus is on reducing colors to cut costs, which makes the bulk of the discussion with your customer about cost, not about the excitement of the finished product.

The reality is most of our customers have to make investment decisions with limited budgets. But with DTG/DTF, the cost to create a garment doesn't change whether it's one color or 16 million and one colors.

I recently had an opportunity to support a small business that I mentored at Our Success Group. He started a local lawn and landscape company and needed to outfit his employees with some branded apparel. He went out and approached traditional apparel decorators and was constantly confronted with a minimum order of 72 pieces because his vision of his logo

was grand and required a minimum of six colors. Every single conversation he had was an attempt to get his vision to fit his budget, which would require a much blander version of what he really wanted.

I was able to introduce him to another of my Our Success Group community members who had DTG/DTF printing technologies as a tool in their toolbelt. They were able to print the four shirts that he needed with full-color grand images.

Yes, the cost of each shirt was higher than the cost of each of the 72 bland, limited-color shirts would have been, but when he stops by to cut my grass, his shirts stand out from the other landscapers' outfits. DTG/DTF technology allowed Becky from 605 Customized to transform a simple logo into a photorealistic image that pops off the fabric, making the young lawn care specialist very happy.

Marketing to your machine's strengths

You can have the best printer and the best processes and nail all aspects of your operation, and still not find success. You must market the products with the right focus and stop making cost the lowest common denominator.

DTG/DTF involves particular costs and characteristics that mean you have to market it differently than an analog process. Learning to market your decorating tools' strengths will also improve your operation. Keep the jobs coming, and the ink turning into profit instead of waste.

By understanding and embracing DTG/DTF technologies, businesses can move from bland to grand, offering products that are not merely worn but cherished. DTG/DTF puts the power of full-color, customized printing at your fingertips. **GP**

DTF FUME EXTRACTORS

Get the right one for your DTF curing oven

COURTESY OF FILTRABOX

To operate safely and efficiently, a DTF oven needs to be used in conjunction with a fume extraction system. The Direct-to-Film curing process releases a dense fog as the oven forces the ink to dry on the transfer film. This oily fog is made up of tiny liquid droplets which may cause skin, eye and throat irritation. The liquid residue can also build up on the internal surfaces of the oven and drip onto the films, ruining the print jobs. To mitigate these issues, the fume extractor's specs and performance need to be aligned with the oven size and type. To start, all DTF fume extractors should be equipped with a durable Hydrophobic HEPA filter to better preserve filtration efficiency under the liquid load generated by all DTF curing ovens. Larger ovens need more suction airflow and power to prevent the fumes from escaping out of the oven and into the room. Some ovens, with automatic conveyor belts, have higher throughput capabilities which in turn can generate much more fog and therefore, need more filtration capacity to deal with greater rates of aerosolized liquid. Conversely, smaller, manually loaded ovens or narrow ovens with slower feed rates will require less flow and lower filtration capacity. So, it's important to match the fume extractor with the size and/or production output

of the oven to ensure that you are getting the performance that fits your expectations and your budget!

DTF fume extractor types:

1. Low flow, single-stage hydrophobic HEPA DTF fume extractors: These are the most basic and budget-friendly DTF fume extractors. They are best suited for small manually fed ovens. They can sometimes be applied to small auto-feed ovens with lower production volumes. It has great filter efficiency despite the single-stage filter arrangement and enough airflow for smaller applications.

2. Low flow/high pressure, multi-stage filtration with hydrophobic HEPA DTF fume extractors: These are a step up from the single-stage systems. Multi-stage filtration means there is at least a

Hydrophobic HEPA filter and a foam filter prefilter which increases the liquid filtering capacity of the system. The additional filtration stages create more air resistance, so a high-pressure blower is used to achieve the required flow. This is ideal for small ovens with high production throughput.

3. High flow/high Pressure, multi-stage filtration with hydrophobic HEPA DTF fume extractors: Medium to large-sized ovens with automatic conveyors need the higher flow rate and filtration capacity that these extraction systems can deliver. With more fog/liquid being generated, it is necessary to have a large foam filter and extra capacity in the hydrophobic HEPA. In addition, the blower is a high-pressure unit with nearly double the flow of the low-flow extractors mentioned above. **GP**

DTF TRANSFERS

How to prepare and cure DTF transfers with conveyor dryers

COURTESY OF VASTEX

Direct-to-film printing is currently a popular method for garment decoration that allows you to print artwork directly onto a special film and then transfer the graphic to a garment of virtually any material. Using a high-quality inkjet printer designed for textile printing and heat transfer film, the design will print out "backward," meaning the colors are printed first, then the white base.

There are different types of transfer film. With "cold peel" film you peel away the backing after heat pressing once the garment has cooled; "hot peel" film, as the name implies, requires that you peel away the backing of the newly pressed design as quickly as possible after pressing.

While there are many ways to cure the DTF film, using a conveyor dryer provides consistent, repeatable results. Setting up a box or basket to collect the transfers as they exit the heating chamber frees the operator to print the next transfer or perform other tasks. Tabletop units such as the Vastex D-1000 shown to the right require little space and are available with optional exhaust hoods to remove excess moisture and fumes from the work area.

With the appropriate equipment, DTF printing is a straightforward process:
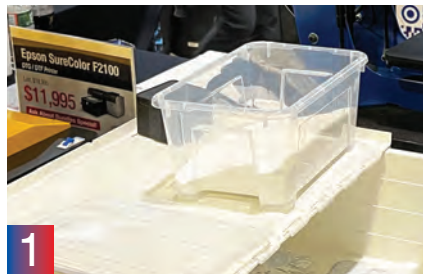
1 Insert DTF film into printer modified for DTF printing with CMYK + White ink channels designed for textile printing. Make sure the frosted side is up. After printing and while the ink is still wet, disperse the adhesive powder over the inked side of the film.

2 Repeat multiple times to get a nice consistent coating and shake off excess powder into collection system.

3 Set sheet into DTF compatible conveyor dryer with adhesive side up and cure for 60 to 90 seconds. Time and temperature may vary based on dryer manufacturer.
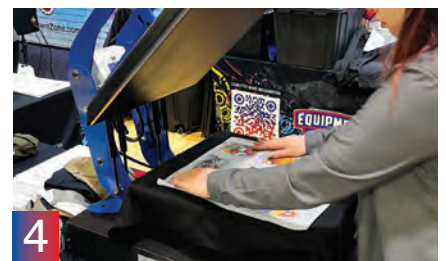
4 Place shirt on pallet of heat press with Teflon paper on top and press to remove wrinkles and excess moisture, then line up your design with print side down.
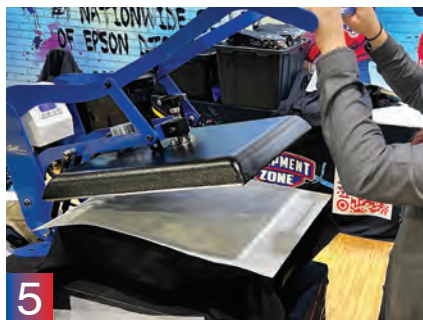
5 Heat press for ink/adhesive manufacturer's recommended time and temperature. Allow shirt to cool down to room temp before peeling off the backing when using cold peel adhesive. When using hot peel transfer film, remove the backing as quickly as possible after pressing.

6 Enjoy the fun and variety of options with DTF printing.

GP

PRODUCTION MOVES WITH DIRECT-TO-FILM

Crawl before you walk, then walk before you run

BY HOWARD POTTER

Howard Potter has worked in the promotional industry since 2003, from designing to building brands and a family-owned business. He is the co-owner and CEO of A&P Master Images LLC, Utica, NY, with his wife Amanda. Their company offers graphic design, screen printing, embroidery, sublimation, laser engraving, direct-to-film, online stores, vinyl graphics, and promotional items. For more information, visit MasterYourImage.com.

In March, we started to promote DTF more to every customer as well as on social media since many of our customers had no idea what this process was. Images courtesy of Howard Potter.

Last year around this time I stumbled across an ad from GRAPHICS PRO magazine promoting a direct-to-film printer from ColDesi — the new and improved DTF-24H4. At first, I brushed it off, but later in the day, I had time to watch a couple of Don Copeland's videos on the machine and the process, and from there they caught my attention, which is not easy to do.

My wife Amanda and I did our research on the process and, after that, flew down to meet with Copeland and Mike Angel to watch this machine in action. We watched for less than 10 minutes before ordering one on the spot. Why? The ease of use with the software for one. And how simple the heat press process is to teach, the quality of the prints, and how fast the printing is.

Trial by DTF

We ordered our machine and received it this past January. There were several unknowns, like how long printing would take daily on average, how long it would take to cut down and organize the prints, how many pieces we could press an hour, how many presses we should own, etc. It is okay to learn this info as you go, but you should really open the process up to customers slowly for the first month or two so you can work out any pricing and production issues before heavily promoting it.

February was our first month operating the DTF printer, so we only promoted the process to customers we knew we could beta test with. We asked them to let us switch them to DTF for testing purposes

At this point, we were operating our printer for two to four hours daily and running three heat presses daily, off and on as needed.

and let them know they were the very first customers to get this process.

They were excited to be part of the testing group, knowing full well we would take care of any issues that came up. That allowed us the entire month to get timing and other aspects down. That first month, we produced about 1,100 pieces for around $12,000, which averaged out to around nine dollars, and some change per piece produced starting out.

During that trial month, we found out we needed another heat press to start, so we invested in another Air Fusion IQ from Hotronix with several extra attachments. We learned that when pressing a front left, full front, and full back on an average piece of apparel, we could do a minimum of 40 pieces per hour (with zero mistakes, which is what we shoot for). Remember, this is 40 perfect pieces with a full-color imprint per hour while only touching an order once. When it came to drawstring book bags, tote bags, and coolers, we could easily get 80 to 100 an hour done with zero mistakes.

