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“As (UV-LED) technology develops and gets better and better, those capabilities will expand... We can print on some pretty unique surfaces. We can print on a lot of different things.”

LON RILEY, LogoJET

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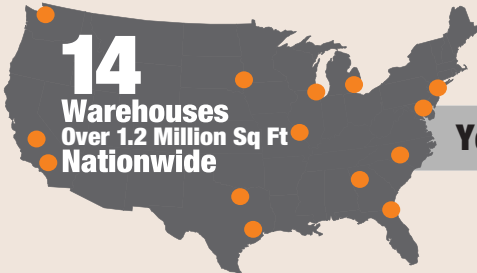




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With many businesses expanding their services, there is a need to learn about new equip- ment. Putting the spotlight on Tools and Techniques, the January cover art was provided courtesy of Radian Laser, Mesa Apparel Decorating Solutions, and Mimaki USA.

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STEP ONE CASSIE GREEN, EXECUTIVE EDITOR



THRIVE

We made it; you can now breathe a huge sigh of relief. 2021 is here and we all survived. In fact, a lot of us not only survived—we thrived. I would even argue that we did more than that. We rose to the challenge that 2020 presented and made it out the other side having learned a few things.

Some of you probably learned how to use new tools and equipment as you adjusted your offerings to better fit the current needs. Some of you learned new software as you navigated the world of virtual connection. All of us learned that we have to be flexible and open to change, and do whatever is necessary to survive.

With so many in the graphics industry exploring new options and ways of doing business, we at *GRAPHICS PRO* thought we'd put the spotlight on the many different tools and machines currently available to kick off the New Year. From the latest in laser technology to print-on-demand options, this issue showcases everything worth considering when adding new equipment. By educating yourself on the options as well as what goes into taking on new technology, you're taking an important step toward business survival and even growth.

Don't let the challenges of the past year slow you down. Keep going.

Until next time.

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METAL MARKING:

why sublimation is great for this substrate, plus a bonus laser tutorial.

APPAREL DECORATING EQUIPMENT:

machines that are perfect for the beginner.

WRAP FINISHING TECHNIQUES:

tips for a professional, durable finish.



(Image courtesy Jennifer Foy)

WANT TO KNOW MORE?

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THOU SHALT NOT ASSUME

My grandfather, Roy Lee Worthy Sr., was a much bigger fellow than I am, and even at about age 70, he was 6' 3" or so, and weighed at least 250 pounds. In his late 60s, he left his adopted home of Texas and moved back to where he started in the small Jackson suburb of Brandon, Mississippi. There he became a deacon in the Baptist church down the road.

One of his jobs was welcoming members and visitors as they walked through the door. He often wore a white suit, which must have looked impressive with his considerable size and white hair. So, when a little fellow, hand in hand with his mother, walked in one Sunday morning, he took one look at my grandfather towering over him and timidly asked, "Are you God?"

Well, he was in the Lord's house, why not assume the big guy—the very big, old guy—all dressed in white, might just be the Lord himself. Makes sense to me... well, it would if I was 4.

As we go through life, we all make a lot of silly, or uninformed assumptions. We make a considerable amount of them when we go into business, and if we are lucky, we survive them. And it doesn't matter if it's a sign business, an engraving business, or a T-shirt shop—we will have a whole lot to learn when starting out that we didn't even know was part of the equation.

In the beginning, I thought I knew what net profit was, but any accounting definition is by nature faulty, and you soon realize net profit is whatever the IRS says is "net" to you. For most of my years in business, I have operated and stayed out of trouble by giving the IRS just about all I can lay my hands on and if I get some back... well that's net profit.

When computers and software first started transforming the graphics business,

the assumption was that they would make everything more efficient and more profitable. Though that assumption has some merit, I am perturbed when someone talks as if there was no effective sign or graphics business before that point in time. Wrong. The work did get done prior to computers, and not as inefficiently as you might think, in my shop and all the others across this country.

Once, back around 1980, I was allowed to be a casual observer in a large Denver sign shop, and the whole process moving forward was a well-choreographed performance, with a sales guy or two up front, one talented layout artist providing designs for the three or four sign painters, a full-blown fab shop, and several install crews. Brother, they were cranking out sign work for the Mile High City at an impressive rate, with no computer in sight.

Of course, computers and software changed the graphics business in a hundred ways, and have created capabilities that we all utilize, which are really amazing. But all of this improved technology comes at a risk.

I found that out a few years ago when it dawned on me that something was altering the files on my computer, on all our computers. Then a message popped up that notified me that everything in our whole network was rapidly being encrypted by ransomware, but that I was not to worry because for a significant amount of money the criminals in charge would decode it for me. Since both our companies were connected, we were losing thousands of dollars' worth of job files by the minute, and the viability of two companies rested in the balance.

My son Slade, the brains behind our computer network, was on vacation, but fortunately answered my phone call; all he said was to kill the power to anything

digital and he would deal with it when he got back. It was Friday, so we shut the whole enterprise down, and that one move killed the encryption process before all our backup files were toast as well. It took Slade a week to put the pieces of the puzzle back together, but we survived and paid no ransom. Moral: parents, choose your children well as someday they may have to save your hide.

And that's how I learned to not assume one layer of backup for our network is enough, or that things like this only happen to other people. Both assumptions were wrong and dangerous. Computers did revolutionize the graphics business, but the strange thing about computers is they can be your savior... or your assassin, your best friend or your worst enemy.

Some of you regular readers of these *Trenches* columns may have heard this account of our near disaster before, and my warnings about protecting ourselves from computer criminals. But, just like the preacher in my grandfather's church, or any church, mostly proclaimed to his congregation what they've heard before, or knew already... that doesn't mean they didn't need to hear it one more time, or maybe more than that!

I hope you're having a great month, avoiding viruses both human and digital, and you can manage to stay safe and prosper. We're trying to do the same here *in the trenches*.

Rick

RICK WILLIAMS owns Rick's Sign Company, a commercial sign shop in Longview, Texas. He has been in the sign industry since 1973 and has been a contributing editor to *Sign Business* and *Sign & Digital Graphics* since 1986. Contact Rick via email at ricksignco@aol.com.

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Instant Print

A LOOK AT THE GROWTH OF UV-LED PRINTING

BY PAULA AVEN
GLADYCH



WHAT IS UV-LED PRINTING?

UV-LED printing is a one-step process, unlike heat transfer printing and dye-sublimation where heat presses are necessary to set the inks. In UV-LED printing, a thin layer of ink is spread over the printable surface and instantly cured or hardened using ultra-violet or LED lamps, which makes the overall process versatile and quick.

Other types of large-format printing require numerous passes to achieve a multi-colored image, whereas on a UV-LED printer, all colors can be laid down at once because the ink dries so quickly. These machines remove steps other technologies must take to print an image, cutting back on time and cost. “The UV printing process has a trifecta of ingredients that create the mechanics of the machine; they in-

volve the lamp, the print head, and the ink. If any of these are out of whack, then you have to reformulate, regroup, or renew,” Roberts says.

INK ADVANCEMENTS

If a printer manufacturer wants its ink to have better adhesion to a specific substrate, certain chemicals come into play that make them bond better to metal, steel, Teflon, or glass. Those bonding agents do impact how fast the ink can travel through the print head and how they are cured by the heat of the lamp. And the work is never done. Manufacturers work closely with customers to rework their inks to better serve specific needs so the innovation will continue.

Mimaki is just one company in the printing industry to originally dedicate effort into the UV-LED space. “The ink technology was the biggest stall in the whole chain of events here,” states Maxwell. “Mimaki engineering decided to invest in LED technology and manufacture the inks in-house, creating our own chemistry. We streamlined the process.”

The company dedicated its resources to making inks that would work well with different printers and a variety of sub-

UV-LED printing has been around for 20 years, but it has only been the last five to 10 years that have seen the industry really come into its own because of advances in inks, print heads, and light sources. This technology is rising in popularity, in large part because shops can print a project and package it immediately because the inks dry so quickly under the UV or LED light.

The sign industry was an early adopter of UV technology because it “skips a lot of manual processes they had to incur,” says Michael Maxwell, Mimaki USA. Another segment that was an early adopter of UV-LED was the point-of-purchase and package prototyping industry. “UV curable created an opportunity to create a mockup in a short period of time, a day or two, or a couple of hours, depending on the need,” he adds.

Jay Roberts, Roland DGA, says that he loves the fact that he can print on a product, like a keychain, and it is ready to go immediately. You can pull it off the printer, wrap it up, and ship it out instantaneously. He adds that the processes have gotten faster, and the textures of the images have gotten better.



UV-LED flatbeds provide a variety of options to print to a wide range of substrates, such as signage, posters, wayfinding, decorative panels, and more. (Image courtesy Mimaki)

strates. Many other companies around the industry have done and still do the same thing. “I’d say we hit a renaissance of ink technology. The chemistry started to come together (as well as) the ability of the machines and the range of things you could do with UV curable inks. The market exploded,” Maxwell adds. Canon, Roland, and others are just some of the other companies working within the UV-LED printing market.



UV lights have always been too intense to use on paper goods or thinner substrates, but LED heat lamps can do the job without burning or warping the thinner materials. That advancement paved the way for UV-LED flatbed printers that can do everything from printing on cardboard packaging to car wraps. (Image courtesy Roland DGA)

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In UV-LED printing, a thin layer of ink is spread over the printable surface and instantly cured or hardened using ultra-violet or LED lamps, which makes the overall process versatile and quick. (Image courtesy LogoJET)



Above: As technology has developed, decorators have been able to print on more and more items, including golf balls. (Image courtesy Roland DGA) **Right:** UV-LED printers can print on some pretty unique surfaces, including metal, steel, glass, and even on sporting equipment. (Image courtesy ColDesi)



THE PRINT HEAD

“We use a multi-drop system, which allows the current heads in our current platform to be able to give different drop combinations,” says Lon Riley, LogoJET Inc. “It gives us a lot more granular control over the specific application we are using. That’s the big deal with this technology. We can do so many things with it.” That means that the printers can create different textures and even two-dimensional images using different drop sizes and layering.

“As the technology develops and gets better and better, those capabilities will expand,” Riley continues. LogoJET got its start printing on golf balls 15 years ago and golf balls still make up a large chunk of its business, but it also has expanded out into sporting equipment like baseballs and footballs. “We can print on some pretty unique surfaces. We can print on a lot of different things,” he says.

UV-LED printers are known for being able to lay down a layer of white ink before layering other colors on top. The white ink allows the printer to lay down a clear, crisp image, even on a shiny surface. Gloss ink can be used to embellish certain parts of the print to create an embossed effect, Roberts says. “The wow factor comes into play,” he notes when talking about the capabilities.

THE HEAT SOURCES

LED lamps revolutionized the technology again. UV lights were always too intense to use on paper goods or thinner substrates, but LED heat lamps can do the job without burning or warping the thinner materials. That advancement paved the way for UV-LED flatbed printers that can do everything from printing on cardboard packaging to car wraps. Even more recent advancements have provided some LED lamps to be segmented, allowing



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Right: Jay Roberts, Roland DGA, says that he loves the fact that he can print on a product, like a keychain, and it is ready right off the printer to wrap up and ship out instantaneously. (Image courtesy Roland DGA)

Below: These printers can create different textures and even three-dimensional images using different drop sizes and layering. (Image courtesy Direct Color Systems)



for certain areas of the lamp to be dimmed or turned off completely, resulting in a variety of matte and high gloss finishes printed all in one pass, according to Kerrie Thompson, Mutoh.

“Most of the machines have already migrated to LED as the light source,” says Roberts. Mercury halide lamps were less expensive than LED but only lasted about 800 hours. LED lasts 10,000 to 15,000 hours, “so the cost really becomes irrelevant,” he continues. “They are smaller, use less heat and energy, so really every manufacturer has almost completely migrated to LED light sources.”

Another development that helped fuel the rise of the UV-LED market was the shift to “more industrial components like heavy-duty motors, belts and chassis, things designed to take some abuse in production environments,” says Riley.

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(Not so Heavy) Metal

BY
JENNIFER
FOY

LOOKING AT ADDING METAL TO YOUR SUBLIMATION BUSINESS?

Here is top-level information on what to know for production, opportunities, variables, and even resources.

Above: Currently sublimating shirts? Think beyond fabric for your business growth. (All images courtesy Jennifer Foy)

The scientific process of sublimation remains the same from fabrics to hard surface products, but the steps look a little different for each. Following, I discuss factors to consider when shifting your sublimation business from fabrics to include sublimating metal, specifically aluminum.

EQUIPMENT: FABRIC VERSUS METAL

The basic equipment list is mainly the same whether pressing T-shirts or metal panels:

- Printer
- Sublimation ink (not for fabrics only)
- Heat press (must be able to reach 385 F)
- Transfer/newsprint paper

There are a few things to note, such as paper may differ for fabric versus metal panels. For shirts, you may have a clamshell heat press already. This can be used for small metal products but once you start really looking to increase your opportunities with metal, a 16" X 20" or 20" X 25" swing-away flat heat press are both among the most

popular sizes for entry into this arena. This type of heat press allows for even distribution of heat and pressure.

If you are creating metal signs for outdoor use, consider switching to an ink that is specifically formulated for outdoor material. Please note that not all metal is suggested for use outdoors.

VARIABLES AND ASSISTANCE

Just as trying out different brands of T-shirts will produce varying results, the same applies for metal. Some metal is powder spray coated and may have an uneven white base across the piece. Be sure to look up reviews and ask your distributor for guidance on metal brands, quality, and pricing. It may cost a little more but if a product is more consistent, you will have less production waste and frustration. Your distributor is a great resource for product assistance when looking at pivoting your business or trying out new products.

Troubleshooting for sublimation is the same whether for fabric or metal: is your





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printer clogged? Do you have the right paper? Is your heat platen heating correctly and evenly? Use resources from your distributor as well as free options, like the free sublimation technical site www.starttosublimite.com. Another option is to search YouTube videos.

OPPORTUNITIES

There are a wide variety of opportunities available with sublimating metal. Fabric is a great sublimation option overall—T-shirts can be run in big batches for a family reunion or sporting event, but for now with limited large gatherings, you may see it reduced to sublimating masks for an entire company with the logo, one time. Looking beyond apparel to personalized gifts expands your business opportunities.

Health and wellness will no doubt remain an important topic. ChromaLuxe metal prints note a crosslinked ability with the coating and an easy to clean surface from germs, making it material suitable for home and business environments.

The vast majority of people carry a really good camera in their pocket all the time on



Family photos on metal can be used to decorate a new baby's room wall.



TRY THIS: LASER ENGRAVING GROWLERS

BY DEVON POSEY



Sublimation isn't the only popular method to mark metal. Laser engraving often rises to the challenge. Using a laser bonding agent like CerMark or TherMark makes laser engraving metal easy. How does it work? The heat from the laser bonds the marking agent to the metal, resulting in a permanent mark.

In the following tutorial, we've used a bonding agent to mark these stainless-steel growlers. Read on to learn how we did it.

STEP BY STEP

Materials Needed

- Growlers - we purchased ours through Amazon
- CerMark
- Epilog laser system, or equivalent system

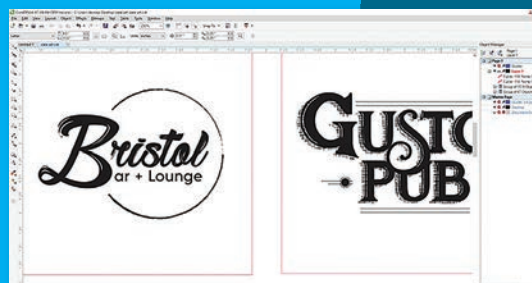
We used a 60-watt Helix with the following settings; please consult your user manual for your specific machine settings:

- Raster: Speed 15%; Power: 100%; DPI: 600; Stucki Engraving

Step One: You can download the engraving files from Epilog's website and adjust the artwork accordingly, or feel free to use/design your own. Depending on the size of your growler, you may need to change the dimensions of the design to fit properly.

Step Two: Coat your growler with CerMark and let it dry. If

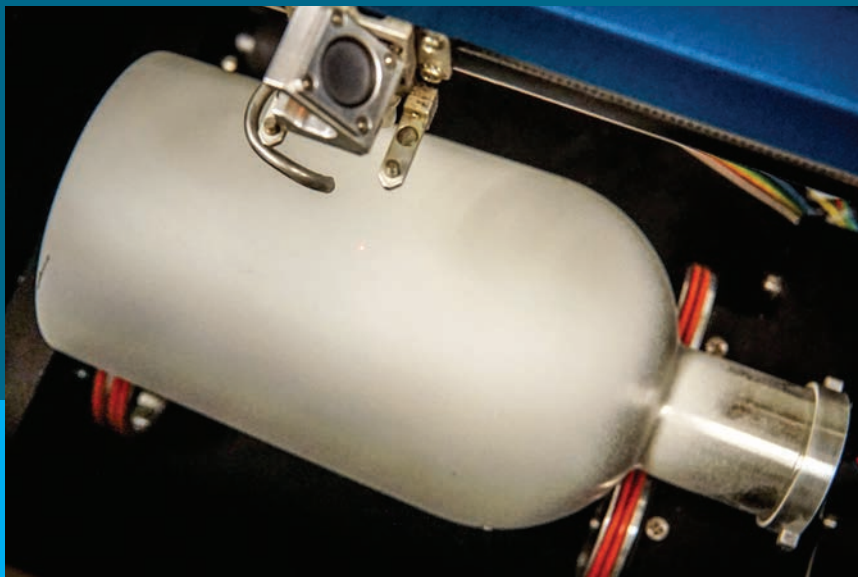
you have a fiber laser, you can skip the pretreating step, as these systems were designed for bare metal marking. Just be sure to check your fiber laser user manual for recommended settings for your particular metal.



(All images courtesy Devon Posey)



Exterior signage is a great commercial opportunity with metal.



Step Three: Now it's time to set up the rotary attachment. To insert the rotary, lower your engraving table, remove the vector or engraving table, and power off your machine. Plug in your rotary attachment and then restart the laser. The laser head will relocate to a new home position for the rotary.

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Step Four: Once you've customized your graphics, send the job to the laser and press GO. The laser bonds the marking agent to the metal, and you're left with a permanent design. Once engraved, remove the remaining bonding agent with a wet cloth and that's all there is to it!

BONUS TIP: WHERE CAN YOU SELL LASER ENGRAVED GROWLERS?

- Breweries
- Taprooms
- Bars/pubs

DEVON POSEY is a Brand Manager at Epilog Laser. Posey develops and oversees advertising, design and is responsible for making sure that branding is consistent across campaigns.



Metal panels in various sizes and configurations can help you create beautiful home decor for your customers.



that little cellphone. People as consumers continue to take more and more photos, even at home. With being separated from loved ones during the pandemic, personalized photo gifts sent to family and friends are cherished now even more.

Ever heard of the Front Porch Challenge? Photographers go around neighborhoods to take social distanced photos of families on their front porch for that holiday photo that can be put onto a 5" X 7" (or larger) metal print and easily sent out in the mail.

Brides and grooms that have to change their wedding dates will enjoy being able to send a save the (new) date magnet to guests whether for a virtual or in-person wedding. With free/low costs or community open design apps such as Canva or Photoshop Elements, people feel more confident about putting together a design with a photo from their cellphone, but they need to get it out there some way, somehow. Be that outlet for them!

Promote yourself to your community in-person and online. Use social media as well as Etsy if you don't have a website. Steel metal panels are a great source for dry erase boards for schools or homeschooling, hospitals, etc.

Don't forget home decor. It may sound

big and scary but home decor can be a 5" X 7" metal print or a 30" X 20" wall panel. As people stay at home more during these winter months, they want to to freshen up their surroundings, whether it's a home office or living room. Positive quotes or motivational sayings are also a big hit for homes in addition to nature or personal photos.

Sublimating metal may be different than what you are doing now, but this change doesn't have to be so scary with all the online and free resources now available at your fingertips. Sales opportunities await you with sublimating metal products. **GP**

JENNIFER FOY has over 20 years of experience using Adobe software and working in the advertising, marketing, and design fields. She received a Bachelor of Fine Arts in Visual Communications from the Ringling School of Art and Design in Sarasota, Florida, and a Masters of Arts in Advertising from Syracuse University, Syracuse, New York. Her years of teaching experience include numerous software and design classes for colleges in Atlanta, Georgia, and Louisville, Kentucky. Jennifer is currently working as the Creative Director at Universal Woods with the Unisub and Chromaluxe brands. Jennifer can be reached by email at jennifer.foy@unisub.com.



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WHAT HEAT PRESS IS RIGHT FOR YOU?

