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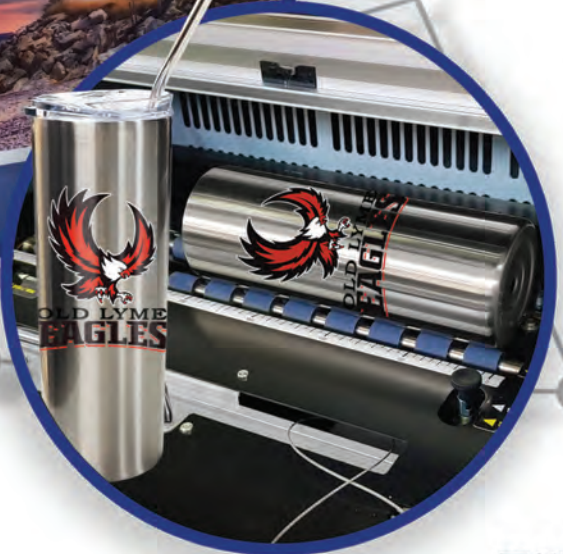
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The challenges of creating an LED sign includes the size of the job, the magnitude and scope of work, and the permitting process, as well as the sourcing and size of the materials. Page 16. Bottom left: The small-format signage market is a lucrative one to get involved in, Page 22.



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THE WORKFLOW MISSION

Completing the project is always the ultimate goal. But sometimes, how we get there can be quite the adventure. That's why an efficient workflow is so important. But building that efficient workflow can often involve a lot of trial and error and often a lot of wasted time, effort, and materials before you find that Goldilocks zone of production.

When I was a kid, I was as big a fan of the show "The A-Team" as any other kid in my class. But I'd be lying if today I said that after each magazine comes off the press that I get to sit back, do my best Hannibal Smith impersonation and say, "I love it when a plan comes together," while chomping on a cigar.

First off, the last time I smoked a cigar, I literally had to watch a YouTube video to find out if I was doing it right. (Spoiler: I wasn't.) Second, as is the case for many these days, there's not much time to celebrate a completed project before the backlog of other projects brings down the mood.

So, where in this process can you find time to improve your workflow? Surely you didn't build time into your current workflow to evaluate your current workflow. That's the type of thing that someone who folds fitted sheets would do. So, likely this much-needed evaluation happens in the back of your mind at 8 p.m. during your daughter's grade-school recital, in which she's obviously the most talented tree in the show.

Can software ease your workflow issues? It sure can. But narrowing down your choices there can be a job in and of itself, so I recommend asking around your industry cohorts to get their recommendations to narrow down the list before you really start digging into your research. But of course, don't just take the first recommendation you get. That's how you end up drinking chocolate water and not trusting your big sister for 12 years. Don't ask me how I know.

Equipment, staff, and available shop space are all considerations that need to be addressed when creating a workflow. And unfortunately, there are only so many recitals you can zone out in before your daughter gets wise.

For resources on creating or adjusting your workflow, be sure to check out these informational pieces at graphics-pro.com:



- Hands-Off Handling: Benefits of Automated Workflow in Wide-Format Printing
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ANDREW WATSON DESIGN REINVENTS

Awards and Recognition



Going from a startup to a supplier for national brands

BY GINNY MUMM



With a master's degree in industrial design, Andrew Watson, founder and creative director at Andrew Watson Design in Squamish, British Columbia, could have done a lot of things. He chose to pursue a career of creating unique awards and recognition.

"The mix of design, manufacturing possibilities, and creativity involved in creating awards and recognition was very appealing to me. I like being able to focus on highly detailed processes that yield a high-quality outcome," he says.

Watson shares how he launched his company, what production tricks he has learned along the way, and how his shop became the "go-to" source for awards and recognition output for companies like Disney, Apple, Nike, and Google.

How and where did you get your start?

AW: We started in 2012 in Vancouver. Back then, it was just me and my laptop. The business grew very quickly and we have since moved twice, each time to larger locations.

We are currently a team of 10 people, which feels like just the right size. We want to remain a small, boutique operation to allow us to continue to provide the best service and quality for our clients.