Before we discuss later production months, here is something no one is talking about enough with DTF: You can heat press at around 260 degrees and never deal with dye migration since the first press time is only 10 seconds and the second time is only five seconds. There is never enough heat or time to activate the chemical reaction in the dyes of the
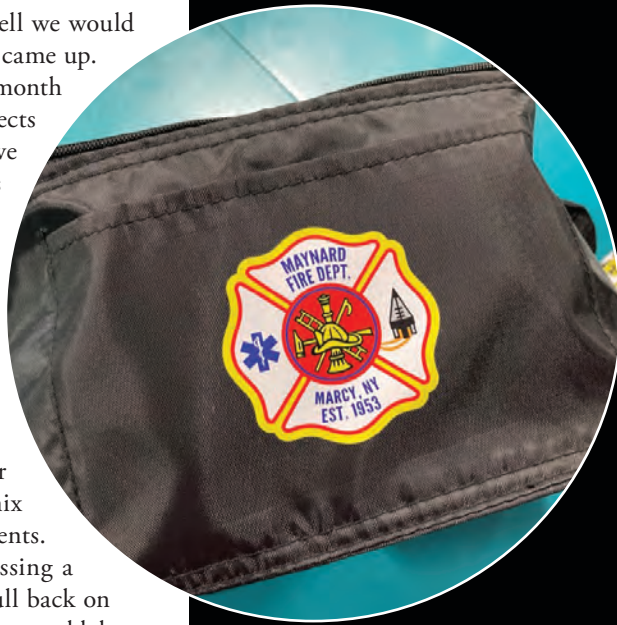
We average a minimum of 1,600 prints or more per roll, depending on the imprint size.

fabrics. Another fun fact? DTF takes up much less space than screen printing and is a very clean printing process, so you can produce more in less space.

Promotion and production

So, on to March, when we started to promote DTF more to every customer as well as on social media since many of our customers had no idea what this process was. We ended up producing 2,300 pieces at an average cost of just over $14 per piece to hit almost $34,000 in production that month. Never in the history of our company has a process caught on and done that well within just a two-month period.

At this point, we did not have to run the printer every day and when we did it was only on for one to two hours on average. We also got the average timing down for cutting down a roll of material. A roll of material is around 650 square feet and takes the average person one hour to trim down.

I know what you are thinking. Man, that seems like a long time and expensive. Wrong... Do the math. We average a minimum of 1,600 prints or more per roll, depending on the imprint size. So, let's say you pay $25 an hour to the employee. Now divide those two numbers into each other, and it breaks down to one and a half pennies per print to have someone cut them out. You can hire anyone to sit and do that all day.

Another huge win is that this is only a 30-amp machine, and it only gets to around 125 degrees, so its power consumption is not even worth recording versus that of a gas or electric screen-printing dryer.

Let's fast forward to May now, when the process gained even more traction. We'd only had it up and running for four months at this point.

Our production numbers jumped to 5,200 pieces for a total of $63,000 in production that month. We learned quickly during this month that we needed another heat press. (Before it came in, we had to have staff work overtime, which did not crush the profit and the staff did not mind doing the extra work, so it was a win for

The true key to the DTF process is making sure your designers can keep up with how fast your production team can produce the prints and press them.

all of us.) At this point, we were operating our printer for two to four hours daily and running three heat presses daily, off and on as needed.

The true key to the DTF process is making sure your designers can keep up with how fast your production team can produce the prints and press them. In screen printing, your designers have to design for one- or two-color imprints and then set up positives, but on the back end, the production team has to clean, emulsify, and burn screens; mix inks; clean squeegees; register screens; and so much more before they even get to producing the orders. So, you may have to find a balance with your art team to keep up with the quick production of DTF.

And here is the cool part about if your designers are ahead and your production team is behind due to volume: the designers on our team have loved pitching in to help. It gives them a break from being on their computers. This process is a huge morale booster for everyone involved, even for the owners.

When you start with DTF, crawl before you walk, and walk before you run. That way, you know you are not only making money, but your team has a handle on production, and your customers are happy every step of the way! Keep making moves with direct to film. I know we sure will! **GP**

LARGE-FORMAT UV PRINTER SELECTION

Perspectives on large-format direct-to-substrate printing

BY BILL SCHIFFNER

This project for video game leader 2K's headquarters was printed direct-to-substrate onto wall panels with a flatbed Mimaki UV printer. VIVAS used PVC boards, and each panel had to be an exact fit for the walls. Images courtesy of VIVAS Inc.

Bill Schiffner, a former freelance writer/editor based in Holbrook, New York, has covered the imaging industry for over 25 years and reported on many evolving digital imaging technologies. He was the editor for a number of imaging publications and websites. He can be reached at wschiffner@yahoo.com.

As with most signage projects, it's all about picking the right tools for the right job. This especially rings true when choosing the right substrates that are to be output on a UV flatbed direct-to-substrate printer.

Over the years, new developments in flatbeds have continued to push the envelope and provide shops with more flexibility and a plethora of media choices to offer their clients. With so many color inks and substrates from which to choose, all with different properties, it is essential to select the right combination depending on your application, such as profiling substrates, matching colors, and workflow. To ensure optimal print quality, all stages of the production process must be carried out effectively to get it right the first time.

VIVAS Inc. by the Bay

Luis Vivas, founder and CEO at San Francisco-based VIVAS Inc. notes that substrate selection is the key element to any signage project, as well as getting the colors right the first time around so they pop when installed.

"To achieve this we utilize a special tool called *Color Muse* to scan existing colors or Pantone books if we start from scratch on a project. Having high profile clients such as Disney, Asana, UC Berkeley, Sephora, Uber, UCSF, Lucasfilm, The San Francisco Marathon and Instacart, we always run a color proof on the actual surface," he says.

The small and growing family-owned office branding business first opened its doors for business in 2010. The award-winning firm offers custom wall graphics, dimensional logos and letters, window graphics, business branding and tradeshow signage services.

Vivas notes that during the pandemic they did a total re-brand of the company: "We used the pandemic time in 2020 to re-brand our company. We started in 2010 as VIVAS Banners, but in 2020 we re-branded to VIVAS Office Branding. We understood at the time that a change was risky because most offices were still closed with most company's employees working remote."

To meet this new market, the company purchased some new equipment, including UV flatbed printers from Mimaki and Roland.

VIVAS produces a wide variety of projects using their UV direct-to-substrate Roland and Mimaki flatbeds on a variety of substrates, primarily foam boards, acrylics, and PVCs. Images courtesy of VIVAS Inc.
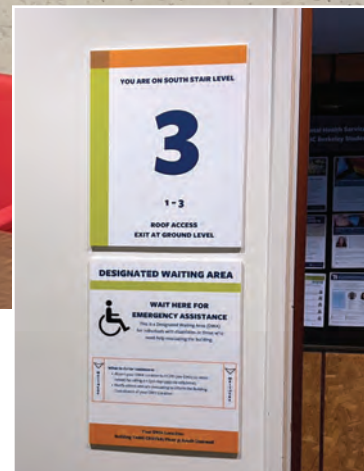
With the addition of a CNC router combined with direct-to-substrate printing, VIVAS expanded its services to include interior architectural signage. Image courtesy of VIVAS Inc.

This sign project for a construction company was printed on 1/2-inch clear acrylic, first-surface printed text with a spot layer of white. The solid colors are second-surface prints with a layer of white ink on top of them, then they applied a frosted vinyl second surface. Images courtesy of PRI Graphics & Signs.
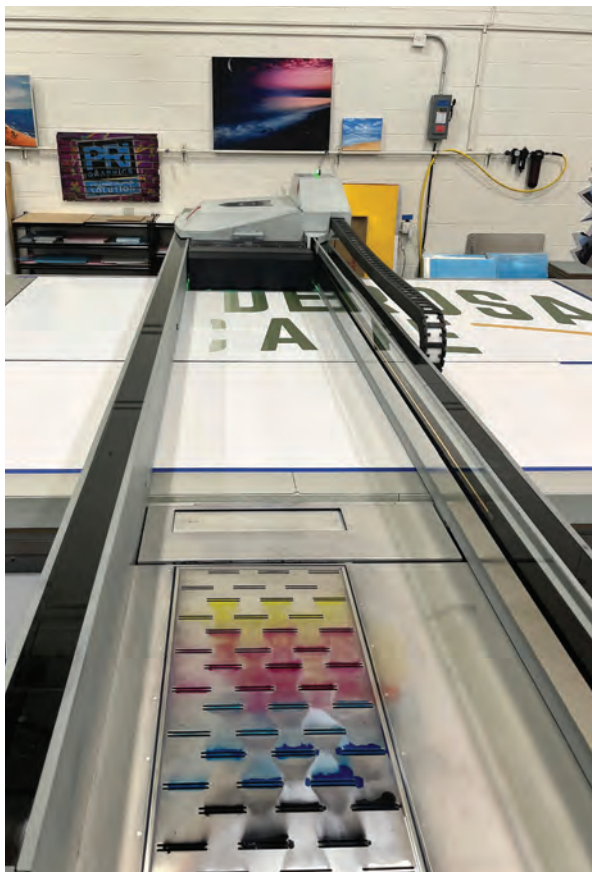
Todd Williams of PRI Graphics & Signs says that since have three Canon 6100 series flatbed printers, the shop does profiles to allow for the same material to print consistently across all three machines. Images courtesy of PRI Graphics & Signs.

He notes that in 2022, when people started to go back to the office, their new business model started to take off. "Once the offices started to open up and people were returning to work, we used our flatbed for 3D logos, ADA signs, directional signs, direct printing on acrylics, as well exhibits and displays. Another part of our investment was to purchase a 5x10 foot CNC router that was the perfect complement for our UV flatbeds," Vivas explains.

Vivas says he stocks a number of substrates to meet his clients' needs. "We use a variety of surfaces; the most common are 1/2-inch thick acrylics, 3mm Dibond, and 1/4-inch foam board."

He points out that he likes direct-to-substrate UV flatbed printing over other printing methods. "We were an old-school sign company when we opened in 2010. Our experience was banners and vinyls. That meant when a client needed a simple foam board project, we would always print on vinyl and paste by hand. When we made the decision to update our printers our goal was to output directly on the flatbed," Vivas says. "The first time we used the flatbed for a foam board job, our total business model changed that day. And once we started doing office-branding work, the whole ballgame changed for us. Having flatbeds in-house was our *wow* factor to exploit."