I have always been an advocate of buying quality equipment when starting a new business, but it is especially true when it comes to sublimation and laser printed heat transfers.

Having a sublimation Facebook group for beginners and advanced levels for over seven years, one problem I see repeatedly is issues with inexpensive no-name brand heat presses not giving the vibrancy in color on finished substrates. Many of those heat presses develop cold spots over time, causing a lot of ruined substrates.

Let's talk about the different heat presses currently available and how to determine which is best for your business. We'll also discuss determining quality.

TYPES OF HEAT PRESSES

Having a good heat press is just as crucial as your dye-sublimation printer. Like sublimation printers, heat presses are available in a variety of sizes, styles, price points, and operational features such as semi-automatic, fully automatic using compressed air or a hydraulic system, and manually operated presses.

There are excellent presses manufactured in the United States from companies such as Geo Knight & Co., HIX, and Stahls' that will provide you with years of quality and service. I suggest avoiding buying one from Amazon or eBay, as most don't come with a warranty or support.

Clamshell Press

These presses open above the lower platen at approximately 70 degrees like a clamshell, as their name implies. They are used primarily for flat substrates, T-shirts, and garments. This heat press is ideal to operate in a small space.

The downside to the clamshell design is the potential for uneven pressure and heating on the platen. It isn't recommended for sublimation with thicker substrates due to not being able to get even pressure. Clamshell heat presses are less expensive than most other types.

Swing-Away Press

Swing-away presses open and the top swings away entirely from the lower platen.



Above: Swing-away presses open and the top swings away entirely from the lower platen. **Left:** A clamshell heat press is ideal to operate in a small space. (All images courtesy Cheryl Kuchek)

They can be used for all items similar to a clamshell press but can also handle thicker substrates. Unlike the clamshell press, the swing-away press requires a more open workspace to swing the top platen away from the lower platen to set up transfers.

Swing-away presses produce even pressure and even heat by the nature of their design. However, not all swing-away presses are created equal, so be sure to do your due diligence when purchasing one.

Slide-Out Drawer Press

This type of heat press is designed for two operation methods: a swing-away or slide-out drawer style. Each way allows the operator to work in an open space to

safely load the substrate on the lower platen without the concern of getting burned by the top platen. It is especially nice when working with T-shirts, as you can slip them on and off the platen easily.

All of these presses are also manufactured in China and can have an appearance similar to those manufactured stateside, but their quality is far from the same. Results will vary; however, typical results can be uneven pressure, cold spots, and temperatures that can be off by 10 to 50 degrees.

I'd also like to point out the importance of having a UL-rated heat press purchased from a reliable source. A UL-rated heat press means that it has been tested and de-

termined that it meets specifically defined requirements. These requirements are based on Underwriters Laboratory's published and nationally recognized Standards for Safety.

3D VACUUM PRESS

This compact desktop is an all-in-one heat press used for sublimation pressing onto substrates that have curves or are oddly or unevenly shaped, as well as your typical products. The nice thing about a 3D vacuum press is that you are not limited to flat substrates. All types of blanks can be pressed, such as mugs, curved glass, 3D phone cases, and rock slate.

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SUBLIMATION BASICS AND BEYOND



This compact desktop 3D vacuum press is an all-in-one heat press used for sublimation pressing onto substrates that have curves or are oddly shaped.



A slide-out drawer press is designed for two operation methods: a swing-away or slide-out drawer style.



Power Switch

1. Switch on Power
2. Press Power on Button
3. Set Time and Temperature
4. Press the Heating Button - Twice

Above: Follow the specific steps outlined in the article to get your 3D vacuum press going.
Right: You can create and press items such as plates (like this full-bleed 8" plate), glass lampshades, and curved glass with a 3D vacuum press.



When looking at the rock slate specifically, the sublimation print embeds into the slate's grooves when using the vacuum press. These vacuum presses are made in China, so be careful to purchase one that gives you support and offers at least a one-year warranty.

I have had a 3D vacuum press for almost 10 years. It has allowed me to create and press items such as full-bleed plates, glass lampshades, and curved glass that would not have been possible without it.

Sublimating slate for some people can be a real challenge, so I will demonstrate how easy it is to get perfect results when using the 3D vacuum heat press.

Things to know before you get started with your 3D vacuum heat press:

- You need to turn on the *power switch* in the back of the press and the *power button* on the front of the press.
- There are two heating elements in the vacuum press that need to be turned on. To turn them on, press the *heat button* in front of the press twice. You will know that they are both on when you see the two red light indicators.
- You can set your press to read Celsius or Fahrenheit by pressing the *plus* and *minus buttons* on the front of the press at the same time.

3D TUTORIAL: SLATE

Items needed:

- Sublimation slate
- Thermal tape
- Transfer image
- Heat gloves

Step-by-Step Process

Step 1: Set your 3D vacuum heat press to 400 F. Set the timer for about 8 minutes, 30 seconds. You will hear a beep once the press has reached the desired temperature.

Note: The time decreases or increases depending on the size of the rock slate. The bigger the rock slate, the longer the time.

Step 2: Always check and ensure that both the top and bottom heating elements are on to let you know that the right temperature will be applied to your product.

Step 3: To prepare the slate and design, put the rock slate face down on top of the printed image, fold the edges of the transfer paper, and use thermal tape to secure it. Pay attention to the positioning of your image to be sure it is placed correctly.

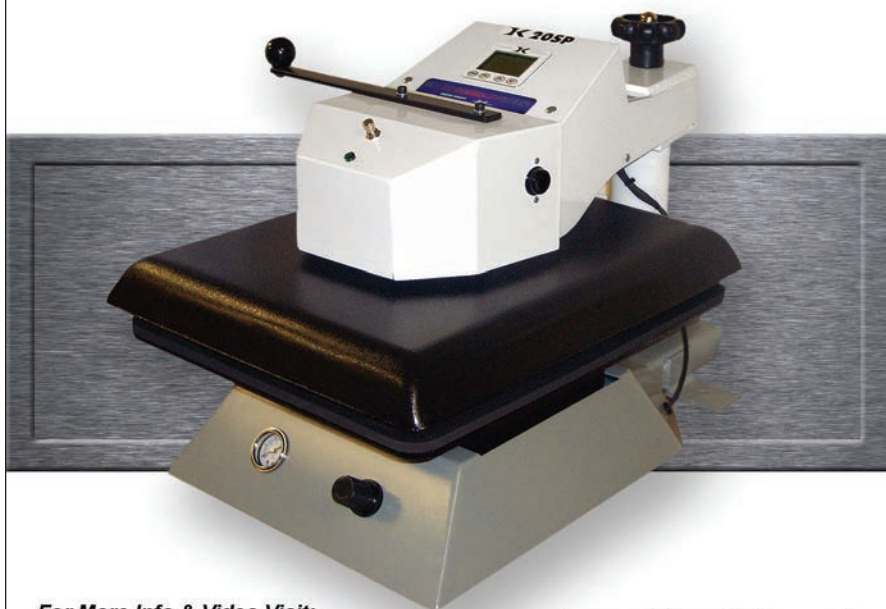


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SUBLIMATION BASICS AND BEYOND



Left: The items needed to sublimate slate using the 3D vacuum press. Step three (**below**): the slate is placed face down and the image is secured with tape.



Step four: set the rock slate face up on the top tray.

FIND OUT WHY SWING-AWAY HEAT PRESSES ARE IDEAL FOR THE AWARDS RETAILER LOOKING TO EXPAND ITS SERVICES:
<http://gpro.ly/swingaway>.



Step five (**left**): pull down the silicone lid, seal it, and press the vacuum button. Using heat gloves, open the lid of the press, take out the slate, and detach the transfer paper.



Step 4: Lift the top cover of the heat press machine and set the rock slate face up on the top tray.

Step 5: Pull down the silicone lid, seal it, and press the *vacuum* button. When you turn on the vacuum to seal the slate with the design, you can

manually rub out small areas that still contain air. *Note: Don't forget to wear heat gloves while doing this.*

Step 6: Afterward, lock the machine lid and start the timer to begin the transfer process.

Step 7: You'll know the process is complete when you hear the machine beep. Just click

the timer to stop the beeping. Using your heat gloves, open the lid of the press, take out the finished product, and detach the transfer paper from the rock slate.

In summary, I recommend buying a USA-made heat press that will give you years of quality and support if you need it. Choosing which heat press is best for you is based primarily on your personal preference and budget, and spatial restrictions. When looking at pressing odd-shaped or curved items, buying a 3D vacuum heat press can provide you the flexibility that a flat press cannot offer, though note that a 3D vacuum heat press does not take the place of a flat press. **GP**

CHERYL KUCHEK has been a business owner since 1993 and the current owner of Just My Imagination DeZigns Inc. since 2008. She has been active in the personalization industry for over 12 years. Cheryl has a passion for the industry and a love for helping people. She started a Facebook group to do that very thing; Sublimation for Beginners and Beyond is not just a Facebook group, but a resource to help those who are first starting out and those advanced. She can be reached by email at sublimationsummit@gmail.com.



BUYING YOUR FIRST LASER

Buying your first laser as a startup business can be challenging. If you are buying your first laser after being in the personalization business for a year or more, it provides you with better and more in-depth insight into your market or potential market. But it can still present challenges.

Not knowing specifically what you will use your laser engraver to produce leads to guessing. Having a written business plan or at least an understanding of the market(s) you are focused on provides some guidance. Regardless of how long you have been in the personalization business, you can anticipate business opportunities that will arise that your laser is not the right piece of equipment for; you will sometimes be in a position when you need to say “no” to some opportunities.

However, you don't want to be in a position to say “no” very often, so let's look at typical laser features and explore what certain specifications would mean for your business. Hopefully this helps you make a purchasing decision.

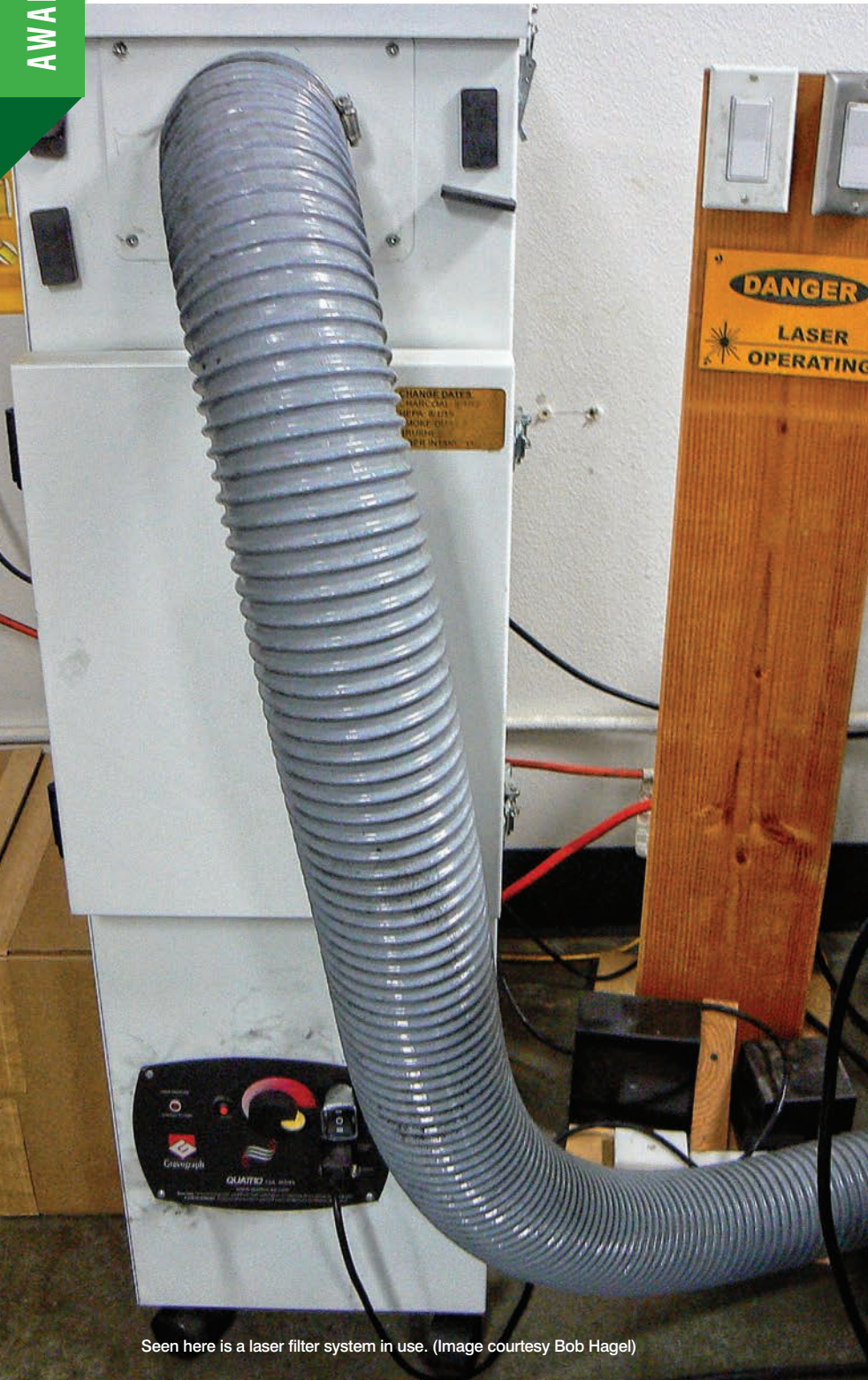
LASER TYPES

CO₂ Gas. This machine can mark 2-ply acrylics, wood, many coated metals by burning away the top coat, leather, and specially designed leatherette materials.

Fiber Solid State. The beam is many times more focused than a CO₂ laser, allowing it to mark (not cut) bare metals, as well as some engineered plastics.

YAG Solid State. A group of laser types primarily designed for marking bare metal and engineered plastics like fiber lasers do.

CO₂ lasers are commonly used in the trophy, awards, and gift markets. Fiber lasers are favored over YAG lasers for smaller businesses that do mostly bare metal marking such as tools or metal and plastic plates with barcodes, logos, and serial numbers or other similar markings. There are machines that



Seen here is a laser filter system in use. (Image courtesy Bob Hagel)

offer both CO₂ and fiber lasers and are used by shops doing a significant, continuous volume of both.

SOME SPECIFICATIONS

Power. Laser power is measured in watts. Lasers are available in a variety of wattages based on the model. Typical CO₂ wattages are 30 to 120 watts. Thirty to 40 watts work well for most personalization. If you will perform a large amount of cutting wood or plastics, I recommend 50 to 60 watts as the extra power cuts through 1/16" to 3/8" materials with one or two passes. Cutting materials 1/4" to 1/2" thick is best performed with 80- to 120-watt CO₂ lasers.

Fiber lasers used for marking metals discolor the metal (marking is *not* removing metal, such as what happens with etching or engraving). Fiber lasers in the 30- to 50-watt range work well for marking bare metal such as tools.

Speed. For most personalization shops, fast speed is much less useful than you might think. If you engrave many pieces at once, speed plays a significant role in your productivity. If you engrave one piece at a time and most smaller pieces, running your laser at 50% speed is still fast. Lasering time can be used by the operator to unpackage and prepare product to engrave, clean, and assemble product that has been lasered, or even work on graphics or other machines.

Most of the speed comes from how fast your optics move from left to right and back again across your table. This function is performed by the X-axis motor. This small motor is likely to be the part most replaced on your laser. What usually causes the motor to fail? Heat! The faster the motor spins to move the optics, the hotter it gets.

Both rastering (engraving) and cutting can be performed with faster speeds. Ask the manufacturers of the lasers you are considering how the X-axis motors are cooled. Some have small built-in fans. Cooling the motors is crucial to the life of the motor. So, running your laser at 50% speed, rather than at 100%, helps keep the X-axis motor cooler and last longer. You can also lengthen the life of the motor by giving it a cooldown break every so often. I even had a large floor fan behind my laser that I ran most of the time.

Table Size. Table sizes vary by manufacturer and laser model. Common sizes are 12" X 16", 12" X 24", 18" X 24", 24" X 36", and 36" X 48". What will work best for you will vary greatly by the products and services you offer and projects you agree to take on.

Sheet Size. In the awards and trophy business, most plates are small, with sizes not exceeding 12" in either direction. If



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you laser-cut acrylic sheet material, consider the size sheets you will buy. Sheets that are 12" X 24" are common, but you can buy larger ones. Consider the size sheets available from the suppliers you plan to use.

If you will use coated sheet metal, 12" X 24" is a common size and must be cut by a shear cutter. Twelve-inch cutters are affordable and common; 18" cutters are available but expensive. Unless you will use the extra 6" on one of these large cut-

ters often, you are wasting your money purchasing one. For many personalization shops, a 12" X 24" laser is the perfect size.

Every once in a while, I had the opportunity to laser something that was longer than 24", such as a baseball bat. If lasering items longer than 24" is important, focus on lasers with pass-through capabilities. If you want to exceed the 12" X 24" in the other direction (12"), an 18" X 24" laser might best for you.

If these types of projects will only appear

occasionally, perhaps make up only 5% of your market, saying "no" may be the most cost-effective solution. Do you want to spend an extra \$1,000 dollars or more for opportunities that come up only a few times each year? If yes, spend the extra money consciously.

Maximum Workpiece Height. How tall of a product will fit into the laser? I engraved many urns for mortuaries each week. How far down I could drop my table was important to my business mar-



I recommend you keep a full laser emergency repair kit on hand to avoid lost time and expensive overnight shipping costs. (Image courtesy Bob Hagel)

ket. Products requiring deeper workpiece heights include guitars, urns, jewelry boxes, and other similar pieces.

Auto Focus. A feature that saves a little time and aids in precision focusing, especially for small and high-resolution graphics.

Closed Bed. Most lasers used in the personalization market are made with closed beds, as they are safer for operators and allow the gases and residues given off by lasering to be contained and removed from the laser.

Pass-Through. Allows a front or side door to be opened (without immediately shutting off the laser firing) to engrave long or large items such as baseball bats, paddles, guitars, or wood boards.

Open Bed. Often used for 3D carving in wood or large-scale laser cutting of plastics and wood. Many larger sign makers use open bed lasers or mechanical CNC machines to cut large letters or carve 3D graphics for cabinets or signs.

Lens. The standard is a 2" lens for the personalization industry. The measurement is from the lens to the product you're engraving. Typical lenses available are 1.5", 2", 3", and 4". A 1.5" lens is good for very high-resolution artwork. Longer lenses are used for engraving concave pieces such as wood bowls. Additional lenses can be purchased and are interchangeable with some effort. Lenses and mirrors last for years; however, they will need to be replaced, especially if you do not clean them often. Explore the cost.

Resolution. Most lasering is best at 300 to 600 DPI. However, small and thin lines may require resolutions up to 1,200 DPI.

Cooling. Most all USA- and North American-made lasers are air cooled. Today, water-cooled lasers are associated with lower cost lasers and those made overseas. I stuck to North American air-cooled laser manufacturers that are active in the personalization market.

Air Assist. The air assist removes heat, gases, and residue from the engraving and cutting surface for a cleaner result. Some lasers come with a small built-in air pump or blower to provide the needed compressed air. Other lasers require a small compressor, such as a pump used for airbrushing. Many laser manufacturers offer small compressors for purchase.

Laser Exhaust. The gases and residue left over from lasering must be safely removed from the laser. This is done using a blower and ducting to exhaust it outside. Some blowers are noisy. There are several blower



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types, and some can be placed on the roof, which is quieter. This may require cutting through the roof of your building or through a wall. If you are renting, make sure you discuss all of the ramifications of this with your landlord. Roof leaks caused by these cuts may be your responsibility and can cost thousands to repair.

Air filters can be purchased and connected to the laser, which will completely clean the air and exhaust it in the same room as your laser. Understand the cost and availability of filters and which is best based on your building circumstances and preferences.