Please tell me about your clientele. Who were some of your first clients?

We have been fortunate to work with high-end clients from the very beginning. Some of our first clients include Indian Motorcycle, Disney, Gap, Wilson Sporting Goods, and the United Nations.

Since then, we have worked with Apple,

All images courtesy Andrew Watson Design



Google, Twitter, Verizon (Yahoo), Yamaha, Dew Tour, Nike, Tabasco, Intel, Microsoft, Xprize, Deloitte, EA Games, Avery Dennison, Lululemon, ASUS, BP, Hilton Hotels, and many others.

Our clients have operations around the globe, but we send the majority of our products to locations in the U.S. A typical order for us is between 20 and 50 awards. We have fulfilled orders of more than 1,000, but we prefer to keep the quantities lower as we are a small team.

How has your product line evolved?

Initially, we were using laser engraving and screen printing. For our applications, however, screen printing is an extremely slow and expensive process, and it limited our product range.

We needed to find a better solution, so we switched our production to UV flatbed. Since then, our design capabilities have flourished. The move to UV flatbed printing was a real turning point for us – we would not have been able to continue in this business with screen printing.

What are some of the advantages of UV print for your business?

The variety of substrates we can print to with our Roland DG UV devices has greatly expanded our production options. Color matching is also extremely important to us. Our clients have specific Pantone colors that we need to reproduce accurately. Being able to achieve those colors is critical.





We like to think of awards as “physical branding.” We feel like the awards are an extension of the client’s brand.



Another advantage is the ability to add gloss and textures, and to simulate embossing. We had a client who wanted all the text embossed on an award for a tactile effect. We were able to print 20 passes on our LEF benchtop UV printer to achieve a 1.5mm height on the text. This effect made our client very happy and was much easier than laser cutting and affixing individual letters would have been. Using our UV printer saved us a great deal of time and expense.

Investing in a UV printer has been one of the best decisions we've ever made for this business. We bought our first Roland DG LEF UV printer in 2015, and I wish we'd done it sooner. We now have four LEF2-200 printers in the studio. We just replaced our original LEF inkjet after seven years of heavy daily use, and it was still going strong.

What substrates are you printing on these days?

We print mostly to wood, acrylic, and anodized aluminum. We have also printed on cork, karate belts, resin, and grip tape (the sandpapery layer on skateboard decks), as well as to 3D prints.

What are some of the main considerations that go into a successful award design?

We like to think of awards as "physical branding." We feel like the awards are an extension of the client's brand, so they should adhere to the brand's guidelines and be visually complementary. One trend we are noticing lately is that there are more companies getting creative with award design, which is great to see. There are far too many badly designed awards out there!

Why do you think your clients choose Andrew Watson Design?

I think our clients choose us because our designs are unique, and because we provide personalized service. In addition, we design and manufacture everything ourselves, which is a competitive advantage in this industry.



What lies ahead for Andrew Watson Design?

We want to continue to discover new materials and manufacturing processes. We have a lot of fun exploring and experimenting with design ideas, printing techniques and material options, and adapting those into our award designs. GP

Ginny Mumm is a freelance consultant for Roland DGA.

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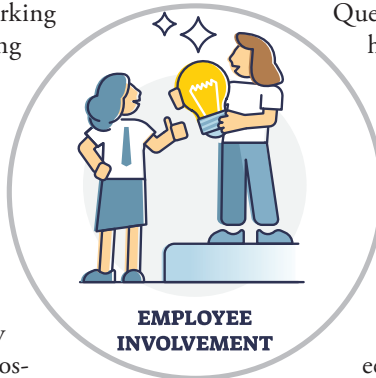
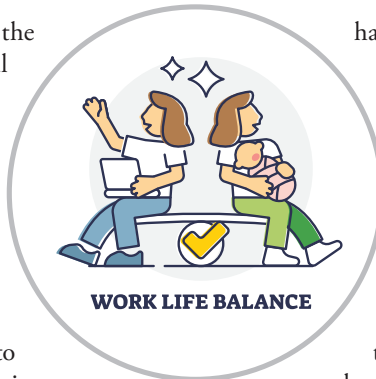
Since the pandemic, the rules have changed