Vivas says that a substrate choice was the right decision for a recent project they did for video game company 2K.

"We chose this project because 2K is one of the leading video game companies worldwide. Another reason why we chose this one is because we love challenges. The client first contacted us to do a vinyl wall graphic, but the wall wasn't ready for it. We suggested they go to direct-to-substrate printing by panels. We used PVC boards, and each panel had to be exact to fit the wall. We used our Mimaki printer and CNC router, and our team perfectly installed them at 2K's headquarters in Novato, California," he explains.

Vivas points out that the PVC substrate they chose and suggested to the client was the key to the success of this project. He adds that the site survey was also important. He says they measured the space beforehand and matched up the PVC boards to fit the space
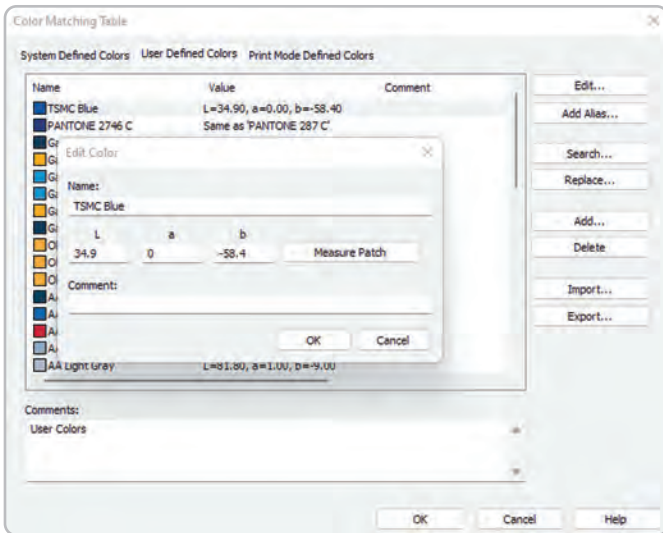
The Color Matching Table in Onyx's RIP software allows PRI to automate color corrections for specific clients. The corrections can be applied globally across multiple printing devices or dialed in specifically for a specific printer. The table stores the values they come up with and are applied to the file when they process it. Courtesy of PRI Graphics & Signs.
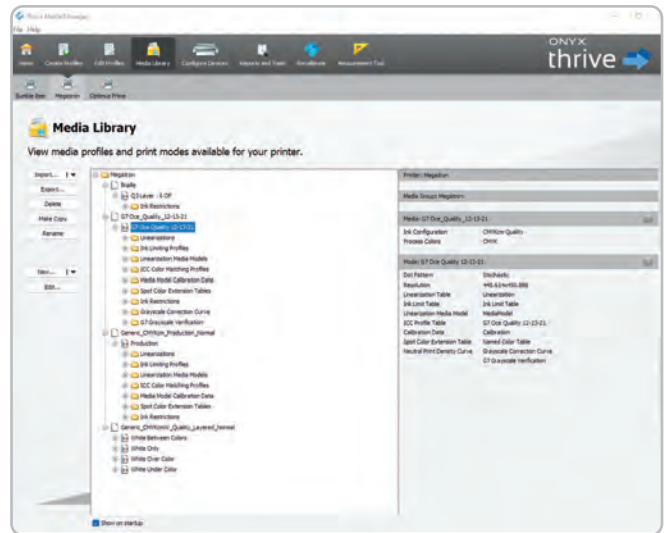
The Media Library in Onyx stores all the profile information for each printing device. The Profile Wizard walks you through each of the steps. At the end of the profiling process you choose how many swatches you would like to print and read into the system with a photospectrometer (PRI uses the X-rite i1 Pro 3). After the swatches are scanned, Onyx shows you a comparison chart. The chart shows the expected color and the measured color. If the measured color is out of tolerance it will highlight red, so you can address the issue. If there are no issues with the measured swatches you move on to the final step and have Onyx build the color profile. Screen shot courtesy of PRI Graphics & Signs.

Onyx has included the G7 grayscale process into the Profile Wizard. If you choose to take advantage of it, you are prompted to print additional swatches and read them into the G7 verification. These swatches have a tight tolerance from the target and will not pass if the colors are out of range. If the measured swatches do not pass the verification, Onyx will automatically try to correct them and prompt you to reprint the swatches and scan them again. The benefit of going through the G7 grayscale process is that you will have a more predictable color output. Each printing device that passes the G7 verification should have an identical color output. Screen shot courtesy of PRI Graphics & Signs.

perfectly. "We also tested for the possibility of fading. In most cases, the area has too much light, we test with a matte PVC as well."

When asked about tips or tricks on flatbed printing in this area, Vivas offers some advice: "First, secure the business before investing in new equipment. Flatbeds are printers that need to run every day to give you the proper ROI. In addition, get a look at competitor pricing. In our case, we used to charge more for foam boards because it was pasted by hand on vinyl, and the price increased. Now, with the flatbed, the time has been drastically reduced, but the value is still about the same."

He also advises to forget about bubbles and wasting materials on jobs. And, most importantly, hire a person with experience to run that particular printer. "Why do you need a specialist? Well maybe the way we went about it was not the normal route to go, but the person that we hired four years ago had graphic design skills. From day one we trained him to use the flatbed. Now he is a specialist."

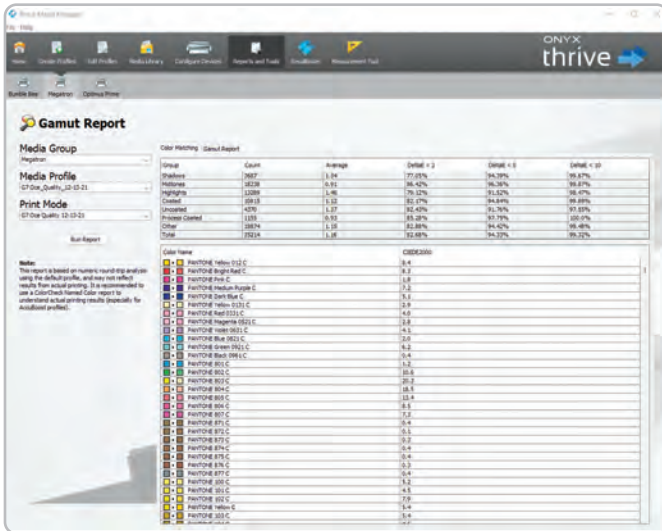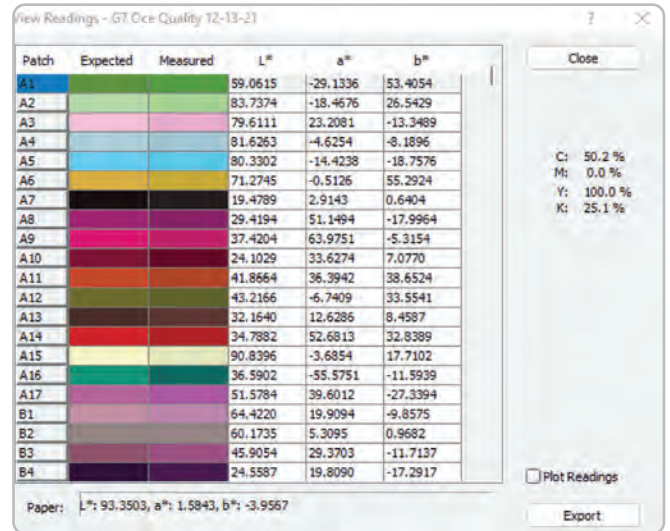### Beating the heat in Phoenix

Located in the heart of downtown Phoenix is PRI Graphics & Signs. The shop is known throughout the southwest and nationwide for its creativity and unrivaled quality on finished products, as well as quick turnaround on all print projects, including construction and corporate graphics.

Todd Williams, vice president of Operations/partner at PRI Graphics & Signs, says the shop knows that each customer has unique needs and requirements, and they take pride in working closely with their clients to understand their specific goals and objectives and to provide tailored solutions that meet

> First, secure the business before investing in new equipment. Flatbeds are printers that need to run every day to give you the proper ROI.

The Gamut Report is a handy tool that gives the operator an idea of what they should be expecting when trying to print specific colors in correlation of the profile selected. Screen shot courtesy of PRI Graphics & Signs.

This screenshot shows some of the Pantone swatches that are built into the RIP. If the DeltaE is greater than 2 you will see a noticeable difference when that color is printed. If the DeltaE is 2 or lower the color should look very close to the target color when it is printed. This report is a quick and easy way to find out if the target color will be achievable. Screen shot courtesy of PRI Graphics & Signs.

> We only stock materials we know will work well with our flatbeds. Luckily, our machines are pretty compatible with most products.

their needs. Williams points out that they usually don't have to do color matching on different substrates.

"Very rarely do we have projects that cover multiple substrates, so we don't spend much time color matching to that level. Since we have three Canon 6100 series flatbed printers, we do profiles to allow for the same material to print consistently across all three machines," Williams says. "Our process is to print out the color targets, scan them with a spectrophotometer, allow the software to generate a profile, and then test that profile. We do this for our standard materials: Foam board, ACM, PVC, styrene, etc. We do the same basic process on all three machines."

He notes that they offer a variety of standard materials that fit customer needs most of the time. Generally, those materials come in various thicknesses. That allows for one material type to be used for various applications.

A few of their standard materials are:

• **Ultra Board** — Wall art, stand up cut outs, meter boards (tradeshows), and event signs

• **PVC** — Trade show panel displays, countertop displays, interior directional signage, and dimensional wall graphics

• **Styrene** — Name badges, point-of-purchase retail signs, sign frame inserts, stencils, and interior transportation signage (bus, rail)

• **Coroplast** — Yard signs, political signs, temporary directional signs, warehouse signage, and exterior event signage

"These materials come in different thicknesses. A thicker material gives more rigidity and stability and is generally more durable. So, depending on how the customer is using the sign, we may use a thicker version to give a better end product," Williams explains. "The most common product we print on our flatbeds is Coroplast. One of our larger customers uses it almost exclusively. However, we also print quite a bit on PVC, ACM, foam board products, and many others. We only stock materials we know will work well with our flatbeds. Luckily, our machines are pretty compatible with most products."