Camera Positioning System. Recently, cameras have become a great option of

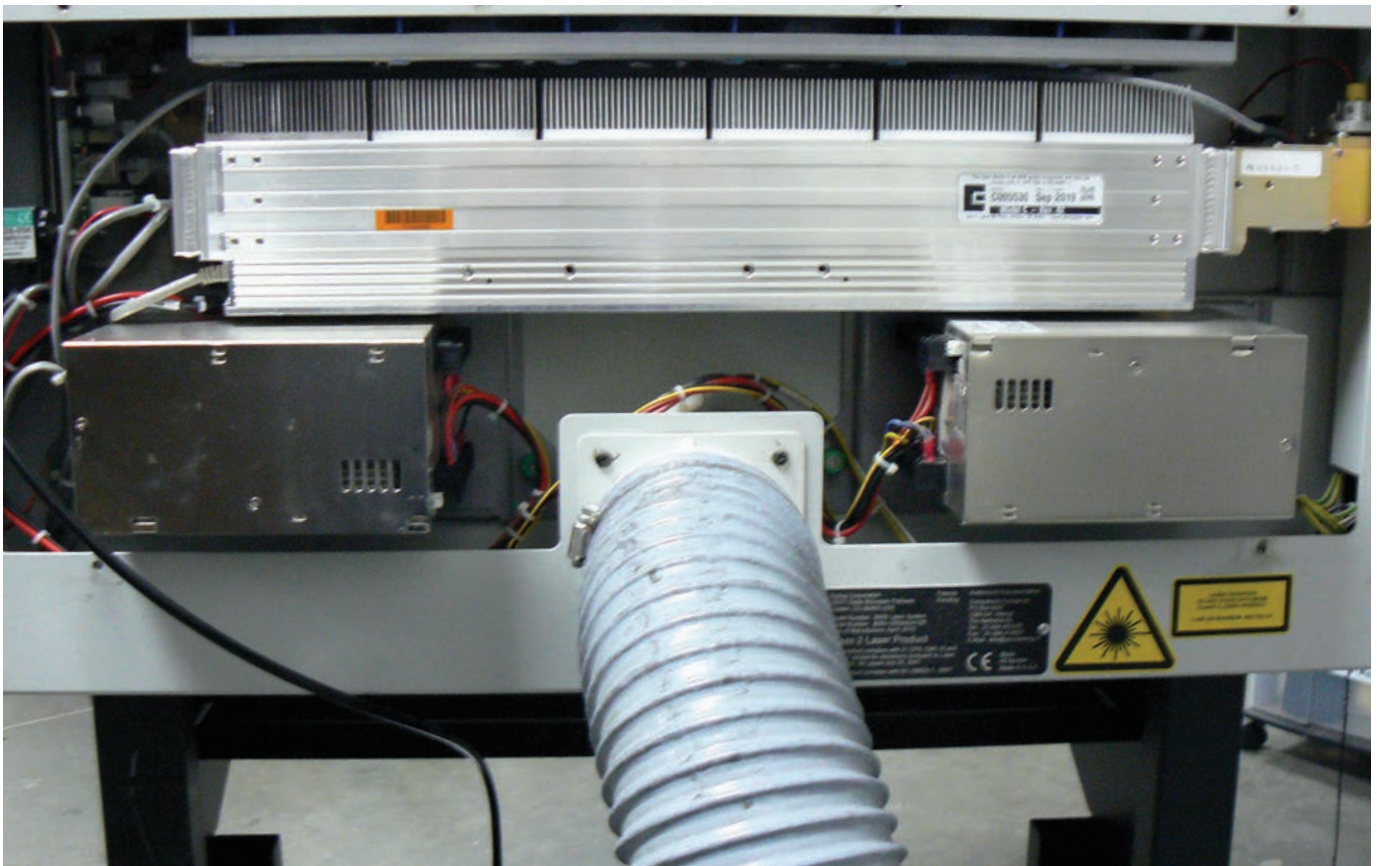
some laser models. They allow you to place odd-shaped products as well as multiples of products on the laser table at once without precise placement of the pieces. You will be able to see the products on your computer, allowing you to place the artwork for each piece right where you want it to engrave. This is great for small products and those requiring you to change the angle of your artwork to fit precisely on the portion of the product to be engraved.

Warranty. Compare warranties for length and parts covered. This topic and the next one are not the most exciting; however, they are critical to your overall success.

MAINTENANCE AND REPAIR

Daily and weekly maintenance is similar among most laser models. Cleaning lenses, mirrors, belts, and the inside of your machine often is critical to reducing parts replacement. Important considerations in buying a laser are the costs and parts availability later on after the thrill and fear of your new laser wears off.

Parts that are the most common to replace are the moving ones, especially those that move along the X-axis (left to right). That includes the X-axis motor, belts, and the mechanism that keeps track of where the optics are at any time. The optics, including the mirrors, are



Seen in this image is a new laser tube after replacement. Understand the signs of a laser tube that is nearing the end of its good performance. (Image courtesy Bob Hagel)

other likely candidates for replacement at some point.

What are the costs? What are the most frequent parts that need replacement? Which parts can I replace myself and which ones will I need a technician for? Ask the manufacturer all of these questions. You will also want to know the cost of a technician including where they are located, travel costs, hourly or daily rates, and availability.

For all the parts you can replace, keep an emergency parts replacement kit on hand and replace any used part as soon as possible. Your laser will always go down in the middle of a job and likely when you are under a time constraint. Avoid

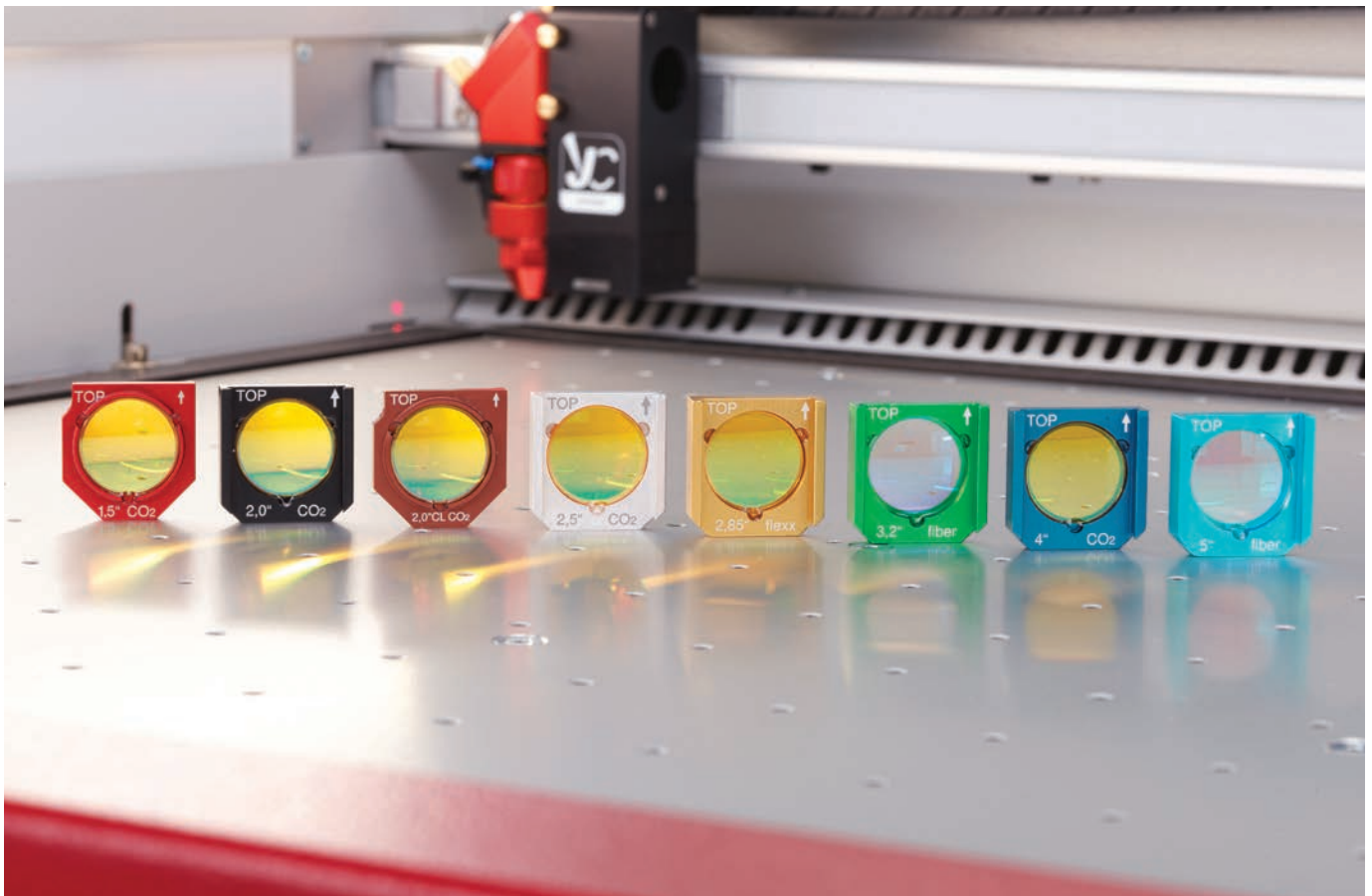
the stress and overnight cost of shipping parts by having them on hand.

One of the major differences among manufacturers is laser tube replacement. How long is the laser tube warranted for? What is the cost of replacing my tube? Does the manufacturer take trade-ins and how much is my laser tube trade-in worth? What is the availability and cost to ship it (overnight, two day, and three day)? Can I replace the laser tube myself? Laser tubes should last many years, but eventually you will need to replace them. Understand the signs of a laser tube that is nearing the end of its good performance.

The cost of a laser engraver is not just

the cost to purchase it and have it shipped to you. The total cost includes all the replacement parts along the way, and your attention to maintenance will play a role in determining that total cost. **GP**

BOB HAGEL recently retired after owning Eagle's Mark Awards & Signs for 18 years in Southern California. While owning the business, he offered a full line of personalized products using laser engraving, sandcarving, and full-color UV direct print on products. Today, he consults on starting and expanding personalized businesses, and on improving production efficiency and quality. He can be reached at rjhagel@verizon.net.



Typical lenses available are 1.5", 2", 3", and 4". The standard is a 2" lens for the personalization industry. (Image courtesy Trotec Laser)



THE TOP 3 BUSINESS TOOLS YOU SHOULD IMPLEMENT IN 2021

2021... doesn't it feel nice to say that! Yes, things are certainly different, but many of the changes are turning out to be for the better, the forced innovations are smoothing out, and the "new" normal is simply becoming normal. I am honored to bring you a column with some great concepts that break down specific strategies for your business, like business planning and mastermind groups that are critical actions for your success.

Sometimes though, we just need to get into the weeds and discuss some specific tools you can use in your daily operations

to help with success in your company, so that is what I want to do for this opening column of 2021. Let's get directly to the details of some tools that, when added to your business or daily life, will help you better manage and organize. These are tools I use daily that I believe you will find useful, but know there are alternatives to these as well, so find the one that matches your personality/preferences best.

ONE: PROJECT MANAGEMENT

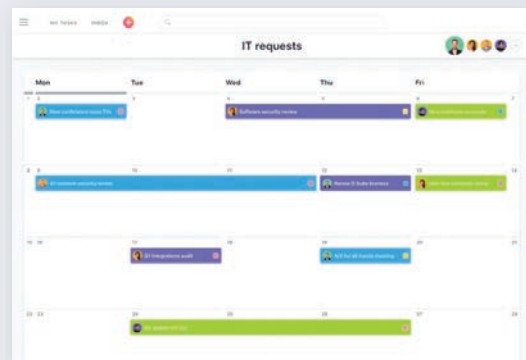
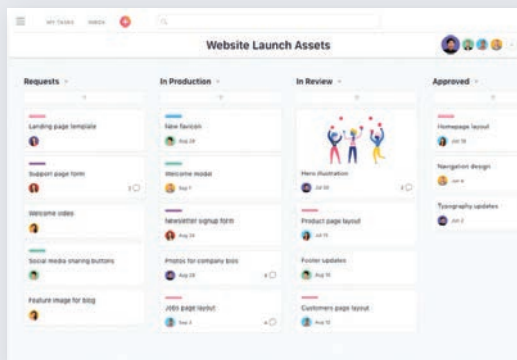
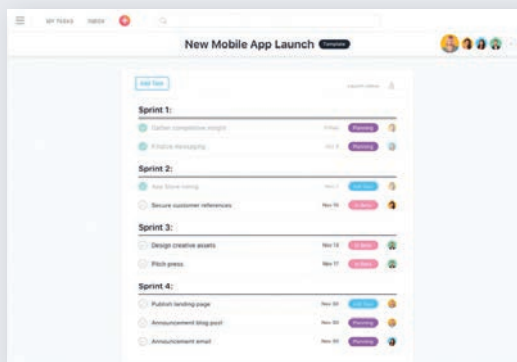
Asana - Project/Task Management. I am a bit of a to-do list junkie and have had

a list of things to do each day since I can remember. I have even had times in my life that I spent more time putting things on a list just to check them off.

Over the years, I have tried a variety of task list programs and systems. I had always looked at programs like Asana but figured as a solopreneur it was more for collaboration, project management, and teams. This year I took the plunge and started using Asana and can't believe that I waited this long.

One of the big myths of time management is that you should be managing your

ASANA



time, but it is really about managing your priorities. As small businesses, we wear a lot of hats and have a lot coming at us at any given time, so the trick to staying organized is managing the projects. Asana is a great tool that allows me to have a dumping ground for all my tasks, ideas, thoughts, and general information. Then, I can use it to prioritize and move those tasks into different projects or break them down into sub-tasks and tackle projects in bite-size chunks.

For decorators, it can also be a great tool for scheduling production, tracking production stages, and managing purchasing. It

works across platforms—it can go with you on the go as well as be used on a desktop. This is the perfect time to bring this tool into your business and see how many places you can connect it. Need extra help? Use Asana to manage virtual assistants. Collaborating with other shops or partners? Perfect!

TWO: ORDERS AND SHIPPING

ShipStation - Order Shipping Aggregator. In 2021, it is more important than ever to be able to get orders from multiple channels. From online stores to POS systems, to social media channels and more, your

customers demand options when it comes to placing their orders. And as has been trending but is now a mainstay, even your local customer might be open to shipping for safety and convenience.

ShipStation is a tool I have been using for about four years now that allows users to bring in orders from all sorts of different platforms, then ship them out to the customer with several different shipping options and carriers. It is truly a shipping aggregator.

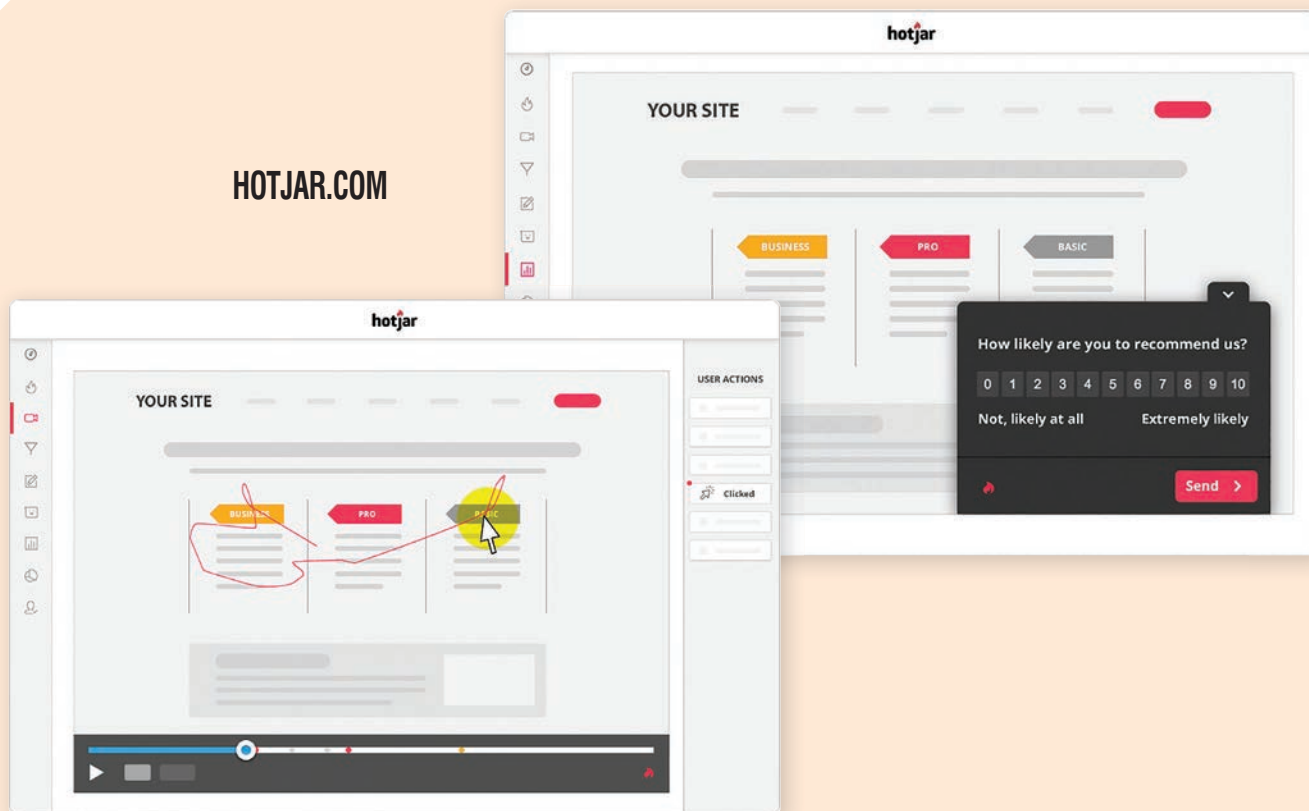
It has tags and tools that allow it to be used as a simple production management

The image displays the ShipStation dashboard interface. On the left is a mobile app view showing sales and customer data. The main dashboard includes an 'Overview' section with a line chart of orders over time, 'Open Order Aging' bar chart, 'Shipments By Carrier' donut chart, and 'Sales by Store' table. Below the dashboard is a detailed 'Order Items' table.

Item	Unit \$	Qty	Stock Level	Total \$
Hustlebrand Backpack SKU: HBS-006	\$30.00	1	Total Stock: 40 Available: 0	\$30.00
Hustlebrand Sunglasses SKU: HBS-005	\$20.00	1	Total Stock: 50 Available: 50	\$20.00

SHIPSTATION

HOTJAR.COM



tool, with easy automating of different functions. It also allows you to enter details of the shipment and then review several different options from different carriers to pick the most economical or service needed to have the shipment arrive on time.

In a more recent update, they even give you the suggested shipping method based on the carriers you have connected. You can use your own shipping accounts and everything. I have this connected to stamps.com for using the Post Office, UPS, FedEx, and DHL.

On the other side, I have it connected to a Shopify store, Jane.com account, Etsy, importing from OrderDesk.me, and a multitude of other channels. I even upload CSV

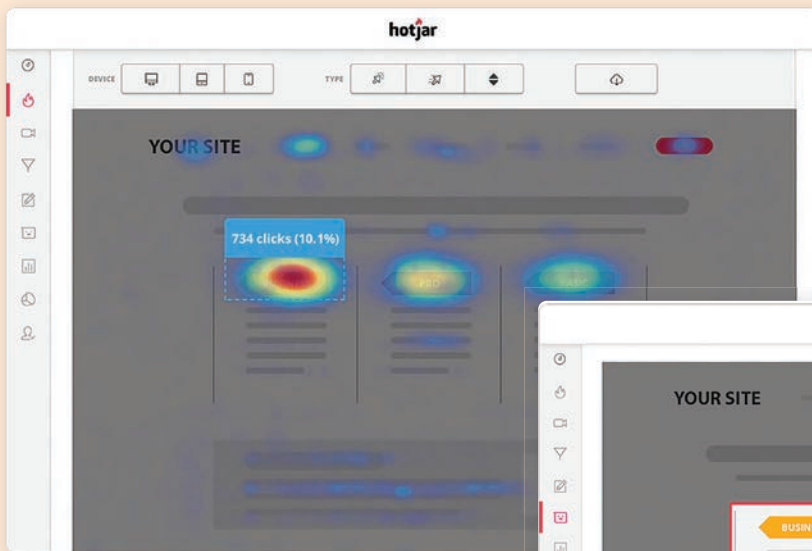
files of orders or addresses when I'm shipping awards or swag for my Business Training company. There are other programs, but the completeness of integrations and ease of use for ShipStation was the deciding factor for me.