BY AARON MONTGOMERY

Remember in 2020 when everyone discussed the potential of a new normal and that the global pandemic would drastically change things? Welcome to the new normal! That “normal” seems to be constant change and shifting the way things used to be. Since 2020 in the United States, businesses with employees have struggled to get their arms around what it means to be an employer. An older model of enticing workers with a well-paying job that was steady and secure faded in the '90s. That led to a different model of bonuses, perks, and emulating being a part of the cool kids' club but then working yourself half to death for a chance to play ping pong or chill in a sleep pod. Today that seems to have changed again, with employees having a more profound desire to be part of something bigger than a paycheck. Plus, many people choose not to work instead of having a job, even if they don't have a steady income. After everyone re-evaluated their use of time during the pandemic, this new mentality flipped the script. Add in our gig economy, and many people have at least one side hustle, and the prospect of hiring and retaining employees is not a task for the faint of heart.

As someone who gets to work with small businesses, I know one of the challenges of growing is finding the help they need and training and keeping those employees. In this article, I want to talk about those two aspects of being an employer - training and retaining.

First, let me tell you a quick story about a local fast-food restaurant that seems to have a magic formula that has shaped my views on this topic. Restaurants have probably taken the biggest hit from the effects of the pandemic, and rising employee costs and shortages seem to be the most significant obstacles. Yet throughout the pandemic, there is a Dairy Queen up the street from me that seems to have no problem with employees. We love our Blizzards and even get a pup cup for our dog, so at first, I thought I was just biased. But the experience we



have each time is wonderful, and there always seems to be more than enough employees. The employees all work hard and seem to be very happy.

On the flip side of this is a Red Robin right up the street, where their dining room sits mainly empty and the wait for a table is generally over an hour regardless of the time of day you try to go. The reason is that Red Robin doesn't have enough servers to seat their restaurant fully. At first, I thought, “Well, maybe the ice cream bonus is enough to make everyone happy,” but I know that can't be true. Maybe Dairy Queen pays their employees a lot more? Their prices have not gone up, so how could they manage to be so out of line with all the other restaurants in the area? I had to find out.

Fortunately, a friend of mine knows the owner and manager of the Dairy Queen. What I discovered was brilliant yet oddly simple once I heard the formula. She treats her employees as if they were her very own children. As young people with school schedules, she is flexible with them and has more employees than similar companies, so they have plenty of help and are not worked to death. She doesn't coddle or baby them. She sets clear expectations and lets them get the job done based on how they believe it should be done. She treats everyone fairly and is available for them for more than just the art of making the perfect blizzard. Homework, personal problems, challenges at home, or just as encouragement when needed. They pay a standard wage comparable to other fast-food restaurants. It is a pretty simple formula, and that formula turns her employees into her recruiters. She has a waiting list of these kids' friends who are eager to join the team when she needs them. The “Mom” formula will not work for everyone, but the idea at its core will. Let's break it down.

TRAINING

While the Dairy Queen story didn't specifically talk about



As the employer, the most crucial part of retention is to take responsibility for your role.

their training, I did mention that she allows them to do the job how they see it. And it boils down to her trusting them to get the job done. You have removed all autonomy and fulfillment when you “train” someone by giving them a line-by-line direction list and punishing them for not following the steps exactly. They show up at work as just another cog and can’t wait to clock out.

Training is the first step in employee retention to ensure your employees don’t fall into this trap. When you train someone to educate them to do their best and then trust them to take ownership of that job by setting clear expectations, you now have someone who will look forward to their job. They get to be the masters of their domain and take pride in their work. But when you train someone by setting them in front of a step-by-step instruction video or telling them to shadow someone else, you set them up for failure. You want to integrate them into the team by educating them on best practices and why those best practices work for your business. Then give them space to learn and grow by allowing for mistakes to happen. Reward the growth and manage the learning curve with checks and balances that everyone is held to, including yourself.