When asked what criteria they use to select direct-to-substrate (UV flatbed printing) over other printing methods, he says they try to utilize the best material for that specific job.

"We want the clients to be happy with the final product. If there is a choice between printing methods, we generally try to use flatbed printing. In our climate, we feel direct-to-print has better UV resistance and is less affected by the heat than vinyl printed graphics."

Williams says there was a recent job that utilized their flatbed where they chose the substrate and matched colors for that substrate, which saved time in the overall workflow. "This project was for a regional construction company in our area. They were updating their company statements. We produced this job for them in a couple of different locations in their offices and at different sizes," Williams says.

He adds that the project was printed on 1/2-inch clear acrylic. "The first surface printed the text with a spot layer of white. The solid colors are second-surface print with a layer of white ink on top of them. We then applied a frosted vinyl second surface. The client used standoffs to hang the finished project on the wall." **GP**

ON PAR WITH DIRECT-TO-MERCHANDISE PRINTING

BY BILL SCHIFFNER

Over 50 percent of U.S. core golfers have bought merchandise from golfluencers, aka, golf and sports social media influencers. According to market research by Roland DGA data shows that these influencers have enough commercial status to challenge previously established manufacturers, or even work with these brands to reach customers that professional golfers otherwise wouldn't.

More than 63 percent of consumers in this sphere choose to buy from an influencer because they trust their recommendations, and over half of those who made purchases did so through the influencers' social media channels.

Frank Scarcello, aka Daddy Chungus, worked with Roland to demonstrate how easy it can be to launch a merchandise collection. The Daddy Chungus collection was printed with direct-to-substrate technologies to customize what Scarcello is presenting to his followers — golf shirts, bag tags, and ball markers — all of which feature the Daddy Chungus logo.

A Roland TrueVIS VG3 printer/cutter was used to produce the heat transfers for the golf shirts, and the ball markers and bag tags were made using a Roland LEF2 benchtop UV flatbed printer.

On top of working to ensure accessible prices for his merchandise, Scarcello intends to donate 5 percent of every sale to the Crohn's & Colitis Foundation, as he has been affected by Crohn's.

"I am currently selling this merchandise on my Daddy Chungus Golf Shopify Store and integrating those items naturally into my social media content in an effort to raise awareness for this campaign and boost sales," Scarcello says.

Being charitable is another way for golfluencers to connect more with their audiences, and Roland's research says that 76% of consumers say it's important for an influencer to associate with a charitable cause. For print shops, identifying influencers and working with them on

Scarcello's signature Daddy Chungus logo being prepped for transfer onto a shirt. The logo was created with Roland's TrueVIS VG3 printer/cutter.

The branded ball markers were made with the help of Roland's VersaUV LEF2 benchtop UV flatbed printer.

A series of Daddy Chungus logos for Scarcello's shirts being printed using Roland's VersaSTUDIO BN-20 desktop printer/cutter.

creating merchandise can open up additional profit centers.

"The initial response has been very positive, and depending on the popularity of the collection, I may expand the items offered in the future," he says. "For now, I'm happy to promote the current line and partnership through social channels and further connect with my audience." GP

Substrates for CNC Routers

BY PAULA AVEN
GLADYCH

Exploring best practices for routing different substrates and bit selection and maintenance

Paula Aven Gladych is a freelance writer based in Denver, Colorado. She can be reached at pgladych@gmail.com.

The bulk of what Signarama Chandler produces is fascia signs and monument panels, Eichenberg says, which means plenty of routed aluminum for channel letters and acrylic for faces and monument sign panels. Images courtesy of Signarama Chandler.

CNC routers offer sign shops flexibility and versatility, opening up many new opportunities in the sign and graphics space just based on the types of substrates used. The most popular sign substrates are acrylic, aluminum, PVC foam board, exterior grade medium-density fiberboard (MDF), and sign foam, but new substrates are being developed all the time.

Wood is still a popular CNC substrate for certain applications, but mostly it has been replaced with composite materials, such as MDF, that have the strength and carvability of wood but are more durable, especially outside.

The right match

Jim Eichenberg, owner of Signarama Chandler, in Chandler, Arizona, says the materials his company uses on the router are dictated by the kinds of signs it sells.

The company, which was started by Eichenberg's parents in 1997, targets small local businesses with brick-and-mortar locations that need fascia signs, window graphics, interior signage, and vehicle graphics. The company also works for larger out-of-state sign companies that need help with sign permitting and installations in Arizona.

The bulk of what Signarama Chandler produces is fascia signs and monument panels, Eichenberg says, which means

(Above) Jim Eichenberg, owner of Signarama Chandler, in Chandler, Arizona.
(Below) Wes Bails, fabrication manager at Signarama Chandler.

When routing half-inch acrylic, a shop will get a poor edge finish if the bit is not perfectly sharp.

The bulk of what Signarama Chandler produces is fascia signs and monument panels, which means plenty of routed aluminum for channel letters and acrylic for faces and monument sign panels.

Channel letters are in high demand for the inside and outside of buildings that can either be front-lit or back-lit with LED lights.

plenty of routed aluminum for channel letters and acrylic for faces and monument sign panels.

Channel letters are in high demand for the inside and outside of buildings that can either be front-lit or back-lit with LED lights. The outline of the letters can be made with aluminum or stainless steel

Channel letters are in high demand for the inside and outside of buildings that can either be front-lit or back-lit with LED lights.

that can be brushed, painted, or mirrored. Signarama Chandler has a CNC router, a paint booth, and digital printers.

"I can make the most beautiful, creative creations you've ever seen. I can custom fabricate anything using great machines but what pays the bills is letters. We have letters coming out of our ears. That's what people need. That's what their signs are … just letters," Eichenberg says. "Yes, you can dress up a letter and make it fairly

fancy. You can add different layers to it, paint the edges one color and one color on the face. You can get creative if the client is willing to pay for the added cost."

Jeff Voll, VP of sales for AXYZ, says that his company's routers can cut all the main sign materials, including foam core, aluminum, acrylic, such as ACRYLITE, and

even vinyl. Shops can make pop-up sign displays, aluminum signs, highway road signs, real estate signs, and adhesive signs for walls and windows.

AXYZ routers come with seven-tool, 10-tool, 14-tool, or 21-tool carousels for automatic tool changeout. They also have automatic height sensing, so if the operator makes a tool change, there is a sensor to verify the distance from the tip of the tool to the wasteboard that the substrate sits on.

"We make sure we are not cutting that part or going too deep, if you will," Voll says. Shops want their tools to last as long as possible, and that won't happen if they are plowing through the wasteboard.

When AXYZ cuts ACRYLITE, it uses a cold air knife that blows onto the cutting area, where contact is made between the tool and the plastic, to keep it very cool.

"The reason you do that is to get an edged surface very smooth, and you're also cooling down the knife. "You don't want the plastic to fuse to the knife," he says. The added benefit of this is that customers don't need to buff, sand, or polish the outside edge of that letter or whatever they cut out.

Aluminum composite metals are another material that is prevalent in the sign industry. It is two sheets of prefinished aluminum sandwiched around a polyethylene core. The material works well for channel letter backing and indoor and outdoor signage because it is lightweight and durable.

AXYZ makes CNC waterjet machines that use a 60,000-psi stream of water to cut aluminum, plastic, and even granite.

"You could never cut granite on a router. It would chew through tools so fast," Voll says. With water, it isn't that much faster than routing, but it is very precise. Another benefit of the waterjet head is that it can cut different angles than a router head.

Buddy Warner, who is in sales at ShopBot Tools, says that some substrates can be used inside or out, such as Sintra, an expanded foam PVC. Some sign makers use these more heavily indoors, particularly the 1/8" sheets that come in red, green, yellow, and blue, due to their tendency to warp in the high heat of direct sunlight. Thicker sheets are normally available in white or black. Expanded foam sheets come under many brand names, including Azek, Palboard, Komotec and Celtec PVC.

"Some of these are gooier when cutting and not as dry and powdery as Sintra, and some imports will have small voids inside as well and are not as consistent throughout," he says.

Other indoor materials include aluminum, brass, and copper. Warner says he typically uses phenolic-backed metallic laminate for indoor signage, although there are exterior grade metallic vinyls that can be applied and used in or outside.

Acrylics can be used inside or out and are sold in cast or extruded varieties. "Cast engraves nicely, leaves the cut white when etched and is very clear, but is much more likely to crack," Warner says. "Extruded acrylic is stronger and less likely to shatter and show cracks when drilled or cut. Either can be edge polished."

Styrene is often used for indoor signs because it isn't as durable outdoors as other materials. Foam Core or Foam Board has a layer of foam between various materials, like poster board. Ultraboard has a plastic-coated exterior. "These cut better with an oscillating tangential knife, but there are also bits that can be used," he says.

Polycarbonate, such as Lexan or Makrolon, come in clear or white and are very tough, he says. "This material should be machined more like cutting aluminum, done in shallower passes." While it can be used outdoors if it is UV-coated, this material is more commonly used for indoor signage.

One of the less expensive materials for outdoor signs is Extira, or exterior grade MDF. "This material is very dense and heavy and must be painted with the proper primer and paints," Warner says. It is also highly water resistant.

Corrugated plastics, such as Coroplast, can be used outdoors for political signs, realtors, and others wanting a more

temporary way to advertise. Sign foam, or high-density urethane, could be used indoor or out but is most commonly used for outdoor signage to "avoid the deterioration common with wooden signs," he says.

ColorCore, which is two-color high-density polyethylene, is a great material for park signs or applications where only two colors are needed, Warner says. The material is high-impact resistant, durable, and doesn't require any maintenance. Signs made with ColorCore are paint-resistant and can be cleaned with soap and water. Starboard is similar to HDPE and is frequently used in the boat industry for decks and signs.