THREE: WEBSITE

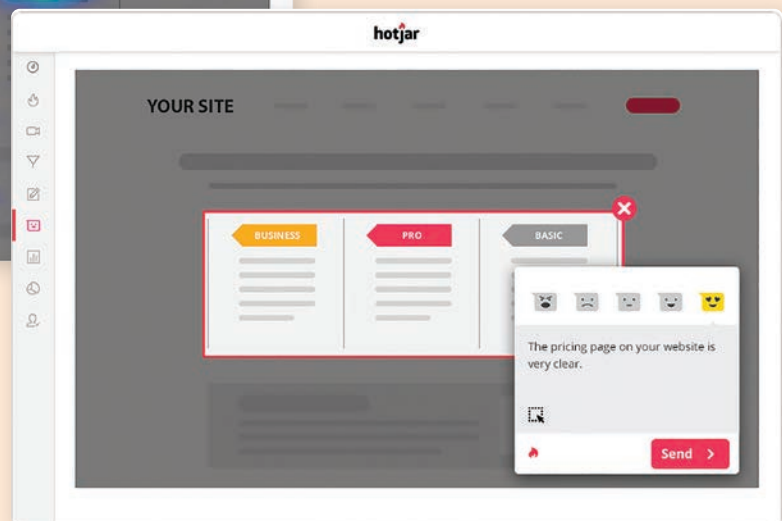
HotJar.com - Website Visitor Recording and Mapping. When dealing with customers face to face, we can get an idea of what things they like and what things give them pause. Even with phone conversations, you can gain feedback based on inflection and tone. But website shoppers are a fickle bunch.

The site doesn't load fast enough, boom, they are gone. Things are not located where they expect—see ya! If there aren't enough details on your product description or the pictures don't show them what they want to see, most website users head to the next site in their Google search to buy from someone else. In steps HotJar.com.

HotJar is a great tool that records the path, clicks, and scrolling of your website visitors, so you can gain feedback by putting yourself in their shoes. What are they clicking on and what are they finding or not finding? Plus, HotJar also provides you with a heat-map of your website so you can see what the most valuable real estate is on your website.



HOTJAR.COM



Then you know that inside that real estate you need to have your best converting call to action.

I love it because it is not just staring at a bunch of numbers trying to figure out what they mean, but instead seeing what actions your website visitors are taking and linking those actions to sales, or site abandonment.

I personally don't even use it to its full power. The free version gives you a lot of tools, and it also allows you to pop-up feedback bubbles to get even more valuable information from your potential customers, as well as surveys. I have it connected to several of my websites. The main reason why I would pay for it based on my current use is

the fact that it only stores a limited number of website visitors, so you have to go review them regularly and delete them.

2021 and beyond is about making sure you understand your customers as clearly as possible, and with the digital world we are now forced to be a part of, having that understanding is invaluable. Hotjar.com is a wonderful tool to gain details to make the customer experience even better, which equals more sales.

TOOLS TO SWEAR BY

What tools do you swear by for your business? What are you looking at to help your business in 2021 and beyond? I'd love to

hear from you, so drop me a line at aaron@montcoconsulting.com. **GP**

AARON MONTGOMERY is the co-founder of OurSuccess-Group.com. Their goal is to help over 1,000 businesses in 2020 reach their idea of success through training, community, and accountability. Aaron has over 25 years of experience with personalized products and small business development. You can also find Aaron co-hosting the podcast 2 Regular Guys Podcast (www.2regularguys.com). He has his own podcast channel and weekly live videos called Small Business Saturdays Series. New episodes are released weekly at smallbusinessaturdayspodcast.com. You can find out more about Aaron at www.aaronmontgomery.info.

PRODUCT SPOTLIGHT: TOOLS AND EQUIPMENT

For more on the suppliers featured in this section, please see contact information following each product.

APPAREL DECORATION



SCREEN PRINTING PREPRESS SYSTEM

Vastex introduces a prepress system for screen printing shops. The package includes a washout booth to clean, inspect, and develop screens; a semi-automatic screen coater to precisely apply emulsion; a drying cabinet to cure the emulsion; an LED exposing unit to expose the emulsion; and a pin registration system to preregister screens as well as register screens onto the press.

610-625-2702

www.vastex.com

SWING-AWAY HEAT PRESS

Insta Graphic Systems

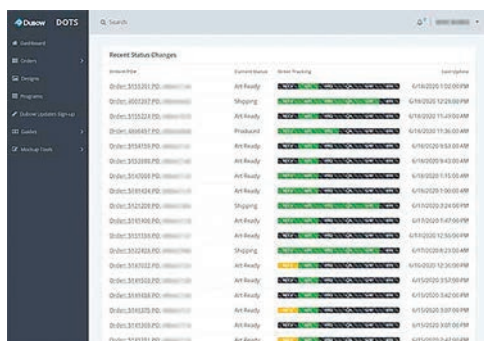
showcases model 256.

Its cast-in tubular heating element heats the upper platen from within.

The 256 is made from a combination of materials, making it lightweight without sacrificing strength and durability, states the company.

562-404-3000

www.instagramh.com



Order ID	Status	Order Date	Order Time	Order Type	Order Status	Order Description	Order Tracking	Order ETA
Order: 303301.PD	Art Ready	6/18/2020	10:52:00 AM	Shipping	NOT TRACKING	6/18/2020 10:52:00 AM	6/18/2020 10:52:00 AM	6/18/2020 10:52:00 AM
Order: 303302.PD	Art Ready	6/18/2020	12:28:00 PM	Shipping	NOT TRACKING	6/18/2020 12:28:00 PM	6/18/2020 12:28:00 PM	6/18/2020 12:28:00 PM
Order: 303303.PD	Art Ready	6/18/2020	11:28:00 AM	Shipping	NOT TRACKING	6/18/2020 11:28:00 AM	6/18/2020 11:28:00 AM	6/18/2020 11:28:00 AM
Order: 303304.PD	Art Ready	6/18/2020	11:36:00 AM	Shipping	NOT TRACKING	6/18/2020 11:36:00 AM	6/18/2020 11:36:00 AM	6/18/2020 11:36:00 AM
Order: 303305.PD	Art Ready	6/18/2020	9:43:00 AM	Shipping	NOT TRACKING	6/18/2020 9:43:00 AM	6/18/2020 9:43:00 AM	6/18/2020 9:43:00 AM
Order: 303306.PD	Art Ready	6/18/2020	11:55:00 AM	Shipping	NOT TRACKING	6/18/2020 11:55:00 AM	6/18/2020 11:55:00 AM	6/18/2020 11:55:00 AM
Order: 303307.PD	Art Ready	6/18/2020	10:48:00 AM	Shipping	NOT TRACKING	6/18/2020 10:48:00 AM	6/18/2020 10:48:00 AM	6/18/2020 10:48:00 AM
Order: 303308.PD	Art Ready	6/18/2020	12:56:00 PM	Shipping	NOT TRACKING	6/18/2020 12:56:00 PM	6/18/2020 12:56:00 PM	6/18/2020 12:56:00 PM
Order: 303309.PD	Art Ready	6/18/2020	8:21:00 AM	Shipping	NOT TRACKING	6/18/2020 8:21:00 AM	6/18/2020 8:21:00 AM	6/18/2020 8:21:00 AM
Order: 303310.PD	Art Ready	6/18/2020	12:36:00 PM	Shipping	NOT TRACKING	6/18/2020 12:36:00 PM	6/18/2020 12:36:00 PM	6/18/2020 12:36:00 PM
Order: 303311.PD	Art Ready	6/18/2020	10:42:00 PM	Shipping	NOT TRACKING	6/18/2020 10:42:00 PM	6/18/2020 10:42:00 PM	6/18/2020 10:42:00 PM
Order: 303312.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303313.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303314.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303315.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303316.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303317.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303318.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303319.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM
Order: 303320.PD	Art Ready	6/18/2020	10:39:00 PM	Shipping	NOT TRACKING	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM	6/18/2020 10:39:00 PM

ORDER TRACKING SOFTWARE

Dubow announces the latest version of the Dubow order tracking system (DOTS). The reimaged DOTS allows customers to track orders in real time, from start to finish. DOTS is a proprietary tracking system that improves transparency, service, and efficiency to keep orders moving, states the company.

www.dubowtextile.com

HEAT-SEAL TABLE

Thermopatch introduces an ergonomically designed heat-seal table, available in sizes 48" X 36" deep or 60" X 36" deep with an operator cut out. It comes with an adjustable or non-adjustable height option.

The adjustable has a manual crank to raise and lower the height of the table. The non-adjustable table can be set to a 30" to 36" height by adjusting the locking bolts in place. Both options come standard with a Formica top, steel insert pan that fits an Easy Seal or Thermo-set III heat seal, lockable table wheels, and two hanger bars.

www.thermopatch.com



EMBROIDERY MACHINE

Mesa Apparel Decorating Solutions

introduces a 15-needle compact embroidery machine that weighs less than 100 pounds and features a small footprint. It sews up to 1,000 stitches per minute, has a 10" touchscreen control panel, and a memory that holds up to 800 designs. Also included is the RPS reciprocator, a 270-degree wide cap system, a border frame, and a selection of hoops. Features include one-touch design trace, auto design recovery, stitch filtering, and tangle-free thread tubing.

800-330-3867

www.mesamachines.com



BEGINNER STARTUP EQUIPMENT

Lawson Screen & Digital Products

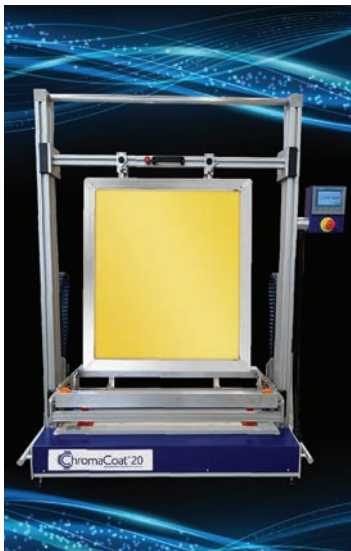
offers a variety of startup equipment for apparel decorating. A full line up of screen printing, direct-to-garment (DTG), and heat-applied vinyl



equipment is available. All startup equipment comes with equipment, supplies, free training, and 24/7 technical and print support.

314-382-9300

www.golawson.com



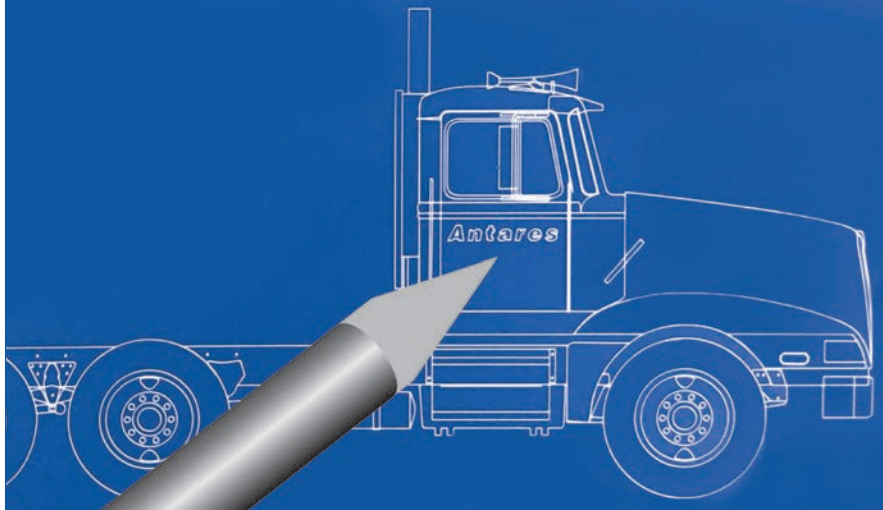
AUTO COATING MACHINE

Chromaline introduces the Chroma-Coat 20 single screen auto coating machine. Paired with Chromaline's emulsions, this coater provides consistent screen coating abilities and allows for consistent stencil thickness, exposure times, and print results, states the company.

800-328-4261

www.chromaline.com

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www.antaresinc.net

PRODUCT SPOTLIGHT: TOOLS AND EQUIPMENT



DIRECT-TO-GARMENT PRINTER

Ricoh Printing Systems America introduces an industrial direct-to-garment (DTG) printer. The dual-carriage RICOH Ri 2000 delivers prints for a full-color, 10" X 8" CMYK graphic. Capable of producing full-color graphics at up to 1,200 X 1,200 DPI, the RICOH Ri 2000 is designed to print on a full range of garments, as well as face masks, art canvas, and promotional products, like wooden plaques, glass coasters, and mouse pads. The RICOH Ri 2000 integrates automatic table height adjustment and quick-change magnetic platens in sizes up to 16" X 19.6".
www.ricohdtg.com



PRE-PRINTED HEAT TRANSFER VINYL

FDC Graphic Films adds nine pre-printed patterns of the heat transfer vinyl film, Lumina

9203. Each of the patterns is now available, including Aztec, banner stripes, sky quatrefoil, U.S. flags, stars, soccer ball, mint argyle, black quatrefoil, and mint petals. Lumina 9203 features a matte finish with printed patterns for decorative graphics recommended for garment decorators, crafters, and do-it-yourselfers. These films do not require a separate mask for application. This series can be applied to cotton, polyester, and poly/cotton blends at 315 F for 15 seconds.

www.fdcfilms.com

AWARDS & CUSTOMIZATION



SUBLIMATION PRINTERS

JDS Industries offers the Sawgrass SG500 and Sawgrass SG1000 printers featuring several upgrades and enhancements. JDS states that it offers free support from its team of sublimation experts.

800-843-8853

www.jdsindustries.com



NEW LASER ENGRAVER

Epilog Laser introduces the Fusion Edge to the company's product line. This machine incorporates some of the features of Epilog's Fusion Pro Series in a small-format system. Featuring a 24" X 12" X 7" work area, the Fusion Edge is available in 30-, 40-, 50-, and 60-watt CO₂ configurations, or a 30-watt fiber laser source configuration. It also includes Epilog's IRIS camera system, which gives operators a real-time image of the laser bed so they can position their artwork and graphics.

303-277-1188

www.epiloglaser.com

DIGITAL RIBBON PRINTER

Jackson Marking Products offers its digital ribbon printer. Design and print satin ribbons and sashes. Ribbon width is 3/8" up to 4".

Print 12" of ribbon every three seconds. Print a single ribbon or up to five ribbons simultaneously. Rotate text in any direction, import logos, and save your designs for future use.

800-782-6722

www.digitalribbonprinter.com



HEAT PRESS

The SwingMan-25 is available from HIX Corporation. It swings almost 180 degrees to allow full visual of your project, presses vertically and evenly down onto the substrate, and provides digital temperature, time, and pressure readout. It features a large 20" X 25" surface.

800-835-0606

www.hixgraphics.com



SAND-CARVING MACHINE

IKONICS Imaging offers its CrystalBlast Sandcarvers. The CB Elite features its Cyclone 240 separator reclaimer that prevents the loss of abrasive up to 240 mesh. It also features The Elite's patented CleanFlo technology, 700 CFM

exhaust blower, and LED inspection lighting. A variety of tools and accessories are also available.

800-643-1037

www.ikonicsimaging.com



LASER MACHINE SERIES

Trotec Laser offers a selection of CO₂, fiber, and flex dual-source laser systems. Whether new to laser engraving or a seasoned veteran looking to grow your business, Speedy laser engraving machines can help expand your offerings, says the company. The system's patented design encloses critical system components.

866-226-8505

www.troteclaser.com

PRODUCT SPOTLIGHT: TOOLS AND EQUIPMENT



■ BLACK TONER SUBLIMATION PRINTER

Marco Awards Group together with iColor black printers has just released the i330 black toner sublimation printer. This new series of sublimation printer uses toner (.01 sq"), not ink (.025 sq"), as well as copy paper (.02/sheet), not transfer paper (.65/sheet). The heat transfer is lower (380 F) than regular sublimation pressing (400 F). The i330 sublimation toner cartridge printer is stocked coast-to-coast by Marco, as well as a full line of paper, supplies, and toner cartridges.

800-229-6592

www.marcoawardsgroup.com

■ LASER ENGRAVING MACHINES/ACCESSORIES

Radian Laser offers laser engraving machines and accessories. Drinkware rotaries are used for multiple units to be marked in order to efficiently get your jobs done, states the company.

714-278-4333

www.radianlaser.com



SIGNAGE & PRINTING



■ UV FLATBED PRINTER

Epson introduces the SureColor V7000. The 4' X 8' flatbed printer is capable of printing on a variety of rigid substrates up to 3" thick. It features 10-color UltraChrome UV Ink, including vivid red ink, gray, opaque white ink, and varnish. The SureColor V7000 can produce color or three-layer prints with little difference in production speeds by using eight MicroPiezo print heads.

www.epson.com

■ WALL VINYL SOLUTIONS

General Formulations announces an expansion of its GF Wall Film & Fabric portfolio with five WallMark HTR adhesive products, including three new textured vinyl films. GF has created a line of peel-and-stick adhesive wall products that are both high-tack and removable, developed for application and clean removal from smooth drywall surfaces.

www.generalformulations.com

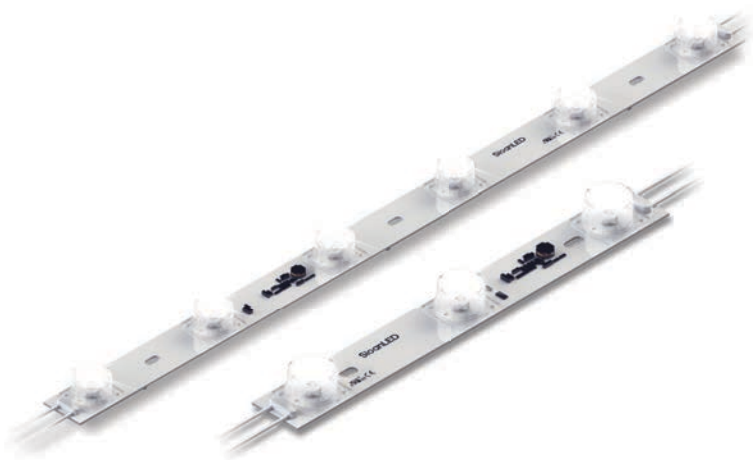


■ INTERIOR LIGHT BOX APPLICATION SUPPORT

SloanLED expands its PosterBOX family with PosterBOX ID light box illumination for interior signage and POP applications. Illuminating box widths up to 10', PosterBOX ID delivers the performance of PosterBOX 3 to indoor applications.

[888-747-4533](tel:888-747-4533)

www.sloanled.com



■ FLATBED PRINTER

Canon introduces the Arizona 2300 Series. Featuring a stationary flatbed table structure, this series is built around the new Arizona FLOW technology, a vacuum technique that supports a zone-less, multi-origin table layout. The company says FLOW technology offers up to 20% more productivity, as it requires less masking and taping, and is supported by three-sided pneumatic registration pins to better secure the substrate in place on the table.

csa.canon.com



PRODUCT SPOTLIGHT: TOOLS AND EQUIPMENT



■ DIRECT-TO-SHAPE PRINTER

Azonprinter introduces the Monsterjet, which focuses on direct-to-shape product printing and interior decoration on objects up to 92 cm in height. It prints directly on refrigerators, ovens, trash cans, flower vases, and onto a wide variety of industrial products, and comes with optional bed sizes of 590 mm X 1,200/1,800 mm and 1,100 mm X 1,200/2,500 mm. The Monsterjet series allows printing directly onto material such as ABS, polycarbonate, TPU, PVC, wood, stone, glass, canvas, ceramic, aluminum, and additionally covers ADA and Braille 3D printing and print on cylindrical objects.

385-014-6180

www.azonprinter.com

■ FLOOR GRAPHIC MEDIA

Mactac Distributor Products announces a thicker liner for its wide-format printable IMAGin StreetTRAX non-skid outdoor floor graphic media. StreetTRAX (STX1528v2) is designed to produce outdoor sidewalk and parking lot floor graphics on unsealed pedestrian traffic surfaces such as concrete, cement, and asphalt. The change in product construction replaces the product's previous 60# polycoated liner with a new 90# polycoated liner. StreetTRAX also features a 13.5-mil outdoor stabilized white non-PVC film that is top-coated with a non-skid printable clear aggregate.

866-622-8223

www.mactac.com



■ COLOR-MATCHING ACCESSORY

Roland DGA introduces its WW-S1 densitometer, a device that the company says makes color matching easier and more cost-effective. Designed to work in tandem with Roland's updated VersaWorks 6.8 RIP and print management software, the WW-S1 lets users make adjustments and share color accuracy between two like printers using the same ink type. It complements other color matching features within VersaWorks 6.8, which comes bundled with new Roland inkjets and is also available for current VersaWorks users to update to.

www.rolanddga.com

ROLL-TO-ROLL PRINTER

The SolaUV Roll 2 Roll from **StratoJet USA** prints fabric and vinyl applications that are up to 10' wide, or multiple smaller rolls simultaneously. Print on a variety of roll media with the no-pinch roller system using CMYK and white SolaUV inks that adhere to nearly anything at 2,400 DPI output.