RETENTION

Once they are trained and part of the team, the next step is to ensure they stay around. If you have built that autonomy in training and provided the new employee with a path to mastery, you have the groundwork for success. From there, the job is not to break the chain and don’t give them a reason to find another job. As the Dairy Queen “Mom” showed me, it goes beyond what happens at your place of business. You have to define your core values and personal strengths clearly. Those values and strengths will point you towards how you need to show up for them as an employer. Maybe your core values and strengths are community and family. You could do things like support them in supporting a cause that’s important to them. Or do things inside your business that remind them they are part of something bigger than themselves.

Show your employees how their work impacts your customers.

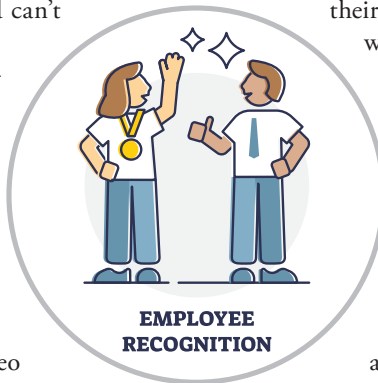
One important thing not to do is to expect them to be like you. Many business owners have told me that they wish their employees would take more ownership and treat the job as they treat it.

That is unrealistic because an employee like that would start their own business. Include them in the processes you want them to emulate and be transparent but don’t expect them to live, eat, sleep, and breathe your business as you do.

As the employer, the most crucial part of retention is to take responsibility for your role. You are not always going to get it right, but it is up to you to be the first to admit that fault. If you constantly have employees you think are lazy or unwilling to go the extra mile, look in the mirror. How have you created an environment that promotes that or puts them in a place where they will not go the extra mile? Nine times out of 10, a system, consequence, or manager drives the employee to do whatever it takes to stay under the radar and collect their paycheck.

If your employee feels like their time is best served covering their own butts, you have created, promoted, or allowed that behavior that will not help your business or that employee. Taking responsibility, even when it does seem like it is your burden to handle, needs to permeate your business. As a business owner, you are responsible, so make the hard decisions, stick by them with integrity, and foster an environment where your employees feel like they are part of the

family. GP



Aaron Montgomery is certified by New York Times best-selling author Jack Canfield as a Success Principles Trainer and co-founder of OurSuccessGroup.com. Aaron has over 25 years of experience with personalized products and small business development and is the co-creator of the “5 Keys of Business Success.” You can also find Aaron co-hosting the decorator’s industry podcast 2 Regular Guys Podcast (2regularguys.com). Also, check him out on his podcast channel, Small Business Saturdays (smallbusinesssaturdayspodcast.com).

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Up in Lights

Bakers' Signs goes large with LED electric sign installations



BY SHELLEY WIDHALM

The newly built electric LED monument sign spans 450 square feet in front of the Javier Marcos Plaza to advertise Marcos's personal injury attorney, emergency room, and ambulance services in Houston.

But it took four weeks to get the special permits and a sign company to do the large-scale project that includes four 999-square-foot building signs still under construction.

"The client reached out to us," says Matt Baker, co-owner of Bakers' Signs & Manufacturing, a commercial sign company based in Conroe, Texas, which serves Texas and surrounding states. "He