Router bits

Wes Bails, fabrication manager at Signarama Chandler, says that his company uses two standard types of bits for aluminum or acrylic in 1/8-inch, 3/16-inch, 1/4-inch, and 1/2-inch shanks. When cutting acrylics, Bails uses a 1/4-inch shank, and when routing aluminum backs, he uses 3/16-inch bits.

"When I was brought in and learning the machinery, I was taught to use the biggest bit you can get away with using because it is faster and more robust," he says. "I only get down into 1/8-inch bits if I need detail, and I have to slow down speeds and feeds to accommodate the less strength of that bit."

Bails orders aluminum and non-ferrous bits for aluminum and acrylic. If the shop has projects that require foams, he uses the acrylic bits for those projects. He prefers

One important tip is to always do a test on materials coming from different vendors because the feeds and speeds may be very different from what the shop is used to using.

single flute upcut bits.

Eichenberg adds that "when it comes to routing, you can have the greatest router and the best tools for cutting, but if the speeds and feeds are wrong, you are not going to get a good product."

It's all about practice. He recommends that shops experiment on different types of substrates, using different cutting tools, to see what works best at different speeds. One important tip is to always do a test on materials coming from different vendors because the feeds and speeds may be very different from what the shop is used to using.

Bails created Google cheat sheets to give the shop's router operators an idea of how

The production area of Signarama Chandler.

fast they need to run the machine and feed in the material based on the thickness of the aluminum they are cutting.

As far as bit longevity is concerned, some bits can run for a very long time. Bails says he can run the CNC on one aluminum 3/16-inch bit for a month, routing aluminum. Typically, bits will wear out after a while, or a bit will snap at its weakest point if the material shifts unexpectedly.

Bits will last longer when cutting acrylic, he says, but once they get too dull, it is time to change them out.

When routing half-inch acrylic, a shop will get a poor edge finish if the bit is not perfectly sharp. When that happens, the fabrication department has to sand it down and make it clean. "It takes hours of manual labor, so we decide to recut pieces with a brand-new bit, which is less money in the long run than having guys spend time cleaning edges," Bails says. Eichenberg adds that it is cheaper to buy a bit than deal with bad edge quality.

Warner says that most plastics are considered "soft," but there are bits designed specifically for hard or soft plastics. The Onsrud 52-700 bits provide a great finish for the softer Starboard/polyethylene materials, and Amana has a great selection for plastics as well, he says.

"O flute bits, which have a circular cutting flute (rather than a flat one like a carbide tipped bit), tend to cut plastics better. Some plastics have a lower melting point and are more temperature sensitive, so less flutes, lower rpm, or faster feed rates work better on these. Harder PVC is temperature sensitive and cuts better with a low helix sheer cut bit," Wagner says.

The Super O flute has a circular flute and is back-ground on the outside cutting surface to reduce friction and heat that causes melting and "re-welding" of chips back into the cutting groove or kerf.

"I generally do not recommend down cut bits for temperature-sensitive plastics as they create excess heat and friction, which adds to the problem," he says. Denser or more abrasive materials like AlumaCore or Extira create more bit wear than Sintra, HDU, or HDPE. **GP**

EVERY CHALLENGE HAS A

Creative Solution

Solution-based companies like TKM Print Solutions have one thing in common: a motivated desire that there's always a better way to improve and grow

BY JD HAMILTON

James Dean Hamilton has more than 30 years of experience in the sign industry with a vast knowledge of everything signage, marketing, and workflow management. His website is www.jamesdean130.com, and he can be reached at JD@jamesdeanjdh.com.

TKMPrint Solutions, located in Uniontown, Ohio, is the perfect combination of high-tech and Midwest charm, mixed in with the work ethic and ingenuity of the nearby Amish communities.

TKM started by offering in-house digital wide-format printing services and custom-branded promotional products. Eventually, the company added the capability to custom fabricate boxes, cases, and displays using acrylic and a large variety of composite substrates in flat stock and roll materials.

Going back to Ohio

I had the opportunity to meet with Luke Messner, president of TKM Print Solutions, at the company's new 50,000-square-foot location with a current workforce of about 20 people. We discussed history, business trends, equipment, and the importance of fulfillment and logistics.

"TKM was founded in 2008, by my father, Thomas K. Messner Sr. At that time, he had over three decades of experience as a print salesman/broker. He became frustrated with some of the wide-format services that were coming to market and the development of new technologies that his existing suppliers were neglecting," says Messner. "He saw an opportunity that he could embellish with superior customer service and the quality he was accustomed to and finally have in-house production control. We started first and second generation at the same time. The company looks a lot different today; even our focus has radically changed."

TKM initially came to market with large-format printing and digital die

TKM Print Solutions' new modern 50,000-square-foot facility, consisting of offices, production, and warehousing employing over 20 team members. Images courtesy of TKM Print Solutions

Organized and well-stocked warehousing of common substrates allows TKM to hit the ground running as soon as an order is released. The new spacious, flexible, and well-lit production floors allow large-volume projects to move through efficiently.

cutting. The competition then was traditional screen printers. It was not too long before the Messner's realized their initial niche was low volume and quick time frames that screen printers could not meet.

Eventually some of those screen printers became customers to handle those more custom requests from their clients. "Screen printers and commercial sheet-fed printers at that time were a big part of the market share," says Messner. "We were also supplying to print brokers and to other smaller printers who didn't have the technology that we had. We started with an Acuity HD 2504 flatbed printer and could print three 4x8 sheets an hour. Cutting edge at the time and yet so hard to believe looking back we produced so much."

From senior to junior

Thomas Messner Sr. had been a very successful print broker in the Cleveland/Akron markets for decades. He was well known and respected for his uncanny eye for color and the ability to find and coordinate projects both large and small.

Key to his success was his ability to facilitate the successful fulfillment of his projects. He learned early on it was one thing to make a product, but a completely different discipline to provide the ultimate back-end logistics to bulk deliver to his client or package and ship to multiple

The acquisition of local acrylic fabricator only added to the company's extensive emphasis of "kit packing" turnkey products that TKM can drop ship to its clients' locations throughout the country.

TKM's core business has led to requests for other printing services and TKM now offers environmental and corporate graphics featuring printed wall coverings and vinyl.

With more than $1 million in recent investments in equipment and technology, the key to ongoing success is the people.

locations of those clients' customers. Messner Sr.'s vision of successfully combining an emerging technology while providing his clients with the turnkey solutions they had relied upon were the cornerstones of TKM Print Solutions beginning. That philosophy continues.

"My dad's got over 50 years in printing experience. He has seen the evolution of printing over the last 50 years, and it has been dramatic. But the evolution of printing over the last ten years has trumped most of that. For us, when we started, we realized we weren't going to win on speed; we needed to win on quality. We also needed to win on customer service,"

explains Messner. "For us at that time, printing three sheets an hour meant that sometimes we needed to run the press 24 hours a day, seven days a week for a month straight. There were times early in the start of our business when we didn't have nearly as many employees; it was me and a few other people. We would work all night. The press took long enough to run that we could set up a little cot and sleep by the cutter if we needed to or sleep by the press and set a timer for every 20 minutes. It seems crazy, but that kind of work ethic is largely what drove us and continues to fuel our growth."

Back to the future

Fast forward to 2023, and you will find the footprint, equipment, team size and, of course, revenues have increased dramatically since its start. From surviving the Great Recession during the company's opening year to getting through the recent pandemic, TKM persevered and grew.

Today, you will find an expansive list of investments that added growth. The initial Acuity machines have been replaced by a swissQprint Nyala large format roll and flatbed printer, an EFI VUTEk H5 that prints 30 full sheets an hour (quadrupling

the speed of the old Acuity machines), two D3 automated Zund Cutters, a Zund G3 cutter/router, a 4x8 Kern laser and a liquid UV material coater.

The addition of a laser complements the Zund D3 cutters and gives a quick, flame-polished finish to acrylic pieces. Acquiring the assets of a local acrylic fabricator provided the equipment and knowledge to grow beyond traditional paper and plastic substrates and the ability to create unique components for point-of-purchase displays and other applications.

The company's focus currently is on providing retail graphics to three types of customers: Corporate and product distributors that sell product at retail stores, brick-and-mortar retail stores where those products are sold, and point-of-purchase display companies.

With more than $1 million in recent investments in equipment and technology, the key to ongoing success is the people.

You can't print core values

"Perhaps our greatest growth has come from growing and maintaining our quality team members. Much of our team has been with us for years and our extended family still steps in and helps. Printing has become more and more about people and process," Messner says. "Our core purpose for being in business is to *Make Life Better* for our clients, our employees, their families, our community, vendors, and shareholders. We live by our TKM Core Values of *On It. Own It., Push Hard Every Day, and Figure It Out.*

Further defining this Messner adds, "TKM aims to make life better for customers by building the best production process we can and working hard every day to help our customers achieve their timelines and goals. TKM aims to make life better for employees by cultivating a positive workplace environment, communicating heavily about our vision and goals and how we're measuring up, and providing good benefits, good pay, and a monthly cash bonus profit-sharing plan tied to the company's financial performance. *"On it. Own it,"* ultimately boils down to trust and accountability. We realize we must

Going hand in hand with a variety of promotional printed products, TKM has also expanded into providing custom special event graphics.

Investing in cutting-edge hardware and technology like two D3 automated Zund Digital Cutters, a Zund G3 cutter/router, a 4x8 Kern laser (shown here), and a liquid UV material coater have been pivotal in the company's continued growth.

earn that trust with our customers every day on every job. Committing to extreme accountability can take different forms. One time we couldn't finish production by the UPS and FedEx shipping deadlines. Our customer was scheduled for a major meeting with one of their customers the next day. We put one of our people on a plane, flew the finished goods to the customer early the next morning, and hand-delivered the job by taxi. Usually, though, taking accountability for our work involves more mundane tasks like checking our work, solving problems, and working out any problems the customers might have. It can also mean tracking how we're doing from a quality perspective. One major initiative we're developing is a quality score that can be reported for any customer showing how many jobs, parts, and individual pieces we've shipped to them compared to the number of issues

the customer has reported. We're excited about this new tool because it gives our team a concrete way to measure how we're doing and shows where we can improve."