562-758-3018

www.stratojetusa.com



DIGITAL PRINTER

Mimaki USA introduces the UJV100-160 digital printer. The company says with two newly developed print heads, the JV100-160 has pursued high quality, high productivity, and stable operation as an eco-solvent inkjet printer. In addition to NCU (nozzle check unit), NRS (nozzle recovery system), and MAPS4 (Mimaki Advanced Pass System4), DAS (dot adjustment system) is also provided to new 100 Series printers.

www.mimaki.com

CAST WRAP FILM

Arlon introduces to its cast wrap portfolio the SLX+ featuring FLITE Technology. The SLX+ adhesive system ensures the same quality of work in any temperature, states the company. SLX+ is rated for use on challenging surfaces, like stainless steel. In addition, SLX+ is rated for 10-year (unprinted) durability and is compatible with all ink systems including, eco-solvent, solvent, UV, and latex.

slxplus.arlon.com



ARLON

GP

A Beginner's Guide to

Apparel Decorating Equipment

(Image courtesy
Lawson Screen &
Digital Products)



BY
TAYLOR
LANDESMAN

Apparel decorating is one of the best business opportunities, with numerous points of entry into the industry no matter your budget. Whether you want to print T-shirts as a hobby, a side hustle, or full time, knowing your equipment options goes a long way in determining how to get started. Here is an overview of the equipment you will need for the most popular basic apparel decorating techniques.

SCREEN-PRINTING EQUIPMENT BASICS

The main avenue into garment decorating is screen printing due to its versatility and low barrier to entry. It is one of the most versatile methods for decorating on any type of clothing including, but not limited to, shirts, hoodies, pants, jeans,

jackets, and hats. You can screen print basically anything.

By having this flexibility, a screen printer can offer their customers a diverse array of options. Everyone knows it is always easier to sell more to your current customers than to get a new customer.

Screen printing requires only some basic equipment, and many of the auxiliary items can be achieved in a DIY fashion. This is one industry that encourages (and promotes) inventiveness and ingenuity.

Plus, the essential screen-printing beginner's equipment fits into everyone's budget. Which equipment you choose depends on your space and desired outcomes, but there are four essential pieces you need.

1. You need an **exposure unit**. This puts the image you want to print into your screen-printing frame.

2. The second piece of equipment is key: your **screen-printing press**. A manual press is typically most popular for beginners because it has a lower cost of entry and requires less space. However, there are good entry-level semi-automatic screen-printing presses available. Look for a solidly built press with readily available print support. Most people have questions when they start, so look for a company that understands printing and has a knowledgeable staff to help when you run into issues.
3. The third piece of equipment you need is a **flash unit**, also called a spot

cure unit. This assists in the printing process and helps you achieve bright, vibrant prints.

4. The final piece for your shop is a **conveyor dryer**. As the name suggests, this dries the screen-printing ink on your garment. All professional-grade dryers are 220 volts, although there are hobbyist options that only require a standard 120-volt plug in. Depending on where you live, gas may be cheaper than electricity. If you are going to be printing water-based ink or using your conveyor for screen printing and direct-to-garment (DTG), consider looking into an entry-level gas dryer.

BEGINNER'S EQUIPMENT FOR DTG

DTG printing might be the easiest garment decoration method to start as a beginner, primarily due to the "plug-n-play" advancements in the technology. To decorate a T-shirt, you essentially put it on the printing platform and hit the start button. The printer does the actual printing. Unlike screen printing, there is no multi-step process to follow, the process is much cleaner, and it can be done from virtually anywhere.

There are a variety of DTG printers to choose from. Desktop DTG printers only print CMYK and have no white ink. Thus, these can only be used for white shirts. If

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THE ZOODIE



DTG printing is one of the easiest garment decoration methods for a beginner primarily due to the “plug-n-play” advancements in the technology. (Image courtesy Taylor Landesman)



Above: The main avenue into garment decorating is screen printing due to its versatility and low barrier to entry. The screen-printing press is an essential piece of equipment. (Image courtesy M&R) **Right:** For those in a peripheral industry, DTG is easy as you might already own a heat press. (Image courtesy Stahls' Hotronix)

KNOWING WHEN TO MAKE THE LEAP ON PURCHASING NEW EQUIPMENT CAN BE A CHALLENGE. CHECK OUT SOME HELPFUL POINTERS HERE: <http://gpro.ly/newequip>.



(Image courtesy Mesa Apparel Decorating Solutions)

you want to print dark-colored garments (a black T-shirt is by far the most popular color in the industry), look for a more robust printer.

If you are totally new to the industry, in addition to the DTG printer, you need a heat press and a pretreat machine. The pretreat process makes the white DTG print stand out. If you do not pretreat dark shirts, your prints will look very faded.

The heat press is the popular beginner's method for drying both the pretreat solution before printing and your DTG ink once you have printed the shirt. A conveyor dryer provides a better-looking fin-

ished product, but most beginners use a heat press due to the lower cost and space requirements.

For those in a peripheral industry, DTG is even easier as you might already own a heat press (or conveyor dryer). DTG remains popular with those who already embroider and/or print wide format as adding another similar (digital) machine is an easy add-on to their business.

The ease of printing and the rapid ability to produce shirts within about an hour of unboxing your printer is why DTG is worth your investment.

A SMALLER SCALE: HEAT-APPLIED VINYL

Another great piece of equipment for beginners is a vinyl cutter or a printer/cutter. As the name suggests, these types of machines cut vinyl, or print and cut vinyl. With them, you can cut out names, numbers, and even print images that the machine will die-cut out.

These vinyl cutters are affordable. Professional-grade cutting machines are less than \$2,000, and printer/cutters are under \$6,000. All of the vinyl is applied to your garment with a heat press. Think of this as

continued on page 53

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**That's How
We Make It Simple.**



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SCREEN & DIGITAL PRODUCTS, INC.

314.382.9300 | golawson.com | info@golawson.com

TAKING THE LEAP: T-SHIRTS

If you're brand new to apparel decorating, it can seem challenging when presented with the variety of substrates currently available. Here is a sampling of some of T-shirt styles available on the market now.



RTP Apparel

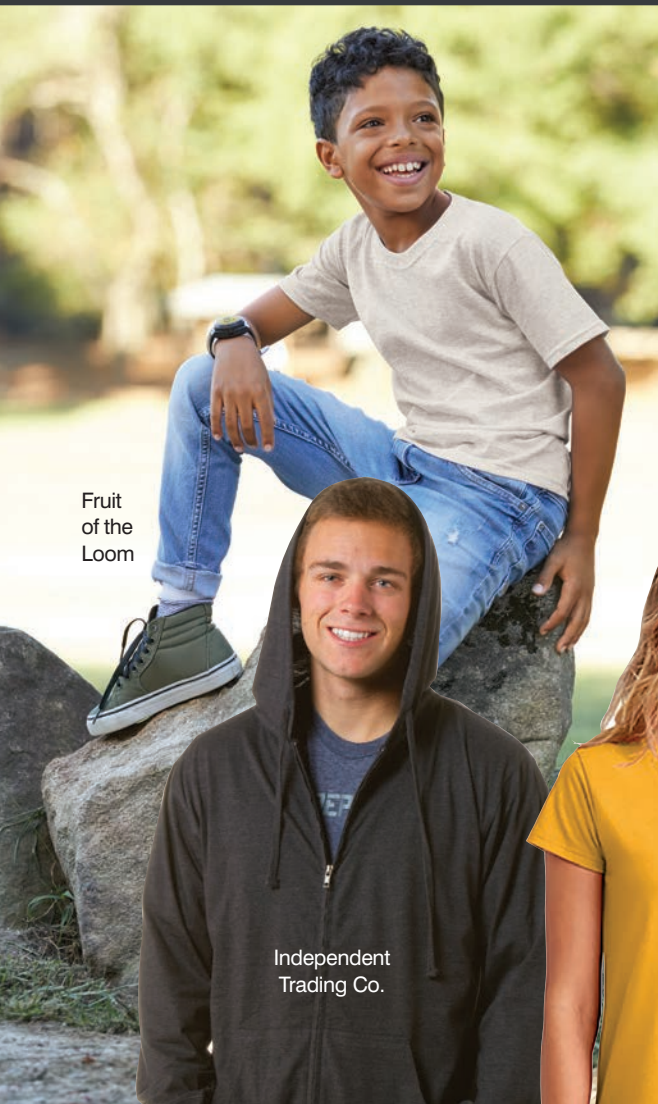
RTP Apparel announces a new youth-sized DTG Ready To Print shirt available in the fully pretreated version. Made from 100% combed ring-spun cotton the entire shirt is completely pretreated and ready to print. They are available in XS through XL youth sizes.

Fruit of the Loom introduces its collection of ICONIC T-shirts. The ICONIC ring-spun T is available in sizes Y to 4X and comes in four styles—the unisex T-shirt, unisex long-sleeve T-shirt, and family companion styles: the women's T-shirt and youth T-shirt.

Independent Trading Co. recently added style SS150JZ, a full-zip hooded shirt made of 4.5-oz. 60% cotton/40% polyester lightweight jersey with the exception of the gunmetal heather, which is made of 100% cotton. Sizes range from XS to 3X. Colors include black, charcoal heather, classic navy heather, gunmetal heather, and olive.

SanMar Corporation introduces the District Re-Tee made from 100% recycled fabric. This new T-shirt is never re-dyed and is made from reclaimed material, such as plastic bottles.

Delta Apparel offers the CVC short-sleeve crew. Made of 60% combed, ring-spun cotton/40% polyester, it is 4.3 ounces/ 146 GSM. Features include short, set-in sleeves, a 3/4" rib-knit collar with spandex, single-needle top-stitched collar, tape neck and shoulder seams, and 1/8" two-needle sleeve and bottom hems. Sizes include S to 3X.



Fruit of the Loom

Independent Trading Co.



SanMar Corporation



Delta Apparel



To decorate a T-shirt using direct-to-garment printing, you essentially put it on the printing platform and hit the start button. (Image courtesy Taylor Landesman)

a big step up from the arts and crafts activity of applying decoration to a shirt with your clothes iron.

Starting up with vinyl is a great option because there is virtually no maintenance and you have flexibility on the range of garments you can decorate. Your vinyl options are virtually limitless. You can get vinyl for cotton and polyester, glitter and neon, plus glow in the dark and even highway safety vinyl. Being able to offer so many different options is a great way to bring in a wide clientele.

No matter what method of apparel decorating you start with, you are joining a fun and rewarding industry. Plus, incorporating the other methods of apparel decorating (screen printing, DTG, and vinyl) all becomes easier once you have established yourself with one of the other print methods. **GP**



A great piece of equipment for beginners is a vinyl cutter or a printer/cutter as they are very affordable. (Image courtesy Taylor Landesman)

TAYLOR LANDESMAN is a third-generation family owner and vice president at Lawson Screen & Digital Products. Having started building exposure units at Lawson during his summer breaks from middle school, Taylor worked in various positions throughout the manufacturing process. After getting his law degree, he practiced law in Chicago. Missing the draw of screen printing, he rejoined Lawson in 2016. Taylor currently focuses on marketing, sales, and helping screen printers achieve more.



PRIMAL FORCE

EARLY COMMUNICATION KEEPS PROJECTS RUNNING SMOOTHLY

The Oxford Dictionary describes primal, in part, as fundamental, basic, and first in importance; primary, essential, and fundamental. Dr. Mist brought together a team of powerful supernatural superheroes to defend the Earth. They were known as Primal Force in DC comic books.

In the biking world, Primal believes cycling is a positive influence globally. They are dedicated to increasing the number of people that choose cycling as a means of

recreation, environmental conservation, and health. Their purpose is to help partners pursue their passion. They do this by blending design, craftsmanship, and service to create extraordinary cycling apparel.

Cycling is Primal's passion, apparel is their craft, and giving back is their way of life. Primal culture is creative, collaborative, selfless, committed to excellence, fun, and will do whatever it takes for their obsession of winning. Sometimes they take the lead, other times they draft, but success

will never be solely their own. When teaming up with Primal for custom cycling apparel, it's about personal success and community.

CASUAL WEAR CREATIONS

While the vast majority of Primal's production is full dye-sublimated polyester cycling gear, we handle the cotton, so to speak. We have been working with our valuable partners for a quarter century or more (probably to the point where we may

To get the gloss look Primal wanted, we decided to print a domed clear on top of a flat black ink with just a touch of white. (All images courtesy Lon Winters)

take each other for granted even). Note to work on that...

We print for events and what Primal calls their Inline work. Basically, this is the casual wear cyclers might wear when not riding. It's mostly clever biking slogans and graphics. Some basic, some more complicated, but all certainly Primal branded. Typically, they send us groups of PO's and specs that we turn into product they provide for their ever-loyal customer base. We recently received this series of emails from the Primal buyer:

"Hi All,
I just submitted XYZ123 for production, and it's a little different from our usual Inline orders. I put most of these instructions in the PO, but I thought it would be helpful to outline them in an email as well. Please let me know if you have any questions about anything!"

- Because all of the designs are just our Primal logo, there are no art files; you can just base the print off of our mock-ups.
- For the white ink print, we don't want a super bright print like we usually do. Please use a lighter pass of ink so the texture of the shirt comes through a little.
- For the black ink prints, please do a high-gloss print like our ABC shirt.
- For the silver and gold prints, please use metallic transfers like our Moonshot T-shirt.

I've also attached the PO for your reference as well, but if anything is unclear

please let me know. Thank you for all of your help!"

"We have decided to change up the ink a little bit on this order. Instead of using standard white ink, we would like to use the same high gloss treatment as the black prints.

Also due to blank shortages, some of the items and quantities look differently from the PO.

Lastly, we would like these items to be prioritized over the other Inline jobs we have submitted, so if you need to push other orders back please do so. Please let me know if you have any questions about anything and thank you for all of your help!"

"Sorry, one more thing on this: instead of black ink for the Black Primal logos, my managers would like to do a dark charcoal high-gloss print. I think that should be the last change!

Thank you."



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GP0121



THE PRIMAL LOOK

We certainly get the shortages. The supply chain has been a real challenge during these crazy times. Getting blanks has been difficult at times, if not impossible. The print descriptions were a bit cryptic, but we thought we could get it figured out.

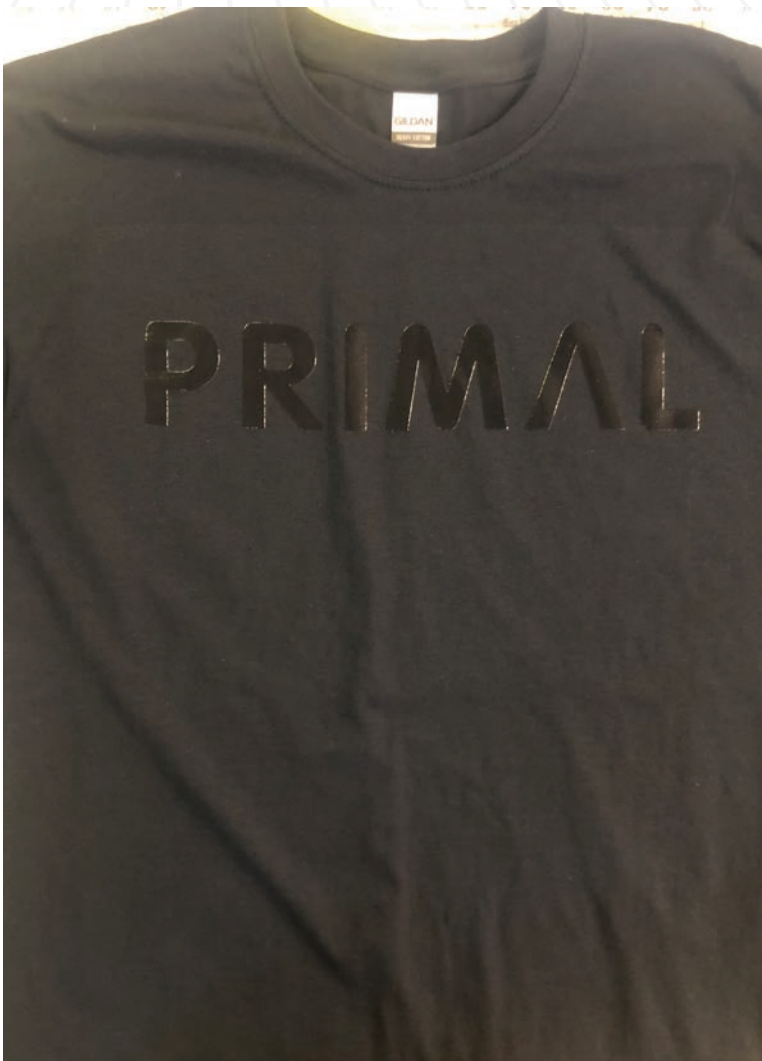
There were about 10 styles of garments. We would use the simple Primal type logo but would increase the size to 10" on the women's and 12 1/2" on men's styles. We opened the smaller version in Adobe Illustrator and increased the vector layer in spot color to size. Art and seps were no sweat on this project.

Since there were no halftones, RIP settings didn't matter on the output directly to screen. While the art was simple, screens got a little more complicated. To get the gloss look Primal wanted, we decided to print a domed clear on top of a flat black ink with just a touch of white. We called it "almost black," and it created a small contrast on black garments. The bottom screen was an N-166 stretched to 45 N/cm, and the clear was exposed on an N-102 with a 400-micron capillary film hung on it at the same tension.

Setup was easy enough. We printed the almost black first with a 65/90/65 triple

To get the metallic look the client wanted, we opted to go with a transfer application.





Left: We called the color “almost black,” and it created a small contrast on black garments. **Right:** Shiny silver and gold was achieved using a foil application.

ply dual durometer squeegee. A quick flash followed with a heated iron and smoothing screen in the cooling station. The clear came next with a 55/90/55 triple so we could take full advantage of the soft edge and hard backer to lay down a heavy ink deposit that would set up on the surface.

Once unloaded, the clear melted through the dryer. This left a nice smooth gloss surface once cured. The gloss white was handled the same way with a print, flash, print of white first followed by the clear.

The smooth ring-spun garments looked great. The tri-blends? Not so much. The

fuzzy surface came up through the clear and left an undesirable texture. To smooth the surface back down, we kissed them with the transfer machine.

Speaking of transfers, we opted to go with that application for the women’s apparel. Shiny silver and gold would be achieved using a foil application—can’t get much glossier than that.

This project was reasonably simple but ultimately required a good amount of handling. Early communication with Primal and an explanation of the process on how we might achieve what they were looking

for helped us increase pricing significantly. Gotta’ get paid! **GP**

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. Learn more at www.graphicelephants.com.

Is Digitizing Needed to Get Excellent Embroidery?



BY DENNIS DUNNING

All of us in the apparel decorating industry should strive to provide excellent embroidery for our customers. Excellent embroidery starts with files that are well designed. One source for such files is professional digitizers.

Professional digitizers can spend years learning the technical skills needed to properly construct embroidery files and many more years honing those skills. They can also spend years learning how to creatively apply different stitch types. For these reasons, having a professional digitizer create embroidery files is often recommended by industry experts. However, using a professional digitizer is not inexpensive.

What if you could capture the technical skills of professional digitizers in computer software and then use that software to create embroidery files? Today, software is available that uses artificial intelligence to convert vector artwork into stitches with results rivaling those of digitizers.

Vector artwork can be converted into stitches using software that is principally designed for digitizing and software principally designed to convert vector artwork into stitches (conversion software). I will show three examples of embroidery files created by conversion software and how using it can be an alternative to digitizing for apparel decorators.

Figure 1 (above). The client did not provide the Fleur de Lis for our first example, so I selected one from our collection of vector artwork and opened it in our graphics software. (All images courtesy Dennis Dunning) **Figure 2** (right). I used the 3D option in the software to create simulated embroidery for the client to review and approve. **Figure 3** (far right). The fill stitch pattern looked flat, so I applied a pattern to the fill stitches (one of many built into the software) that I thought was more interesting and attractive.





EXAMPLE 1: FLEUR DE LIS

The first example is a simple one. A potential client asked us if we could embroider a 4" tall Fleur de Lis on lightweight fabric that she would assemble into a dress for a Renaissance Faire. The client wanted to see what the embroidery would look like before she gave her approval.

The client did not provide the Fleur de Lis. So, I selected one from our collection of vector artwork and opened it in our graphics software (Figure 1).

I imported the vector artwork from our graphics software into our conversion software. In the conversion software, I chose a fabric option. The fabric option set the density of stitches, the stitch type, compensation, underlay, and the sequence of stitching.

The stitches generated by the conversion software accurately rendered the vector artwork into a combination of fill stitches for the Fleur de Lis and satin stitches for the outline. I used the 3D option in the software to create simulated embroidery for the client to review and approve (Figure 2).