Besides people, TKM has a unique and successful strategy when it comes to creating win-win relationships with vendors and maintaining inventory. The company views vendors as part of its extended family.

"We view vendors as a pivotal part of our team and monumental to our success. They take care of us, and we make sure we take care of them. We have developed unique partnerships with some of our substrate partners where we inventory products for them and pay as we go. This enables us to quickly move forward on virtually any type of product, large or small, without depending on a supply chain that can become unreliable," explains Messner.

The ability to have on-site access to

large amounts of sheet stock definitely gives them an advantage in many large time-sensitive projects, thanks to a vendor relationship.

Circling back … and forward

TKM's central location puts it within 500 miles of most of the markets it caters to. Access to freeways, tollways, railways, and even airports offers a competitive advantage for product costs and for shipping fees for its clients.

"We realized we needed to focus on the things that we wanted people to think of when they thought of TKM: high perceived value, great customer service, exceptional sharing of information, rapid responses to emails, and RFQs. We have an extreme desire to improve our processes every single day. We believe there's no idea that's too crazy if it fits within the focus of what we're trying to do here at TKM,"

explains Messner. "We'd like to double in size in the next five years, and we'd like to double that growth again in the next 10 years. We believe we can get there under our context of *Make Life Better*. We don't want to do that by doing two to three times the volume of work that we're doing now and ask everybody to work two to three times harder. So, everything that we do has to be focused on making life better by transitioning into our new facility and continuing to invest in technology, processes, and people to achieve those goals."

TKM Print Solutions is a prime example of the growing trend of businesses in our industry that don't look at simply selling as many widgets as possible at the cheapest price. Instead, they offer a turnkey solution to their client needs, which is the face-to-face customer service at the front, quality workmanship, and a dependable fulfillment system with follow-up.

Messner sums it up best with: "Our clients don't buy printing from us; they trust us to provide the solutions and services to meet their needs." **GP**

Printed and fabricated point-of-purchase and point-of-sale pieces and displays are the cornerstone of TKM's business. Packing, shipping and handling logistics is the service that separates TKM from most of its competition.

The company's new EFI VUTEk H5 can print over 30 full 4x8 sheets an hour, four times the capacity of the original machines.

Fleet Account Management

Fleet projects from estimate to installation

Charity Jackson is the 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.

Vehicle wraps and fleet graphics are our specialty, and we have many different small-to-large companies we work with. Often, the work we do for them is ongoing, meaning we'll wrap or letter one to three or so vehicles at a time. We keep track of their artwork and graphics placement and make the reordering process as easy as possible. Most of our fleet accounts started with one or two vehicles and grew from there.

Over the years, we've also bid on large fleet projects. Usually, these projects are for a set number of vehicles that will need to be completed in a pre-specified time period, unlike with our ongoing accounts.

Some of these projects are posted through a bid portal in the form of a Request for Proposal (RFP) and have a packet of information that needs to be completed. These are more formal estimates with a lot of paperwork and specific requirements.

We'll often bid on a fleet project less formally, especially when we've worked with a company on other projects before. While they may not have an RFP in place requesting specific documents, you'll still need to provide plenty of information in addition to the estimate itself.

Rapport

Meeting with the customer and gathering information is essential to the project because that's when you establish a rapport. On projects with many vehicles, the customer should have a pretty good idea of the end goal and will need your assistance in organizing the process to achieve that goal.

We're currently in the middle of a large project involving multiple vans and box trucks, over 30 semi-truck cabs, and 45 trailers ranging in size from 28' to 45'. The client is a local distributor that was bought out by another company up north. Their goal is to rebrand all of the vehicles by the fall.

We've worked with people in different departments over the years, but this project is overseen primarily by one person locally. We met with him numerous times as we gathered information on their goals for the project, measured and

There were multiple print files for each trailer. A simple proof showing the printed panel allowed us to easily track our output.
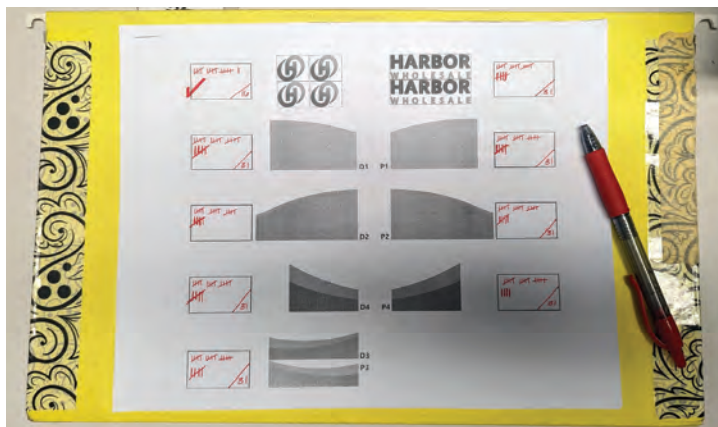
Scaffolding, scissor lifts, and proper tools made the installation as efficient as possible.

Scaled proofs with sizing noted were provided during the bidding process to ensure we were quoting comparable coverage and understanding the customer's goals.

photographed the trucks and trailers, and worked through final vehicle quantities.

We also met with representatives from the main company to clarify artwork and coverage to be sure we'd maintain consistency with the other fleets they have up north. Since this is a great company to work with, and we've had experience with them on smaller projects over the years, the process has been relatively smooth.

Assessment

We met with the customer to assess the vehicles and began putting together an estimate. We took straight-on photos of all sides of each type of vehicle and trailer they planned to wrap. We looked at the condition of the paint and noted any obstacles like doors, rivets, or brackets.

We got a close estimate of the number of vehicles we would be doing, and some examples of other fleets they'd had branded in the past. This helped speed up the process since we weren't starting from scratch in establishing the size of the fleet and the coverage.

Proposal

When you fill out an RFP, and even when you do a less formal estimate on a large project, it feels like you're also submitting a company resume. In some cases, you do exactly that. For some proposals, you'll need to establish your company's experience, provide referrals, and show examples of past work while also providing information on the primary company representatives and all pertinent contact information.

You should also provide product bulletins for the materials you plan to use and a written warranty for both materials

and workmanship. Usually, you're bidding against other companies on large accounts, so be sure to spell out precisely what you're providing for the price and ask for an apples-to-apples comparison. If another company is providing something different, note those discrepancies.

For example, we use a 3M Scotchcal 8548 non-PVC overlaminate on all our wraps to help prevent the browning issues we commonly have in our area. Many other companies use a premium 3M 8518 gloss laminate. Both would work for this application, but we noted why we wanted to use a different material and why we feel it is a better choice.

The written estimate we provided spelled out the vehicle types, the coverage, the number of vehicles at each size, and the price per vehicle for graphics and installation. We quoted the rears of the trailers separately for this project because some had a lift gate and some didn't, which affected the amount of rear coverage.

We started with the cab doors and front fairing logos, completing portions of the project as they were approved.

During the initial assessment of the fleet, we took into account the doors, brackets, and rows of rivets.

Each trailer had multiple panels for each side.

Simple labeling printed with each panel and stuck to the outside tape kept the rolls organized.

Design

Typically, we only do artwork for an order, but on large projects like this, some amount of design needs to be provided to clarify coverage. Providing an initial proof helps the customer compare your estimate to other bids and shows the customer that you understand the direction they want to go in.

One project we're currently working on has van wraps, a box truck, and multiple trailers that are 28', 36', and 48' long. The artwork for most of the vehicles is very similar, just fit to the different sizes. Using photos of the trailers and templates for the vans, we created proofs for each one and submitted those along with the estimate.

As the bid process moved along, we also provided sizing notations to ensure the coverage size was consistent for all companies providing bids. There were some adjustments and things to clarify along the way, but we worked hard to answer any questions and provide any requested information quickly.

Since we could not get artwork early in the process, we created similar artwork to provide an accurate quote. When we received the go-ahead on the project, we worked with the company to gather vector artwork and Pantone colors. Once we had this artwork, we provided updated proofs of all vehicle types for final approval.

We also provided color samples printed on the wrap media we use for final color approval. After a couple of variations, we had the company sign off on the final print sample, and we kept it on file for future reference.

Printing

Only once we had a signed-off print sample did we start setting up the graphics for production. The cab graphics, which involved spot logos on the two doors and the front fairing, were approved first, so we started by printing all of those.

As I set up these files, I added small boxes to indicate the midpoint of the graphics to make it faster to line up pieces on the truck doors. We rotated the graphics during the printing process for the upper fairing logos so we could print them in one piece. To ensure the logo was applied straight, I added a line and noted the top of the logo to avoid confusion during installation.

We also did this with the spot logos on all the sides of the trailers. By printing the logo separately from the text, we were able to better stack the graphics for output. And, by aligning the side weed borders and adding bright boxes that lined up to one another, we were able to quickly and accurately realign the graphics on the vehicle.

While installing the cab graphics, we received the final artwork approval for the three vans, so those were wrapped next. The art approvals came in waves, which worked great for us, as we could plan and print the various vehicle graphics in batches.

Once we received final approval on the trailers, we established with the customer that the thirty-one 28' trailers were the priority. When I set up the print panels for these trailers, I also printed proofs showing where the print breaks were and how the panels would look. They were also labeled by the side of the trailer and what number panel they were, starting at the

back of the trailer since we install from back to front.

A separate proof was created to track the panels as they were printed so we wouldn't accidentally under- or over-print them. Matching labels were added to each printed panel so that, as we cut down the panels in production, those labels could be added to the rolled media for clarification. Our labels indicate the trailer size, which side of the trailer, and the panel number.

Workflow

We're not a big company, so large projects like this mean we have to be super organized in our workflow. Other projects are still coming in, and they have to go through the production process, too, and we don't want to drop the ball on anyone.

We typically wrap one or two trailers a day, depending on the weather, and then try to leave a couple of hours for production time to prepare the next batch of panels. The printing, drying, laminating, and finishing process is straightforward and streamlined to ensure we're as efficient as possible.

The rolled panels are labeled and then sorted by truck/side so they're all ready for installation. We make sure to print an entire trailer in one day to lessen the chance of color variation, and the printed panels are relatively easy to sort. We don't print multiples of one type of panel; rather, we print all the panels for an entire side before moving to the other side.

Installation

The first installation on a new vehicle type always takes longer than subsequent ones. On the first one, we establish placement and make clear notations on the proof so we know exactly where to place the panels on each trailer for consistency.

We also ensure we have scissor lifts and scaffolding in place to speed up the process. Proper tools and handy tips and tricks also make the installation faster, especially on rows and rows of rivets.

Since we're in California, we also have to consider the weather. Other than the vans and smaller box trucks, all the installations must be done outdoors. Installing in

the early morning, setting up a large portable umbrella, and installing the side in the sun first thing are all little adjustments we make to get it done. Once the temps get too high, we switch gears and move in to prep the next trailer. Something is always getting done on the project.

Tips

Throughout the process, we make sure to communicate with the customer. We track trailer numbers and install dates and work hard to rotate the trailers out as efficiently as possible. If the weather is too hot, we let the customer know we'll need an extra day to finish.

We require a deposit up front to start a project for companies we've never worked with. For our current project, we've

worked with the client for years, so we didn't require a deposit; instead, we're just billing the project in batches. This way, they're not hit with a huge bill all at once, and we're not putting out a ton of money upfront for materials and not billing it for months at a time.

A lot of material is purchased for these fleet projects. We can get the graphics for approximately two 28' trailers out of each roll of vinyl and laminate. Since we can only print, prep, and install so many wraps at a time, I spread out the material purchases from our suppliers. In the end, we'll still order and pay for the same amount of vinyl, but rather than ordering it all up front, we can bring it in and pay for it because the customer is also being billed for the completed work. **GP**

Adding simple alignment blocks speeds up the installation of spot graphics.

The vans were approved early on and were wrapped in a similar layout to the rest of the fleet.

LASERING
FOR THE
HOLIDAYS

Christmas season is right around the corner, and ornaments are on the table

BY JOHN MORMAN

Depending on your point of view, it may be unfortunate that we consider Christmas to be a time to maximize our revenues. Regardless, the Holiday season does offer us a chance to add items to our product offerings that can be carried every year or can be customized to suit a particular customer.

You can also take a standard item and add a specific date to celebrate a New Year. Remember that Thanksgiving really marks the unofficial start to the Holidays, so be ready to start on Christmas items then.

Please don't forget our Jewish and Muslim friends, who also celebrate significant Holy Days around the same time of the year. They do have slightly different calendars, so timing can vary, but they'll be close enough to build into the general Holiday Season.

Ornaments and beyond

The biggest opportunities will involve personalized gifts described in previous articles but don't forget Christmas ornaments. Again, a wide range of materials can be used, but I have found wood or glass to be those most commonly requested.

Metal and ceramic-marked items are popular as well. The processes to produce these pieces are basically no different than for any other item, using the suggested setting as a baseline. As always, judicious settings for power and shade on wood, in particular, and to a lesser extent on glass and metal, can achieve various results if you choose to keep the natural wood finish.
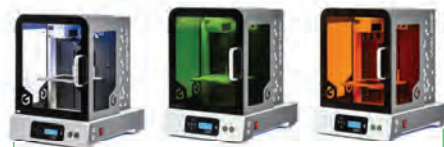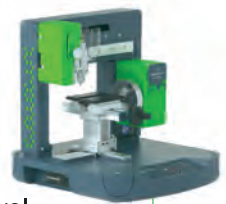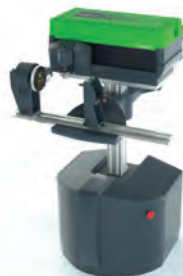
Color fill is another idea for ornaments and other wooden gifts, but please don't forget that this will be time-consuming, and your pricing will have to reflect that. I have found it necessary to limit the number of color-filled items to three per customer and produce no more than six at any one time in order to help reduce the time spent on color-filling. I will usually offer to mail a customer order if I don't have enough pieces on hand. Never give a customer an excuse not to buy!

We are fortunate enough to have two universities here in town and a third a few miles away, as well as two high schools. This is a great source for all sorts of gifts, again covering the whole gamut of objects using the school logos, including Christmas ornaments, barware, glassware, etc. Please, though, get permission to use the logos. Many schools and universities have licensed their logos to third parties, so be careful.

There are lots of open-source locations from which you can import designs. If you look hard enough, you can find editable vector art that you can manipulate to suit your, or your customer's, own preferences. If not, tracing a jpeg design into an editable format will again afford you the

chance to change things to your liking. Again — always remember to take any additional time into account for pricing.

A quick note about wooden ornament. I use 1/8" sheet stock of a medium hard wood. Softer woods, like bass wood for example, can be easier to work with, but are prone to burning more easily if you're not careful.

If you are going to be making pieces that include cut-outs, remember to have sufficient margins so the piece doesn't break up as soon as you finish it! I do some pieces which involve sandwiching two pieces of 1/16" sheet stock but which have a different material in between the two pieces, and then glued together.

Timing

This is obviously essential around the holidays. If you are mailing out items, remember to keep in mind the volume of items going by mail, Fed Ex, UPS, DHL, etc. The "last date for delivery" your shippers will send are only guidelines, and you should plan on getting orders out for delivery no later than mid-December.

As far as taking orders is concerned, I try and set a final order date of Thanksgiving to ensure I have stock in hand, have enough time to produce the order, and ship it to the customer. (I have taken orders for local folks as late as Christmas Eve, though!).

The Holidays are stressful enough for business owners such as ourselves without getting worked up about getting orders done in time. If you have a backlog of orders, try and organize your work so that everything that needs a cutting table or a rotary adapter gets done at the same time so you're not spending time chopping and changing the configuration of your machine.

I've always been a Christmas nerd, OK? Even so, I find producing gifts for any of the Holiday Season to be a great way to get me really in the mood for the Season. Without backing yourself into a corner with a large volume of "Must have by…" orders, the Holiday Season makes working with your laser even more fun.

GP

Working with Lens Effects

Add a new dimension to your designs

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

The Lens effect may possibly be one of the least understood and least used features included with CorelDRAW. I hope to explore some of the magic of the Lens effects in giving a whole new dimension to some creative endeavors. So, first, open the docker by going to Window > Dockers > Effects > Lens or, on the task bar Effects > Lens or the keyboard shortcut Alt + F3, whichever way you prefer to open it. (Many of the Lens effects can be applied with other kinds of processes, so it is important to determine if this effect is the best choice for your project.)

With the docker open, there are several options available as seen in **Figure 1**. I will go through some of these effects, beginning with the transparency choice. In **Figure 2**, there are three objects: Red, Green and Blue. Each has a transparency applied where they overlap, and several other colors are apparent. All this is done using the Transparency Lens effect.

The next effect is the Magnify choice in the docker. In this example is a road map of the Denver area. I wanted to magnify a particular part of this map, so I first drew a circle over the area to magnify, then applied a magnifying lens. **Figure 3** shows the magnification. The problem is that my magnified object covers the original area, and when I move it, it magnifies a different area of the map. So, in the docker, I checked the "Viewpoint" box, then "Edit" and a small "x" appeared in the circle. I dragged it to the word "Denver," and the magnified area appeared in the circle. Checking the "Frozen" box allows the circle to be moved anywhere on the page, and the magnified area is retained. (Note: The "Apply" button may be locked, so it will have to be unlocked by selecting the
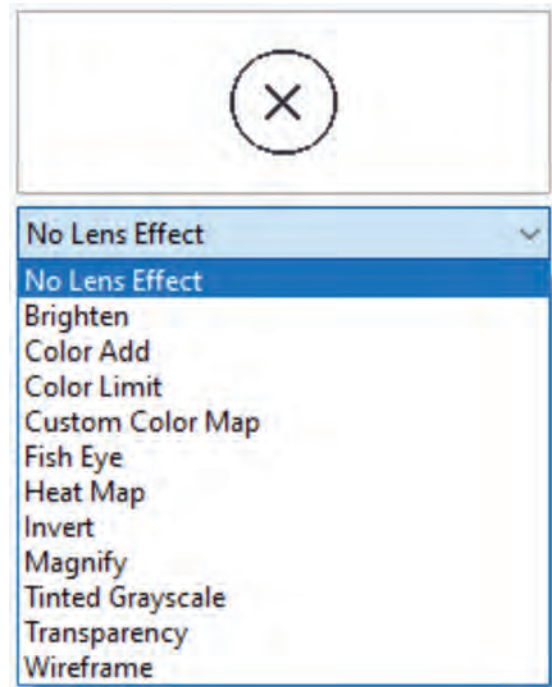
Figure 1: With the docker open, there are several options available.
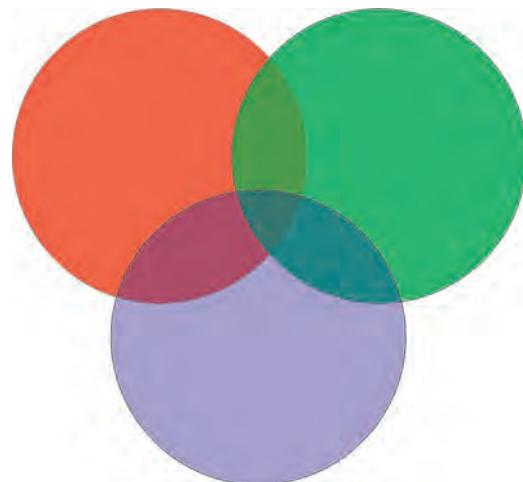
Figure 2: There are three objects: Red, Green and Blue. Each has a transparency applied where they overlap, and several other colors are apparent.

Figure 3: I want to magnify a particular part of this map, so I first drew a circle over the area to magnify, then applied a magnifying lens.

Figure 5: A lighthouse on the left side and the Invert lens applied to the image on the right side.