Figure 4 (above). I embroidered a sample on fabric provided by the client to confirm that it would sew well. **Figure 5** (right). I embroidered the Fleur de Lis at 89 locations on the client's fabric.

I sent the simulated embroidery to the client, who wrote back that she was pleased. Although I had the client's approval, the fill stitch pattern looked flat. So, I applied a pattern to the fill stitches (one of many built into the software) that I thought was more interesting and attractive using just two mouse clicks (Figure 3).

I sent the revised version to the client and asked if she liked it more than the original. The client wrote back, "Incredible. Love it!"

Next, I embroidered a sample on fabric provided by the client to confirm that it would sew well (Figure 4). Then I embroidered the Fleur de Lis at 89 locations on the client's fabric (Figure 5).



Figure 6



Figure 7



Figure 8



Figure 9

Figure 6. The vector artwork we used for the second example was a 3" tall piece of sushi. **Figure 7.** The conversion software accurately rendered the vector artwork into a combination of fill stitches and satin stitches. **Figure 8.** The design created by the conversion software looked flat, so I applied one of the software's patterns to the white fill stitches, which created a texture that looked similar to short-grained rice. **Figure 9.** The final results for the sushi design were impressive.

EXAMPLE 2: SUSHI

The second example is more complicated and challenging. The vector artwork is a 3" tall piece of sushi (Figure 6). It has multiple objects and they overlap.

Even more challenging is the fact that everything black in the artwork is attributable to a single, solid object behind the other objects. Before importing the vector artwork into the conversion software, I chose a fabric option. Again, the conversion software accurately rendered the

vector artwork into a combination of fill stitches and satin stitches (Figure 7).

Rather than creating a solid layer of black fill stitches over which the other objects could be embroidered, the conversion software removed the overlaps, considerably reducing the stitch count. However, the design created by the conversion software looked flat, as it did in the example of the Fleur de Lis. So, I applied one of the software's patterns to the white fill stitches, which created a texture that looked similar

to that of short-grained rice used in sushi (Figure 8).

The software converted some parts of the fish in the center of the design as satin stitches and some as fill stitches. I changed the satin stitches to fill stitches and made the direction of all fill stitches the same with a few mouse clicks.

The conversion software also constructed the black and green parts of the nori (the wrap around the rice) with a combination of fill and satin stitches. I made all of those



Figure 10 (left). The third example shows how I made a cross-country design visually more appealing.

Figure 11 (below). The design was converted from vector artwork into stitches by applying a gradient fill.



stitches a textured fill and curved their direction so that they followed the curvature created by the bottom of the nori. Curving the stitches was simple and easy.

Last, I added a 1mm satin outline around the boundary of the pieces of sushi to finish off the design. When I embroidered this design, the results were impressive (Figure 9).

EXAMPLE 3: CROSS COUNTRY

The third example shows how I made a cross-country design (Figure 10) visually more appealing after it was converted from

vector artwork into stitches by applying a gradient fill (Figure 11).

I imported the cross-country vector artwork into the conversion software, after selecting a fabric option, and once again, the conversion software accurately rendered the artwork into a combination of fill stitches and satin stitches.

In the conversion software, I duplicated the X and C, made the color of the duplicate letters white, and placed the white letters behind the green ones. Then I selected the green letters, checked a box for a gradi-

ent fill, and entered a gradient number of 200% (the range is from 500% to -500%). Had I entered -200%, the darker part of the gradient would have been at the top of the letters rather than the bottom. Had I entered a gradient number of 500, the spaces between stitches at the top of the X and C would have been smaller.

To finish the cross-country design, I placed a 1mm satin outline around its boundary.

continued on page 94



MODEL OF SUCCESS: EMBROIDERY SHOP PROFILES

SUSAN RIEDEL OF JENNY & JOHN'S EMBROIDERY

There are unlimited variations of models for successful apparel decoration businesses. They range from a part-time business at home to a retail storefront on Main Street, to a cavernous commercial facility in an industrial parkway, and every conceivable option in between. Throughout 2021, we will meet and chat with some of these embroidery professionals and sneak a peek behind the curtain to see how their operation is set up and what makes them successful.

THE "EVERYTHING PERSON"

Meet Susan Riedel, the self-titled "Everything Person," of Jenny & John's Embroidery, which is located in the basement of Jenny and John's home in Lemont, Illinois. My first question to Susan was,

"You, Susan, run Jenny & John's?" It turns out that Jenny and John are Susan's parents, and they are the ones that started the business in 1996.

"Dad was ready to retire and mom could sew, so they started this business in the extra room over the garage. I was working as a graphic designer for a print company," she says. As many working moms discover, being the "taxicab, forgot the lunchbox, take the children to the dentist, come get your child, they are running a fever" parent while trying to maintain a full-time traditional job can be challenging.

Susan's dad invited her to put her professional graphic design and art skills to work in their business, which would give her more flexibility to manage her family's demands as well as work. Jenny and John retired (again) about 10 years ago, and

Susan now runs the business full time. They have become snowbirds, enjoying a warmer climate during the winter. Susan says they still do stuff in the business when they are in town.

The business evolved when Susan came onboard. They moved the business from upstairs into the basement because the added two-head embroidery machine would not fit upstairs. She runs a single-head embroidery machine, two-head embroidery machine, cutter, both heat presses, and also handles their screen print orders.

One of the reasons that she feels she is successful is because, while the business is in a home, it is not in *her* home. "It is so hard to work at home. I can see myself going in at eight o'clock at night and messing around with something.

That is not profitable when you spend your free time on business stuff," Susan feels. "It is a common problem with a lot of home-based business owners. Their free time gets sucked into



Susan Riedel is the self-titled "Everything Person" of Jenny & John's Embroidery. (All images courtesy Susan Riedel)

Jenny & John's Embroidery was originally run by Susan's parents (Jenny and John). Today, she runs the single-head embroidery machine, the two-head embroidery machine, the cutter, both heat presses, and also handles the screen print orders.



STITCH SOLUTIONS

the business, and they do not get valued or compensated for it. Their prices do not reflect that, and it just skews the whole model.”

Susan knows that the business will have to move someday in the not too distant future, when and if her parents decide to sell their home. In the meantime, she has maximized what she can produce and sell in the space she has. In an ideal world, Susan would move

the business to an outbuilding on her property, or they would move to a home with a walkout basement.

DOING WHAT YOU LOVE

Susan is the main person doing all the work in the business. When her husband has time off, he comes and helps, as do her parents when they are in town. “I also have some friends who come and help when I have the big orders with custom

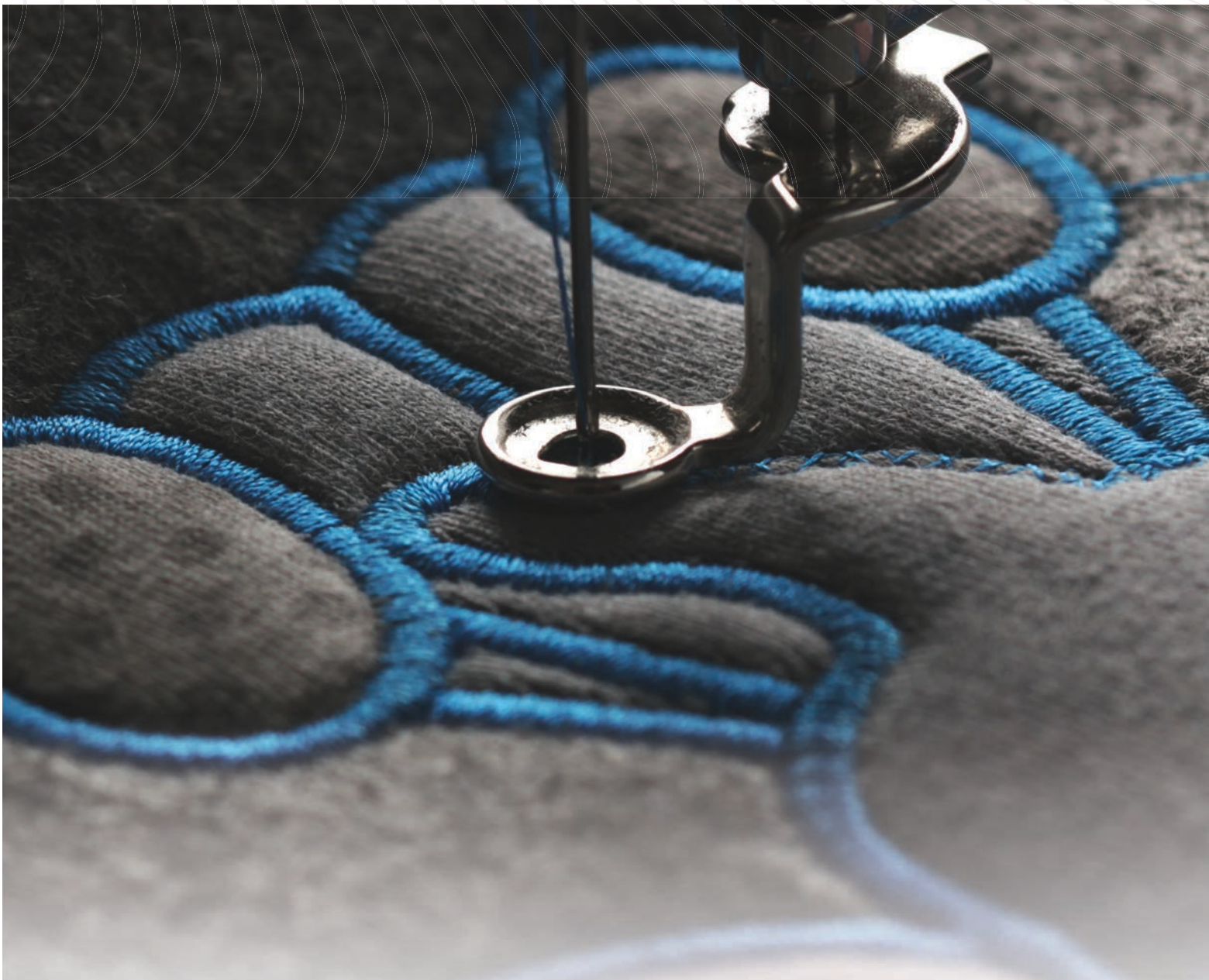
stuff for the schools. They work the heat press or peel,” she adds.

Susan charges for her professional graphic design services, and she should with 10 years of experience before she joined this industry. It gives her an advantage, as excellent art is essential to creating excellent embroidery.

She designs logos and graphics that translate well into thread and ink but outsources the digitizing, as she believes



As a graphic designer with 10 years of experience before joining the apparel decoration market, Susan designs logos and graphics that translate well into thread and ink.



that creating quality digitizing is an entirely different skillset, one that is best left to the people with those skills. She has worked with two digitizers for the past 10 years, both here in the U.S., and plans to keep using them as they produce designs that run well, even if they are more expensive than the overseas digitizers.

(Editor's note: Dive into the digitizing discussion! Read up on it in Jennifer's column in the October issue of GRAPHICS PRO, page

60; or check out the article by Dennis Dunning in this month's issue, page 58.)

Susan's ideal order is "One hundred of something! I'm a production person. I'm not a crafter-type person. I will put a name on a stocking or make one of something for a customer. But my business is really about making things for companies, schools, organizations." She prefers spending time working with an organization that understands that she is a professional,

that she will produce excellent work, and that it will be delivered on time.

Her advice to others in the industry? "Find your niche. If you do not like making baby blankets, then don't make baby blankets! You will resent what you do; it gets frustrating." She herself takes great pride in doing what she loves: "I'm happiest doing production work. I love when I'm around town and I see someone wearing something I made, and then another

STITCH SOLUTIONS



one, and another one. It gives me a good feeling.”

She encourages business owners to acknowledge when a customer or job is not a good fit. “Don’t take the job just for the money. Juggling orders or customers you hate is not the way to run a good business,” she advises.

Susan feels confident that the demand of custom logoed and embroidered goods will continue to grow. “People weren’t spending money for a while, but this is one of those things where the orders kept coming.”

She notes that she would benefit from better organization. She uses some of the wholesale suppliers’ online tools to create websites for her customers and spends time organizing which orders have been placed versus those still in the customers’ shopping carts. “It is the stuff like that which I find frustrating and takes more time than it should,” she adds, but overall she likes and appreciates the website tools provided by the suppliers.

Because she is a home-based business, she meets many of her customers to drop off orders. “I’m the apparel ‘dealer’ in my town—‘Meet me at the gas station, bring the money,’” she laughs. Sometimes the calls almost sound like she is selling something else, and she finds that amusing. In her opinion, the best part of being in this industry is that when she gives people their order, “They are so excited to see it. Clothes make people happy, and I like that.”

Susan encourages every business owner to connect with outside resources to get help. “I’m a member of NNEP. I call when I have major questions, and I still have them even after all these years in business. I’m a member of PPAI and SAGE. I check out YouTube—there is a video for everything. I’d



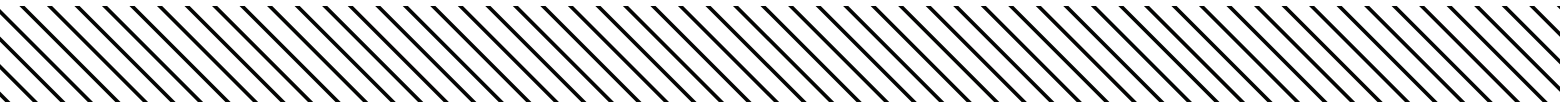
Susan feels confident that the demand of custom logoed and embroidered goods will continue to grow.

not done appliqué in years, and I just had an order for them. I watched a quick video, then knocked out the order.”

She also encourages business owners to realize that “you do not have to do everything for everybody. Find your niche. Make sure you charge enough.” As a final thought, she says that determination and perseverance are key to her success. She feels that her art expertise and her customer service, as well as her ability to be pleasant all the time (even when she does not want to

be) are also big advantages that contribute to her ongoing success. **GP**

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@nnepp.com.

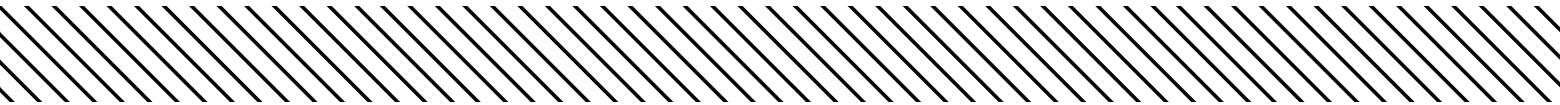


Business Billboards

BUILDING AN ONLINE MARKETING PLAN

BY DESIREE COLONNA





When talking to customers in my 22-year-old web design and online marketing firm, the No. 1 question I am asked is, how do I get more views and leads from my site? First of all, imagine your site as a building on a dead-end side street. It's a street no one ever uses unless they know about it. There are no signs to direct the way.

However, what if you created many different billboards by leveraging an online marketing plan? You could help direct traffic to your site and show potential business owners where to find you.

There are a few components that build a good online marketing plan: social media, email lists, blogging, video, and search engine optimization (SEO). I'll run down

the importance of each one and talk about how to use them to create those billboards on the internet highway.

SOCIAL MEDIA

Social media is often top of the funnel, meaning that it's a great way for potential customers to discover new brands. It's also good for retaining customers by creating value-added content and re-engaging with them.

The first step is determining where your customers already are, then mapping your social strategy to that. Let's be real. Most people are on Facebook but that doesn't mean that they prefer to spend their time there. I have a personal Facebook account but prefer to hang out on Instagram or YouTube.

Facebook business pages are good to have because you can showcase images and videos of your products. You can also write longer form posts and share events and blog posts. It's easy to drive people back to your website.

Instagram is mainly image driven, much like a magazine. You can't really write a long-format post but you can show off your work, much like an online portfolio. It's where I spend most of my time, although you aren't allowed any links in your posts.

Both of these lean more toward business-to-consumer (B2C) strategy platforms.

If you're more of a business-to-business company (B2B), then LinkedIn is the place to be. You can post videos here as well as long-form blog posts about your

company and services. You can connect with executives around the world and even find people looking for the services you offer in their talent finder section.

YouTube is becoming more important in the social media landscape. Creating vid-

eos about your products and providing a learning environment each week can be a game changer.

TheRhinestoneWorld is a good example of using a solid video strategy for business. They hold the same giveaway each

Monday where people comment on the video and share it as a way to grow followers. Each person gets a chance to win a Cameo 4. Throughout the month, owner Matt Vasallo teaches different techniques step-by-step, which brings him a



loyal audience that turns into customers. You can post your own videos on YouTube and then link them on your website and all of your other social media channels for a huge one-two marketing punch.

Though there are tools within many so-

cial media platforms to create a direct connection to your store, at the end of the day, any social media is owned by the platform, and at any time that could go away. Keep that in consideration.

EMAIL AND DIRECT MARKETING

Building an email list that's specifically interested in your brand is a good strategy no matter what you sell. Email marketing is trackable, targeted, and you own the connection. It's also an opportunity to speak one-on-one with your customer.

The only danger with email marketing is creating spam or emailing with too much frequency. You have to find a good balance between outright selling and communication with your clients.

A good rule of thumb is keeping your emails educational. Talk about what you offer that might help your customer grow their business. These are much more welcome than an outright sales pitch.

There are many great platforms that help you track who opens your emails, what they click on, and what they delete. We use Infusionsoft by Keap in our company, but there are other platforms such as Hootsuite, Salesforce, and Constant Contact available depending on how deep you want to go with your email marketing.

A lot of business owners underestimate the power of blogging on their site. A blog is a built-in section of your site where you can write long-form posts. Google loves blog posts and uses them to strategically place your site in its search engine database. Blogging often and using targeted keywords both in the title of your posts and in the text helps Google direct traffic to your site.

For instance, my event artist agency creates a blog post after each event highlighting the services we performed and our customers' reactions. People still love a good story, and blogging gives you

the ultimate story-telling platform to work from. You are encouraged to write posts that are around 300 to 400 words in order to give Google content that they can automatically index. Blogging has been the No. 1 strategy to obtain good search engine optimization for my own company websites.

SEO

Search Engine Optimization is built from all of these strategies put together, but only if your site is built in an SEO-friendly way from the ground up. Your site needs meta tags, keywords, and good copy in order to score well in search engine algorithms.

Although these things should be addressed when building your site, it's never too late to fix weak areas. A good SEO specialist can help you. Google also has Webmaster Tools online that give great suggestions. You can also add Yoast to your site, which is a WordPress plugin. It helps guide every post you write and even tells you what you need to fix on the fly.

CHOOSE YOUR SIGN

As you can see, it can be a bit overwhelming to choose which billboard to put up on your own personal internet highway. The best way to figure it out is to know where your customers live online and concentrate on that one area for a while. However, one point to note is that blogging is still king and requires someone in your organization who can write well, as well as provide high-quality images. If you don't have this individual, hire them. Good copy makes all the difference in creating more traffic to your site.

A good online marketing strategy can funnel traffic to your site and make your dead-end street a superhighway. **GP**

DESIREE COLONNA is the CEO and owner of Inkwell Designers. She is an Atlanta calligraphy, hand engraving, painting, sublimation, and embossing artist and agent who represents both digital and calligraphy artists for over 20 years. Her company also creates event activations worldwide.

Let's Talk Shop

Wrap Finish Techniques:

Considerations in Choosing the Right Film

**TIPS FOR A PROFESSIONAL,
DURABLE FINISH**

BY CHARITY JACKSON



One of my installers often comments that he likes installing graphics but hates the trimming. This is often the tedious part of wrapping, but finish techniques are essential both visually and from a durability standpoint.

It's important to keep in mind that the installation of the vinyl on the vehicle, and the trimming involved in finishing a wrap, are not two separate steps. Rather, a good finish starts with a properly installed wrap. And a properly installed wrap requires an experienced and well-trained installer.

EXPERIENCE

When I took the 3M Preferred Graphics Installer training, one of the last stations we had was wrapping the front bumper of an HHR. This installation combined most of the techniques we had learned over three days. A few of these techniques included deep concave areas and how to feed the vinyl into these areas, proper stretching over objects, working vinyl to avoid trapped air or closed air channels, finishing around curves, and clean trimming to prevent lifting.

Taking the class, along with years of hands-on experience, means that I'm working the vinyl so that my installation will be solid before I start trimming. So

how does the way I put the vinyl on the vehicle affect how I finish the graphics?

INSTALLATION

If a wrap is not installed correctly, you'll run into collapsed channels, trapped air that can lead to adhesive lines when releasing the air in a bubble, and having to lift and rework sections of vinyl before the graphics can be trimmed. Not only does this slow down the installation, but it can also lead to overheated and overworked vinyl that can affect the integrity of the adhesive and the luster and texture of the vinyl used.

Over the years, we've had the opportunity to work with customers needing to either re-wrap or repair a wrap they had installed by another company. In some cases, the entire wrap is a mess—panels are misaligned, important text is cut off on obstacles, or the wrong material was used.

Sometimes the wrap might have been installed well, but the finish work is sloppy. The corners may have excess material, sloppy cuts, overlaps, and trimmed areas are jagged or lifting, and cuts are messy.

Whether the entire wrap is a mess or it's primarily the finish work, both issues



Learning to wrap the front bumper of an HHR during my 3M training brought together multiple techniques taught during the class. (All images courtesy Charity Jackson)



Removal of the door handles and gas cover made for a much cleaner wrap on this color change project. Smooth overlaps from panel to panel and along the bottom of the vehicle ensured clean cuts.



go back to an inexperienced or untrained installer. Continuing to learn new techniques and reevaluating processes you're currently using will not only speed your wraps, but will improve both the install and finish work.

SETUP

To fully understand how much a quality install directly impacts finish work, let's look at a full commercial wrap on a vehicle door. To properly apply the graphics, you must first consider how you're going to work the graphics around the door handle. The same considerations for setup on our example door apply to the rest of the vehicle and the various objects you'll need to plan around.

Setting up the graphics to work around this protruding object can be done in

many ways. The critical thought here is that each option requires setup before you even start applying the graphics. If you don't plan this during the installation step, you'll never achieve the highest quality of finish work.

Here I break down the options for applying graphics to a door taking into account the door handle. I recommend checking out videos from The Wrap Institute where Justin Pate breaks down these options, as well.

1. Remove the door handle completely.

This removes the protruding object and gives you a reasonably flat surface to quickly wrap with complete coverage behind the handle in one piece, wrapping the entire door with smooth coverage to the edges. The drawback

here is the removal and re-installation of the door handle itself, which can be time consuming and should be done by someone with experience to avoid damage. The door handles would also have to be removed a second time when it's time to remove the wrap.

2. Leave the door handle on and do an inlay piece behind the door handle first. The inlay piece should be a piece of vinyl that matches the color of the graphics in that section of the wrap. You can run Knifeless tape around the perimeter of the area behind the door handle, apply the vinyl section, form it, and pull the tape, or an experienced installer with a steady hand can trim the shape freehand with a sharp knife. With this option, you then cover the



Above: We were provided the graphics for this install and they were a little short for the door, which meant a tight fit. We also had to maintain the horizontal line while working around the door handle and mirror. Careful placement and a relief cut around the mirror allowed us to stretch where needed while keeping the graphics in place. **Right:** The graphics are installed on this large hood, but all of the edges still need to be smoothed and the tension released before we do any trimming.



top of the door handle with masking tape, so the vinyl panel that will cover the door doesn't stick too aggressively to the handle. While applying your door panel, you can mark and cut out the vinyl over the door handle ahead of time or as you're applying. Either way, by precutting out the section that will go over the door handle, you're relieving any tension around the handle. Once the panel is in place, you'll need to then finish the vinyl around the inlay piece for a clean finish; you can do this with either Knifeless tape or a steady hand.

There's another option for working around a door handle that provides a clean finish—this is a tip from Jim Miller with Miller Decals. There is a short video on YouTube that clearly shows this method as well.

This option doesn't involve removing the door handle or doing an inlay. Like the other options, it requires prior planning to achieve a good install, leading to quality finish work.

3. Set up your panel on the vehicle and start applying the bottom half of the door. Again, you'll cover your door handle with masking tape, so the vinyl panel doesn't stick to the handle aggressively. With the backing paper still on the graphics, pull up the panel to the bottom of the door handle and trace the shape onto the front of the vinyl with a grease pencil following the body line. Without cutting through the backing paper, precut out the shape of the bottom of the handle. Now remove your backing paper and

pull the vinyl panel up over the door handle (the flap you've precut eliminates the tension you normally have over the handle and keeps the vinyl from distorting) and lay it flat all the way around, trimming excess vinyl from each side of the handle. Clean off any grease pencil residue. Your panel should now be applied smoothly over the door, leaving a flap of vinyl above the handle. Pull this flap through the back of the handle, overlapping the installed graphics along the bottom of the handle by about 1/8". Lightly heat the vinyl behind the handle to avoid overstretching, and form the vinyl down into the concave space behind the door handle.

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Above: The body lines on this full wrap included many curves and corners that required careful stretching and trimming for a clean finish. **Right:** This was a full wrap on the hood of a Can-Am Off-Road Side-By-Side. The contours are not extreme, but still require special attention to ensure a smooth finish. All corners and edges were also carefully stretched and post heated for long-term durability.

the door handle is wrapped separately—if you choose to wrap it. If the handle is plastic, you may decide not to wrap it; or if it's chrome and you're leaving all the chrome details on the vehicle unwrapped, you could choose not to wrap the handles at all.

If you want the handles to blend in as much as possible, then a separate vinyl section is used. The cleanest option is to do a solid color that matches the area of the wrap. Consider a cold stretch method of wrapping: anchoring the vinyl on one side of the handle, cold stretching across the top, before using heat to finish the vinyl to the edges. There are several videos on YouTube and on The Wrap Institute that clearly show this method.

There is one other way to wrap over door handles, keeping the graphics on the handle. Since we primarily wrap commercial vehicles, we often use this method as well.

4. In this option, the door handles are left on the vehicle, the door panel is positioned, and your backing paper is pulled away. Dur-

ing application, heat the surface of the vinyl that will go over the door handle before pulling the panel taut over the surface and squeegeeing the graphics in place. Because only the vinyl over the obstacle was heated, that section will stretch over the handle while the rest of the vinyl will not overstretch. This is an effective way to wrap a handle and to maintain alignment of the background graphics up over the handle. The main drawback is less control over how the graphics finish around the handle—usually we'll either have a gap in the graphics behind the handle or we'll have to do an inlay. There also seems to be more tension in the graphics



around the handle that requires more time and effort to lay smooth.

EDGES

We've correctly set up the door panel and have applied the graphics. Let's say my panel completely covers the door and the panel behind the door, so I'm going to need to trim out the door's edge, leaving the excess to tuck in on the back panel.

Before you start trimming, be sure your vinyl is laying smooth across the gap. Any fingers or areas that aren't smooth will cut jagged when you trim. Add a bit of heat and smooth the vinyl along the edges on both sides of the gap.

When trimming along the door, make sure you have a sharp blade that will slice through the vinyl without jumping, which

creates a wavy edge. Angle your blade slightly away from the front edge, which will give you an extra sliver of vinyl to wrap around the edge of the door.

The excess vinyl that bridged the gap will need to be smoothed into the front of the back panel. Start at any curved areas, warming and stretching the vinyl, pulling the excess away from the curve, which distributes the extra vinyl along the straight areas and avoids unnecessary relief cuts or puckered vinyl.

CORNERS

We've planned around obstacles, applied the graphics (finishing them around the obstacles), and trimmed our edges (working around curves). This still leaves curved corners around the door on a standard

door wrap, cutting around the window, and often trimming around the mirror.

The same way you tackle the corners of the doors is how you approach corners on the hood, trunk, and any other small points. No matter the obstacle, be sure that you're anchoring the vinyl around the curved edge before heating and squeegeeing the vinyl away from the curve.

Trimming away excess vinyl along a tip before anchoring it and post-heating will give you a smooth corner without extra vinyl that can pucker and be challenging to cut clean. Once your corners are set in place, and you've squeegeed away from that corner, you can then finish trimming any excess vinyl.

continued on page 94



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DIGITAL COLOR Q&A

ANSWERS TO THE MOST ASKED QUESTIONS ABOUT DIGITAL COLOR MANAGEMENT

Optimizing color from screen to print is crucial to produce a quality product. The task often requires paying attention to details and processes that are buried within the software. The ultimate goal, of course, is to maintain the dynamic color relationships of the onscreen image when it is converted from pixels to ink. This article answers FAQs that pertain to color output and will hopefully improve your understanding of the practicalities of the color conversion process.

COLOR MODES

Q: What are the differences among the common color modes, and what is the best color mode in which to work and print?

There are several color modes to choose from (Figure 1). The quality and appearance of the final product is greatly affected by the one that is assigned to the image.

Bitmap color mode (the simplest) consists of either black or white pixels such as line-art or black and white tonal dots that compose halftones. *Grayscale* color mode is used for monochromatic images like black and white photographs and consists of 256 shades of gray that compose the highlights, mid-tones, and shadows.

Scanners and digital cameras are RGB devices. They collect and separate red, green, and blue information by filtering the light that is reflected from the scene through RGB filters. The software combines the color information into a full-color composite. The monitor is also an RGB device that displays the red, green, and blue information. RGB color mode begins the process for colored images at the point of collection and is displayed on screen. RGB is the best working mode on color images because it is the native color mode and has a large color gamut.

RGB images can be converted to cyan, magenta, yellow, and black (CMYK) for the purpose of making color separations that are used for offset lithographic printing (Figure 2).

If you are outputting to an inkjet, laser, or large-format printer, images should remain in RGB. The algorithm used to process the image has a built-in RGB converter called a RIP (raster image processor). Manually converting the image to CMYK distorts the color output and produces inaccurate and usually inferior results.

BIT DEPTH

Q: What is the advantage of scanning and printing images in 16-bit color?

When images are scanned or captured with a digital camera in 16-bit color, a lot more color information is collected. Bit depth is determined by the amount of information each pixel contains. Images that contain 1 bit of information or bitmap images can support two colors: black or white. Images that contain eight bits of information in each pixel are grayscale color mode. They can support a maximum of 256 shades of gray (2⁸).

Images that contain eight bits of information on each of three channels, or eight-bit color, can produce almost 17 million colors (256³). Sixteen-bit color images contain 16 bits of color information per pixel per channel and can generate more than 35 billion colors.

Thirty-two-bit images have the capability of producing trillions of colors. More color information in the image produces smoother color transitions and more detail in the shadows and highlights at the expense of much larger file sizes.

Many photographers and graphic professionals claim that images scanned or captured in 16- or 32-bit color have superior color relationships when they are

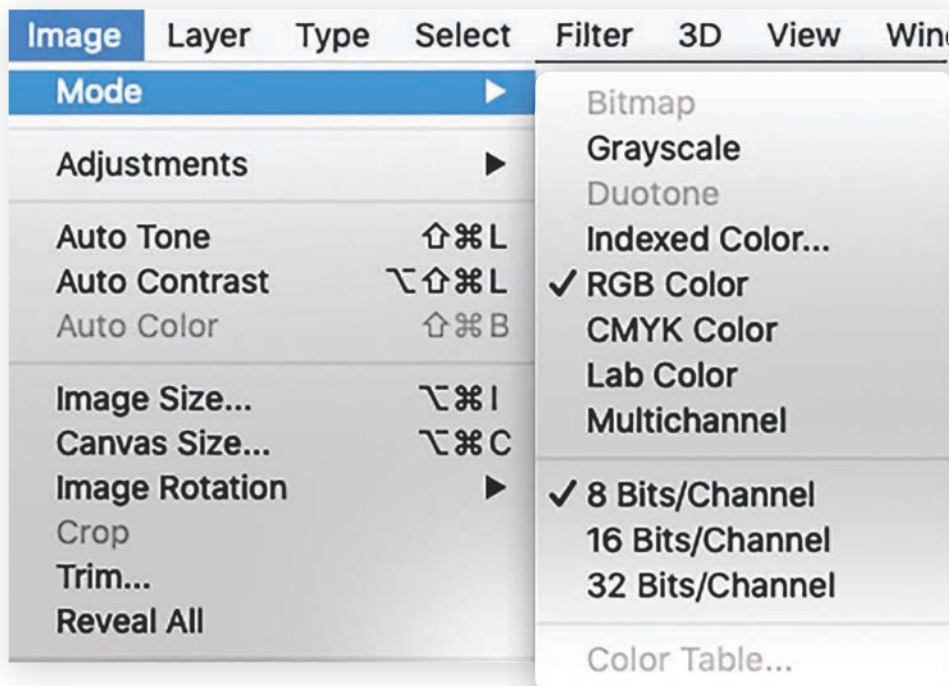


Figure 1. There are several color modes to choose from that affect the quality and appearance of the image. (All images courtesy Stephen Romaniello)

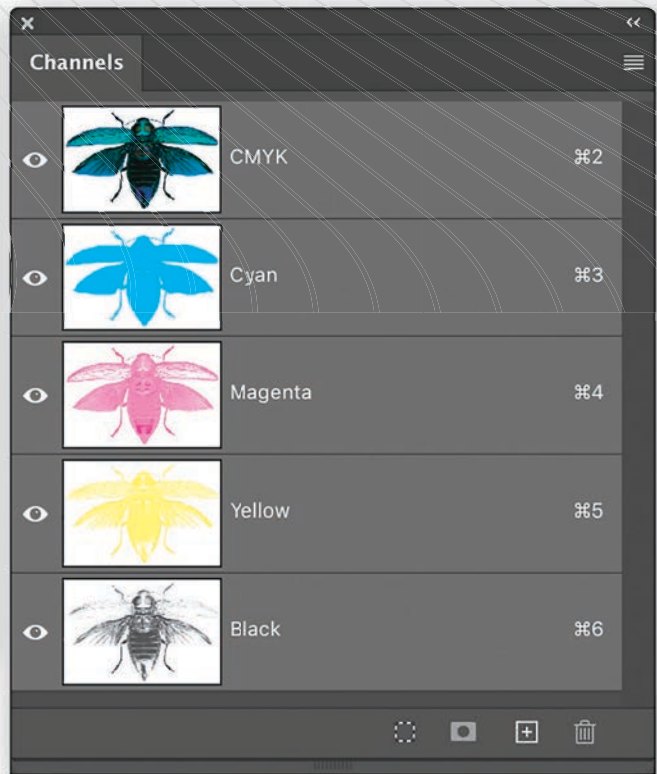
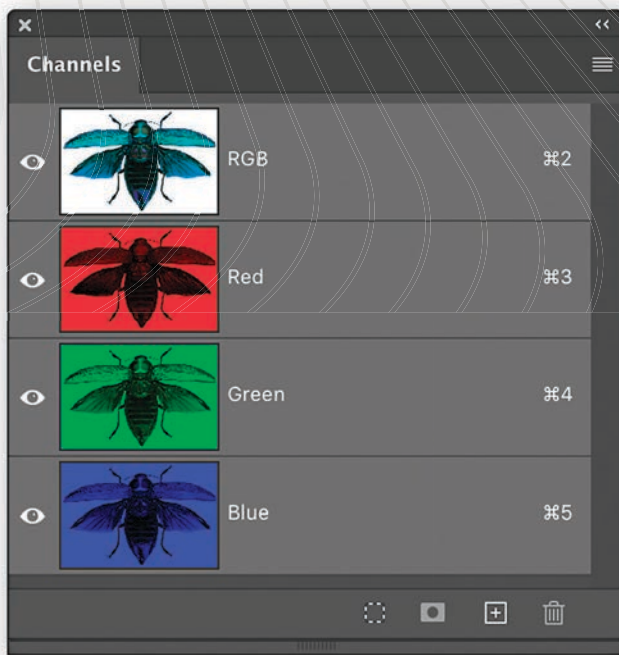


Figure 2. RGB images can be converted to CMYK for the purpose of making color separations that are used for offset lithographic printing.

converted to eight-bit color for output. The bottom line is that monitors and printers cannot recognize billions or trillions of colors; therefore, 16- and 32-bit images need to be converted to eight-bit in the image editing software prior to printing. This is where the claim of the photographers and graphic professionals is put to the test and where you should decide whether it's worth the effort.

COLOR MANAGEMENT

Q: What is the most accurate method of matching what my printer produces to what I see on my monitor?

Anyone involved in the digital graphics business has experienced the common and daunting problem of color matching from screen to printer. An image can look dazzling on screen with brilliant saturated colors but when printed, it looks like unwashed laundry—dull, weird colors, too much cyan or magenta, yucky browns, etc.

The problem is that the *gamut* or range of color that the monitor is capable of displaying is different than the colors the printer can print. The solution to this problem is solved by managing color.

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Figure 3. A print of a target image consisting of a grid of colored squares is output on a specific printer and substrate.

Color management begins at the monitor. A digital profile is made with a hardware device called a colorimeter that measures the temperatures of the on-screen colors. This profile describes the monitor's capabilities and assures that the monitor runs optimally and displays color at its full range.

A print of a target image consisting of a grid of colored squares is output to

a specific printer and substrate (**Figure 3**). A unique profile should be made for each individual substrate because each substrate has different reflective and ink absorption capabilities. The target print is measured by a hardware device called a spectrophotometer (**Figure 4**), and the software creates a profile based on the printer's gamut. The profile is loaded into the image editing software's Color

Settings dialog box. The custom profile can be selected from the RGB menu in the Working Spaces field (**Figure 5**). Many printers include profiles with their driver software that are accessed from the RGB menu. These profiles were made for specific printing environments and substrates. Over the years these profiles have been improved and today they are pretty reliable. They



Figure 4. The target print is measured by a hardware device called a spectrophotometer.

change RGB values to match the color capabilities of the ink set and the reflective qualities of the substrate to produce an on-screen image that mimics the potential gamut of the printer's capabilities. A custom profile is more accurate and preferable to the manufacturer's profiles, but of course you'll need to purchase the equipment and software to make one.

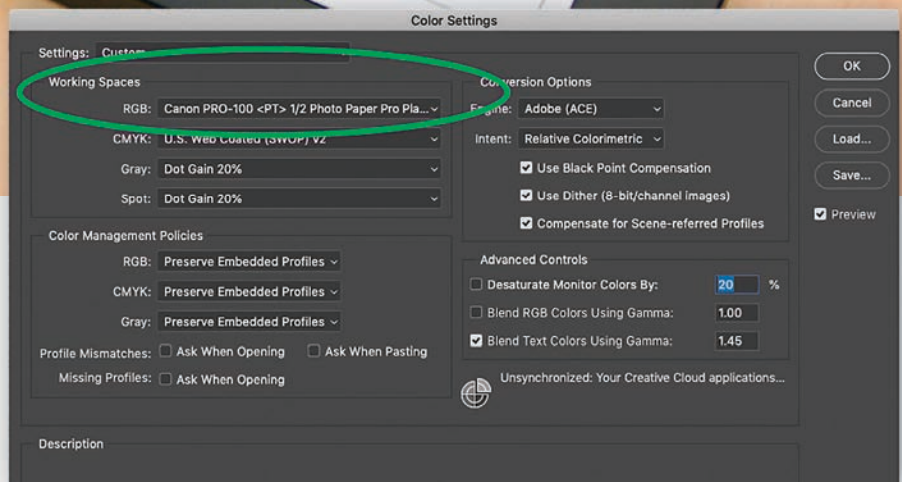


Figure 5. In the Color Settings dialog box, the Working Spaces field is where the RGB menu is and where the custom profile can be selected.

THE DIGITAL EYE

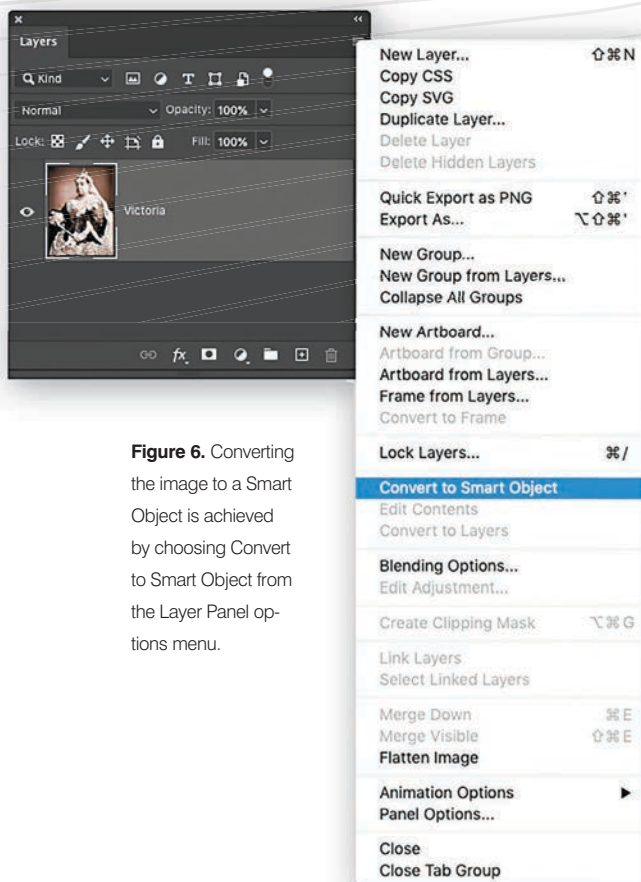


Figure 6. Converting the image to a Smart Object is achieved by choosing Convert to Smart Object from the Layer Panel options menu.