Figure 4: I wanted to add a description of this image. So, I typed the word "HOLIDAY" and chose an appropriate font.

padlock icon. Also, in the 2020 and later versions, there is no "Apply" button... instead, the effect is automatically applied when selected). In this example, I drew a smaller circle to indicate the magnified area. One could possibly draw an arrow to show this. The "Amount" of magnification is 2, by default, but it can be changed as needed.

The next effect I want to explore is the Brighten effect. In **Figure 4** is an image of a seascape, and I wanted to add a description of the image. So, I typed the word "HOLIDAY" and chose an appropriate font. With the Brighten effect applied to the text, I was able to create a subdued or faded rendition of the text. Note that a negative value in the "Rate" box will tend to darken rather than brighten the image.

The Invert lens is the next one I want to talk about. **Figure 5** shows a photo of a lighthouse on the left side and the Invert lens applied to the image on the right side. A rectangle was drawn over the image to apply the lens. Note that colors are

Figure 6: On the left, a bitmap image with a green triangle, and the right side is the same image with the Color Limit lens effect applied to the triangle at a rate of 55.
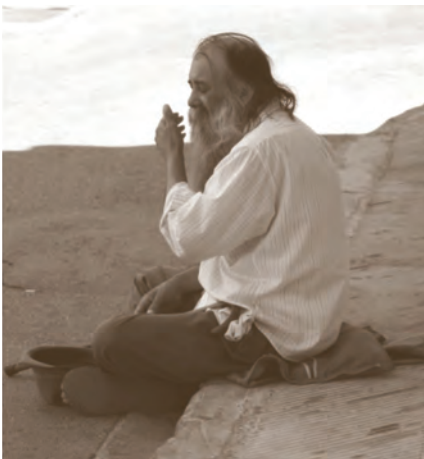
Figure 7: An image of a man on the left and the result on the right, so I want to change the image color to a Sepia look.
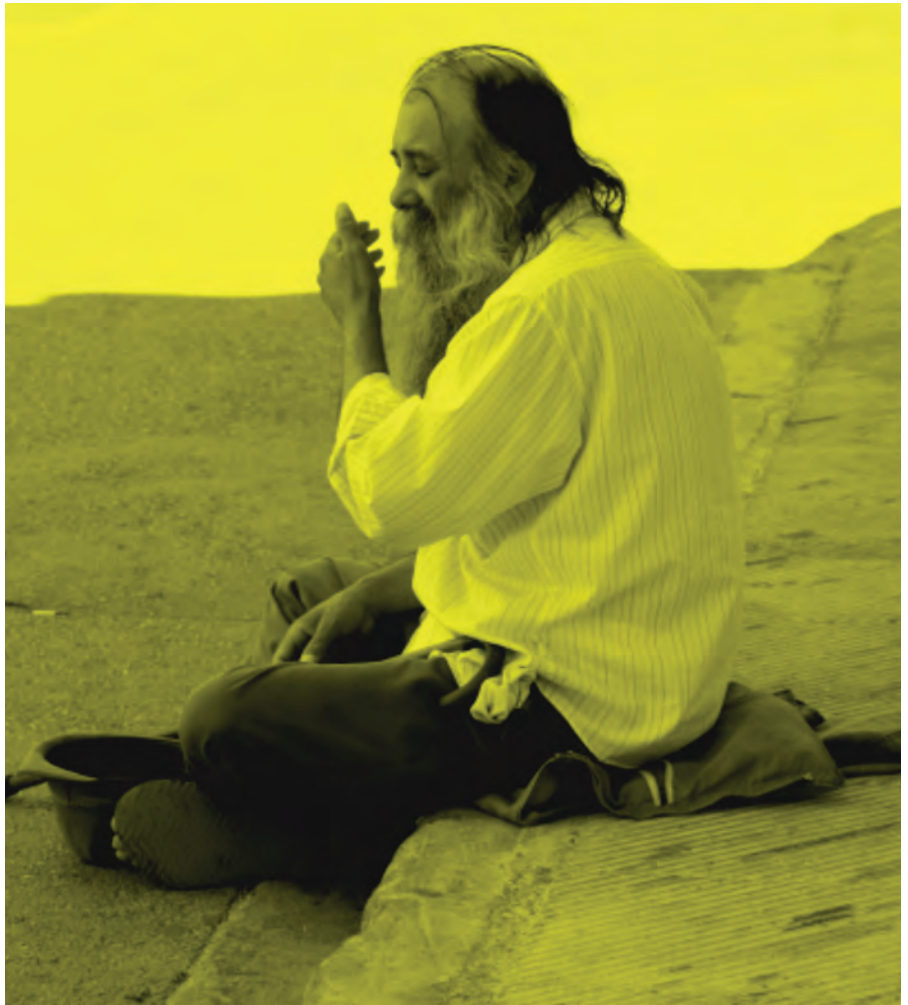
Figure 8: Using the same image and the Custom Color Map effect, in the docker, you can choose a beginning color and an ending color. I chose From: Black and To: Yellow.

Figure 9: Applying a Heat Map lens to a rectangle drawn over the photo, with a Palette rotation of 25.

the same image and the Custom Color Map effect, in the docker, you can choose a beginning color and an ending color. I chose From: Black and To: Yellow, as in **Figure 8**. Other choices in the docker include Direct Palette, Forward Rainbow, and Reverse Rainbow. Each of these will yield a different look, and I urge one to try them all to see the difference of each.

Using the same photo as in the Color Limit example, I now want to apply a Heat Map lens to a rectangle drawn over the photo, with a Palette rotation of 25, as seen in **Figure 9**.

changed appropriately to indicate the changes. This may be an effect that is seldom used but may be exactly what you need for a particular project.

The Color Limit lens effect is next to be considered. **Figure 6** has two images. On the left, a bitmap image with a green triangle, and on the right side is the same image with the Color Limit lens effect applied to the triangle at a rate of 55. A negative number yields different results.

The Color Add effect could be quite useful in some instances. Opposite to the Color Limit feature, Color Add allows one to add colors and should be somewhat self-explanatory. Tinted Grayscale could easily be one of the most useful lens effects available. **Figure 7** depicts an image of a man on the left and the result on the right, so I want to change the image color to a Sepia look. I drew a rectangle over the image and chose a dark brown fill color, then applied it to the rectangle. The result is a Sepia color. Sometimes, a warning appears, indicating that it uses a Spot Color. Just choose OK, and the color or its equivalent is automatically used and applied to the lens effect. Of course, one could use any color to get a unique tint in the lens. A similar lens effect is the Custom Color Map. Using

Figure 10: A rectangle drawn with the Graph Paper tool above, and on the right is a circle with the Fish Eye lens applied at a rate of 250.
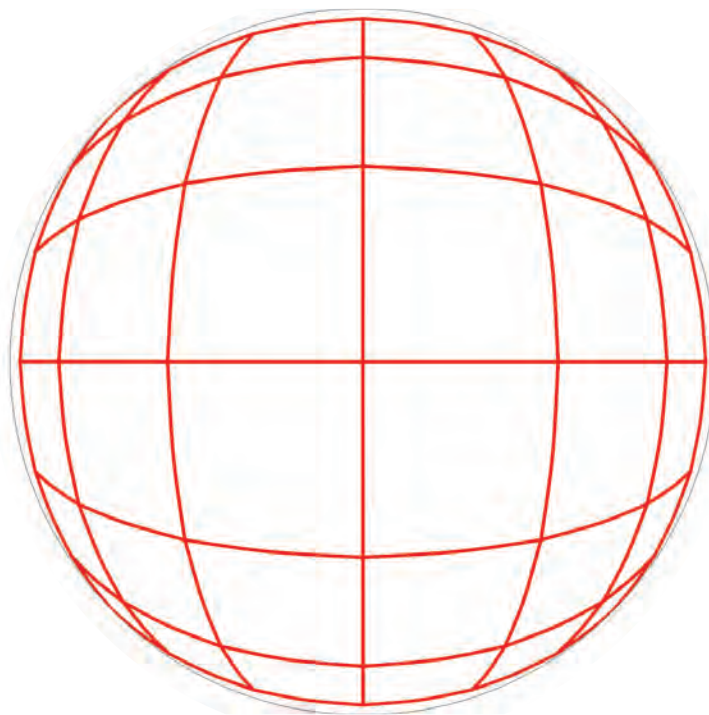
Figure 11: A vector logo design at the top and below it, a rectangle about halfway over the image with the Wireframe lens applied.

Changing the Palette rotation value will give a different look to the colors. Try 50 or 75 to the differences. It depends on the look you want.

Figure 10 is a rectangle drawn with the Graph Paper tool on the left, and on the right is a circle with the Fish Eye lens applied at a rate of 250. It kind of looks like a globe. A different value in the Rate selection will give a different look. It could easily be used over headline text to give a unique look. Or maybe over a photo of a person's face to give it a cartoon or caricature look. Just a thought.

The last lens effect is the Wireframe effect. **Figure 11** shows a vector logo design at the top, and below it a rectangle about halfway over the image with the Wireframe lens applied. In the docker, the Outline is red, and the Fill is 20% black. This could be handy in some instances. You can change

Outline and Fill colors as needed or turn either off by clicking the check box.

We have looked briefly at all the lens effects available. Some of these may be better achieved with other tools and processes in CorelDRAW, but they do offer another option to creative design. One caution to consider is that some of these effects may prove difficult to output. In that case, it may be good to save a copy and convert it to a bitmap for output. If you want to remove a lens, select No Lens Effect, apply it, and you are back to where you started.

All the effects have several choices in the docker, and it is best to try them all to learn their unique function and purpose.

I will answer questions as soon as possible at dezender1@gmail.com. I always like to hear about the differing uses of CorelDRAW from other users of the program. **GP**

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https://gpro.link/pacificemblemmaui

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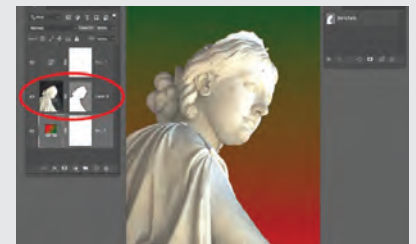
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