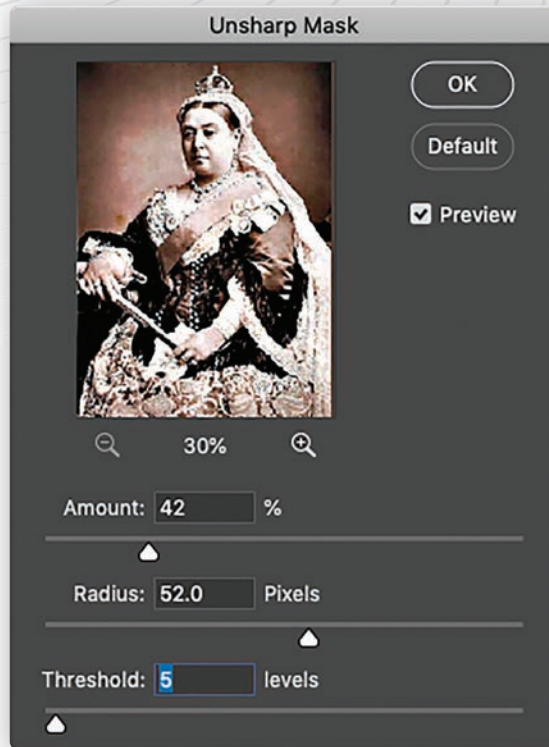


Figure 7. The Unsharp Mask filter applies the effect to the areas of most contrast by dragging the Amount and Radius sliders. The Threshold slider mitigates the effect on the areas of less contrast, thereby smoothing the internal color relationships.

SHARPENING

Q: What is the best method for sharpening images prior to printing?

Sharpening is essential for producing the best possible contrast in an image. Sharpening tightens contrasting edges and enhances the distinctions between colors and shapes.

Sharpening is achieved by applying a filter to the picture and therefore, if you are working in Photoshop, it's best to convert the image to a Smart Object first so that areas can be protected from the sharpening by masking. Then the sharpening can be altered later on in the workflow if necessary. Converting the image to a Smart Object is achieved by choosing Convert to Smart Object from the Layer Panel options menu (Figure 6).

The two filters most commonly used for overall sharpening are the Unsharp Mask filter and the Smart Sharpen filter.

The Unsharp Mask filter (Figure 7) applies the effect to the areas of most contrast by dragging the Amount and Radius

sliders. The Threshold slider mitigates the effect on the areas of less contrast, thereby smoothing the internal color relationships. The Smart Sharpen dialog box (Figure 8) has a set of extensive controls that refine the sharpening effect and zero in on specific tonal ranges. Choose the Highlight or Shadow tabs to control the amount of sharpening that affects lighter and darker areas of the picture.

In the dialog box, the Amount slider controls the intensity of the effect. Higher values increase the contrast between edge pixels and produce sharper focus. The Radius slider determines how many of the edge pixels are sharpened. Larger radius values extend the effect over a wider edge and produce a more pronounced sharpening. The powerful Remove menu determines the style of sharpening. Choosing Gaussian Blur produces similar results to an application of the Unsharp Mask filter. Lens Blur, however, produces finer sharpening of detail and a reduction of edge halos. Motion Blur

reduces the effects of the blur caused by movement of the camera or subject.

FILE FORMATS

Q: How do you determine which file format to choose when saving an image?

Because there are so many file formats to choose from, saving an image can sometimes be confusing. By default, there is a list of 22 formats in Photoshop's Save As menu. With all of these choices, it's a good idea to know what the specific characteristics of the most common file formats are so that you can choose the best one.

The format in which you save your image depends on how the image will be published. The format can also affect the color. If you have assigned a color profile to the image, be sure that the Embed Color Profile box is checked when you save the image (Figure 9).

Will the image be displayed on a monitor or printed to a large-format printer? Will it appear on a website or in a magazine? Will it be opened in a

desktop publishing program or saved to a video editing system? Each of these options requires a different saving strategy. Saving your image to the native Photoshop format (PSD) is a good place to start because it supports all of Photoshop's editing features. Preserving a full-scale version of the image in the PSD format with all of the features intact ensures that you can easily make changes down the line if necessary.

If the image is large and will print to a large-format printer, save the image in Large Document Format (PSB). This lets you create documents up to 300,000 pixels in height and width as opposed to the 30,000 X 30,000 pixel dimensions of native PSD files. You can continue to save the document in PSB format until you are ready to print. Then, just prior to printing, save a flattened version of your document as a TIFF (Tagged Image File Format). Flattening the image reduces file size and processing time. An additional advantage is that TIFF images can be compressed. Many digital artists and photographers save their documents to JPEG format (Joint Expert Photographers Group) because the file size is so much smaller. I



Figure 8. The Smart Sharpen dialog box has a set of extensive controls that refine the sharpening effect and zero in on specific tonal ranges.

don't recommend saving a document in JPEG format during the editing process. Use it after you have finished the image to create a flattened image for an archive. Save it at the highest setting to avoid image deterioration. JPEG doesn't support layers and other Photoshop features, so be sure to save the original in PSD format first.

QUESTIONS AND ANSWERS

I hope this Q&A has been instructive for the general process of opening, editing, and saving your images. An understanding of these critical points is essential and should be integrated into the workflow. The goal, after all, is to achieve the best possible color relationships with the most impact.

This outcome is achievable when you perform the right moves in the proper sequence. Yes, there are countless other processes in image editing that can be employed and that's what makes it so compelling and fun. The ones I've included here address the fundamental aspects of image manipulation and are key to producing the best possible results. **GP**

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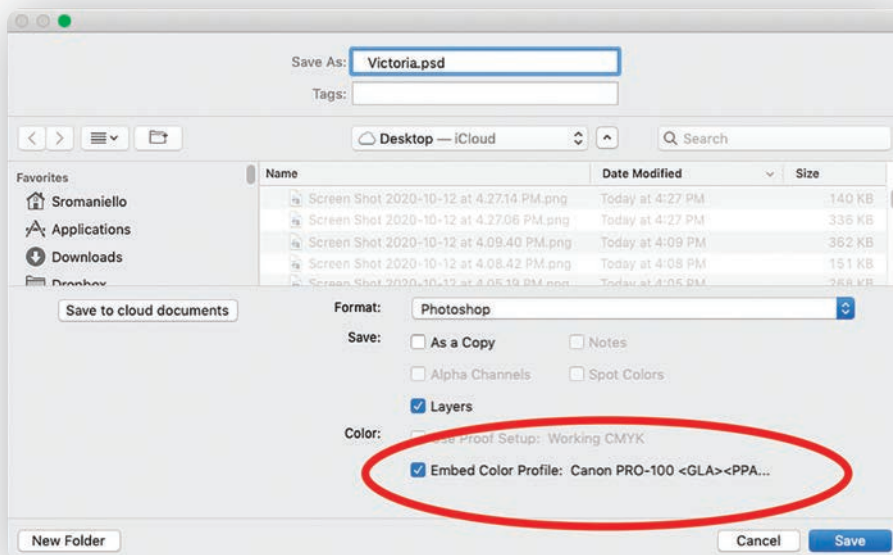


Figure 9. If you have assigned a color profile to the image be sure that the Embed Color profile box is checked.



Shop Profile:

Custom Graphix Signworks

PRINTING AND THRIVING IN THE VALLEY OF THE SUN



BY MIKE CLARK

Having a substantial online presence in today's business atmosphere is crucial to survival, and a quick scan of Custom Graphix Signworks' website and social media pages certainly conveys that message. The company runs a shop in Phoenix with a set of loyal local customers and has ramped up its eCommerce game in recent years. With a presence across Instagram, Facebook, and LinkedIn, the company has its eyes on the future of eCommerce. However, the start of the business traces back to when doing business online was still a relatively novel concept.

EARLY DAYS

In 1995, owner and founder Mladen Mirkovic immigrated to the U.S. from Bosnia. He says not long after getting established in his new home he took an early interest in the graphics world. After graduating from high school, Mirkovic says his career plan was to open his own business. "Large-format printing caught my eye," he explains. His inspiration for working with the medium came after a trip to Las Vegas, where Mirkovic marveled at the large-scale graphics surrounding him on the vibrant billboards, banners, and building wraps.

Determined to get into the market, Mirkovic began researching printing technologies and learning what kinds of equipment and materials were needed to start a business. He began consulting with distributors and manufactur-

Opposite: Mladen Mirkovic, owner and founder of Custom Graphix Signworks, started exploring the graphics industry shortly after high school in the 1990s. (All images courtesy Custom Graphix Signworks)



ers on different equipment options and took advantage of various informational and educational resources. “I asked a lot of questions (of distributors), watched online training videos, and went to trade shows,” he explains.

With the new millennium in full swing, Mirkovic opened shop in 2002 with a plotter, focusing primarily on vehicle graphics for the early phase of the company. Within two years, he says the business was steady enough to move into a bigger space and purchase additional equipment, specifically a Roland VersaCAMM SP-540V printer/cutter. Bringing the new machinery on-board helped grow the business’s offerings, and he diversified his printing services for a range of products like banners, floor graphics, and window graphics. The uptick in activity also allowed Mirkovic to bring on additional staff, and he says he did so by hiring his entire family to work for him.

FURTHER GROWTH

As Mirkovic and his crew continued to refine their skills, the business flourished with the expanded product offerings. By 2006, Custom Graphix reached capacity with their existing space. Instead of moving locales again, Mirkovic opted to take over an additional 2,000 square feet of adjoining space in the company’s building. At the time, the business was still primarily serving



While the shop originally started in the vehicle graphics world, the business currently focuses heavily on banner printing.



Custom Graphix's wide-format printing services cover a range of clients.

the greater Phoenix area. But Mirkovic says he had designs on stretching the company's presence further.

"At that point, I thought (we should) aim for a national market," he states. To help reach that goal, Mirkovic sought to develop an online design tool for customers who weren't close to the shop. He partnered with a programming firm to build the platform, which allows clients to choose from Custom Graphix's full range of offerings. Additionally, the tool enables customers

to design their own custom products by specifying color, size, and artwork. Mirkovic says since unveiling the platform, the shop has seen a steady increase of customers from that avenue.

BRANCHING OUT

Since the expansion in 2006, Custom Graphix has continued on a steady trajectory. The seven-person shop now runs two large-format printers and more recently added direct-to-garment (DTG) printing

for apparel. Mirkovic says he added the Ricoh Ri1000 primarily "because I didn't want my customers going somewhere else for T-shirts and possibly having another shop offering them signage."

Adopting the technology did come with some hurdles since pretreatment can be a challenge for those new to DTG. But Mirkovic says the business has dialed in the process over roughly the last year and a half or so. With the added technology, Custom Graphix provides custom bundle packages



Above: The company serves the greater Phoenix area but does a sizeable share of business through eCommerce as well. **Right:** Custom Graphix developed an online tool to allow clients to design their own custom products by specifying color, size, and artwork.





Above: In recent months, the business has pivoted to address signage and other goods needed for the COVID-19 crisis. **Below:** Adopting DTG technology did come with some hurdles since pretreatment can be a challenge for those new to the process.



primarily aimed at small businesses. These packages feature essentials for companies that may need branded apparel, signage, and potentially vehicle graphics.

With the business closing in on the 20-year mark, Mirkovic says he's enjoyed growing alongside the evolutions of new machinery and technology in the industry. "I love the fact that there's always something new," he adds. He also points to the marketing aspect of the business, and how he likes providing customers with insight/advice when they consult him and his staff about branding approaches.

The continued success of the shop isn't the only thing Mirkovic enjoys about the business. He says helping develop signage and graphics for other fellow businesses has been a gratifying experience, particularly when those businesses flourish, thanks in part to the signs he and his team help create. "(It) gives me a good feeling that we've truly accomplished something for these customers," Mirkovic states. The added benefit to this scenario is that many of these successful businesses have become loyal, repeat customers for him.

KEEPING IT GOING

Inevitably, the COVID-19 crisis has posed challenges for Custom Graphix just like it has for other shops across the country. When bars and restaurants began shutting down in March 2020 during the early phases of stay-at-home orders and safety measures, Mirkovic says the business had to pivot quickly.

Many eateries opted to transition to curbside pickup models to keep their lights on, and the shop soon landed a printing job with the Denny's diner chain. The demand, Mikovic says, was steep since the company needed their signage turned around in a much shorter time than a typical job. "We had to work for about seven days a week and in 12-hour shifts to supply the restaurant, so we were extremely busy," he adds.

In the weeks following the rush for the signage, regulations tightened in Arizona to where only essential businesses could re-

main open. Thankfully, Mirkovic says, Custom Graphix was deemed essential and was able to keep working. For a period, the shop experienced a downturn, but thanks to its specialty in items like floor decals for social distancing, recent times have seen orders picking back up.

With the challenges that lay ahead for the economy in general, Mirkovic says he's looking to digital expansion versus physical. "Right now, we're trying to grow our presence on Google," he explains. He adds that the shop has seen some sizeable repeat business with tweaking their online presence and an increase in referrals.

Besides being a solid practice to make a company digitally nimble in the age of eCommerce, Mirkovic says the strategy is helping with current obstacles. With social distancing becoming a standard precaution everywhere from the supermarket to the local park, businesses are also reconsidering in-person transactions. "I think no-contact business is essential right now," he elaborates. "The customer can order with our online design tool, and we pack, ship, and that's it."

From a young student with a fresh interest in large-scale signage, to a bustling Arizona business, Mirkovic and his team at Custom Graphix aims to create a whole other set of happy clients in the online realm.

For more information, visit www.customgraphix.net. **GP**

MIKE CLARK is the contributing editor for *GRAPHICS PRO* and *RV PRO* magazines. He previously served as the associate editor for *Printwear* and *Sign & Digital Graphics* magazines. Contact him at mclark@nbn.com.

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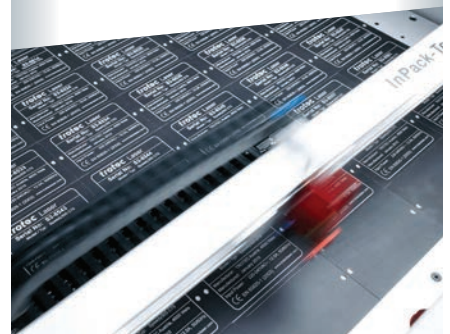
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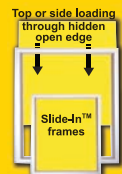


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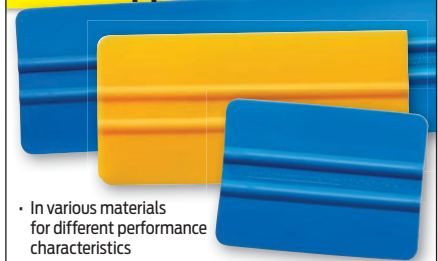
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UV-LED PRINTING

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The same things apply to a lot of other technology. “We are seeing major advances in head technologies, thin film technologies coming out from major players; more granular control, longevity, and better throughput, leading to faster print speed,” he adds. Costs also have started to come down, making more industrial offerings available even to smaller print shops and graphic artists.

COVID’S IMPACT ON THE MARKET

The retail market, which is one of the printing industry’s biggest users of large-format printers, has seen the whole industry turned upside down because of the COVID-19 pandemic. “Retail as we know it changed drastically. There is a lot less brick-and-mortar activity and a lot more online shopping,” Maxwell points out.

But, even with the pandemic and limits on how many people can be in a retail location at a time, big box stores and grocery stores are still demanding floor and wall graphics, particularly graphics that tell people where to stand or that they should be social distancing, wearing masks, and using hand sanitizer. “The big challenge is everyone wants something tomorrow. UV gives us the ability to deliver,” Maxwell states.

The flatbed market saw a huge influx of business in 2020 because retailers changed the graphics they were ordering from double-sided signs that hang from the ceiling to more floor and wall graphics. “People are more focused on looking down, staying six feet apart,” Maxwell adds.

As current events and advances in technology continue to change, UV-LED will continue to play a role in the graphics industry. **GP**

PAULA AVEN GLADYCH is a freelance writer based in Denver, Colorado. She can be reached at pgladych@gmail.com.

EMBROIDERY DIGITIZING

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CONVERSION ACCURACY

In all three examples, the conversion software accurately and quickly rendered the vector artwork into stitches, accomplishing automatically what a digitizer would do manually and more quickly than a digitizer. However, the fill stitches created by the conversion software produced a flat appearance. So, I had to be creative and apply patterns built into the conversion software to produce designs that looked visually more appealing.

If you are an apparel decorator without digitizing skills, want the ability to convert vector artwork into stitches, and enjoy applying your creative skills, you might want to consider conversion software.

The conversion software that I employed is easier to learn, more intuitive to use, less expensive than traditional digitizing software that has the capability to convert vector artwork into stitches, and does not require an in-depth understanding of digitizing. This conversion software is also unique in that it is dynamic and automatically recalculates stitch types and stitch parameters in real time as changes are made to a design. As a result, it consistently produces production-ready embroidery files that are unrivaled in our industry.

In conclusion, the answer to the question posed in the title of this article is that excellent embroidery can be produced without digitizing by using the latest technology that converts vector artwork into stitches and by applying some of the built-in features that allow its users to express their creativity. **GP**

DENNIS DUNNING works with his wife, Vicki, who founded their small apparel decoration business in 1993. Dennis is adept at using digitizing software and software designed principally to convert vector artwork into stitches. He is a proponent of using new technology. Dennis can be reached at dennis@embroideryd.com.

CHOOSING THE RIGHT FILM

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TRIMMING

To finish the door, we need to tuck and trim areas around the window and possibly the mirror. Removing the mirror completely is one option, but again make sure an experienced person removes the mirror (especially if it has electrical components) to avoid damage.

Often we’re able to lay the mirror flat enough to work around it, or the plastic trim extends to the edge of the door and we’re able to use that to create a relief cut. On commercial wraps, we have a bit more flexibility over color change wraps, which require a seamless finish.

To finish the vinyl around the mirror and around the window itself, use the same tuck and trim methods as you’ll use on the rest of the vehicle. The key is to keep the vinyl smooth, tucking entirely around or into the obstacles, so the vehicle color doesn’t show, before trimming with a sharp blade.

Before doing any trimming, be sure your edges are smooth and flat with no fingers or lifting. Remove excess vinyl that will make it harder to work into tight areas before adding heat and smoothing the vinyl. Once it’s lying flat, then you can cut along the trim of the window and mirror.

POST-HEAT

The final step to achieving a professional, durable wrap is to post-heat your graphics. Using a heat gun and an infrared thermometer, slowly heat the vinyl in areas that were stretched to release the vinyl’s memory and ensure the graphics stay in place. Check manufacturer guidelines for the type of vinyl you’re installing to be sure you heat it to the proper temperature. **GP**

CHARITY JACKSON is co-owner of Visual Horizons Custom Signs based in Modesto, California. She has been in business since 1995, and has worked in the sign industry for over 25 years. You can visit her website at www.vhsigns.com.

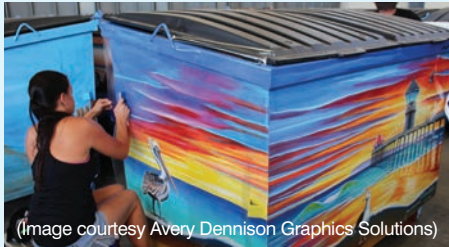
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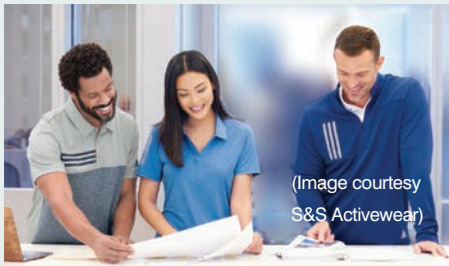
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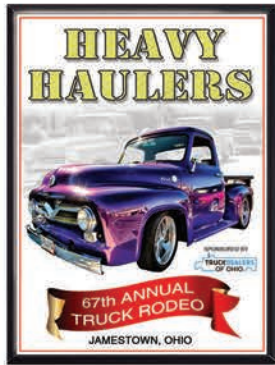
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