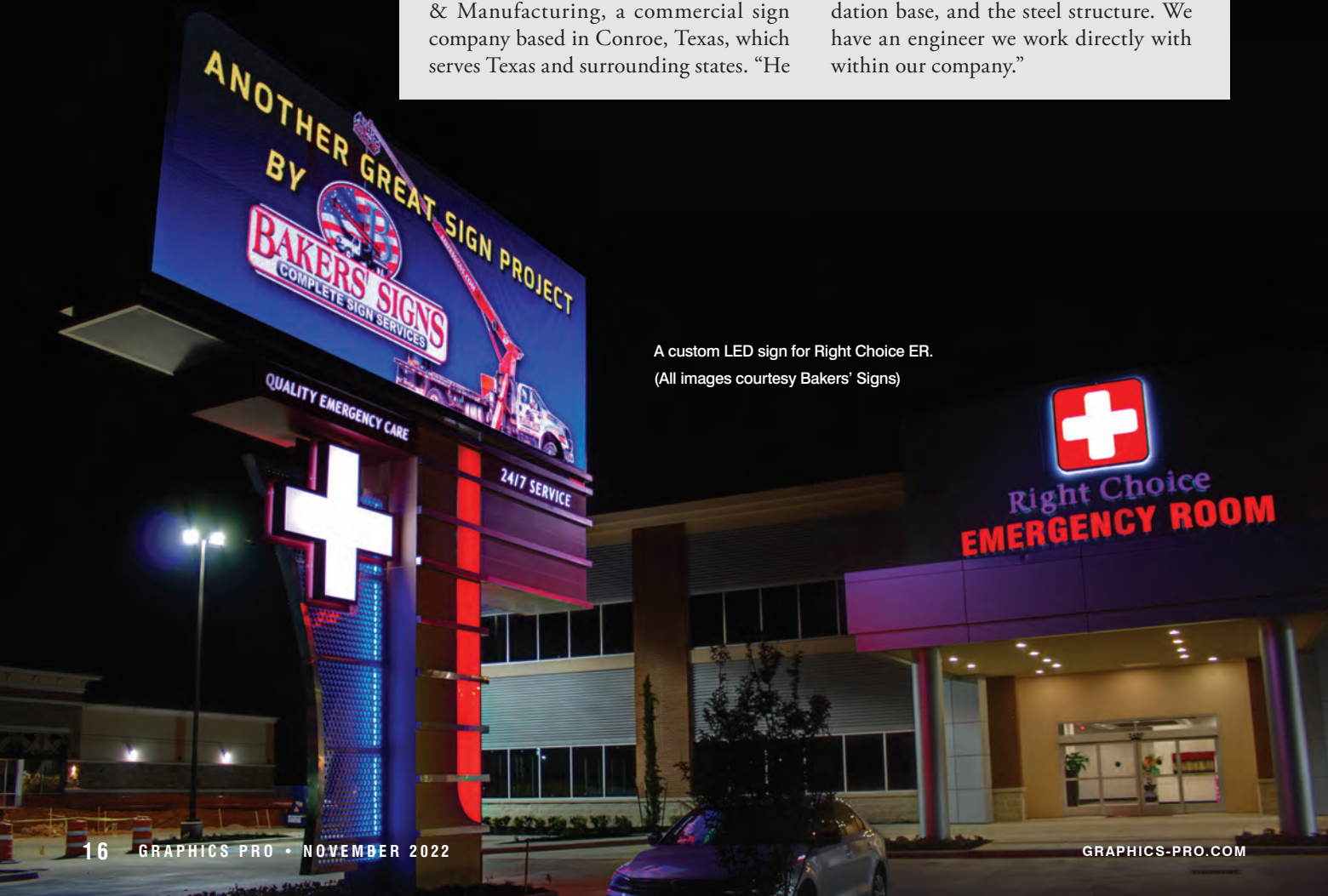
had prior issues with other sign companies. We welcomed the challenge and met him on site."

THE LARGEST IN HOUSTON

Baker says the challenges included "the size of the job, the magnitude and scope of work, and the permitting process," and the sourcing and size of the materials.

"With a lot of companies, their doors aren't big enough to get the sign out of the shop," Baker says. "We had to get engineering for the sign itself, the main foundation base, and the steel structure. We have an engineer we work directly with within our company."

A custom LED sign for Right Choice ER.
(All images courtesy Bakers' Signs)





Bakers' Signs went through the usual design process and was awarded a \$1.5 million contract in mid-September to design, build and install the sign, taking eight weeks from start to finish. Before work could begin, Bakers' Signs had to secure permits for a monument sign larger than 100 square feet, the maximum for one occupant in a building.

"It was navigating the code based on how many occupancies there were," Baker says. "We had to create additional occupancies for additional businesses at that location in order to achieve multi-tenant status to get the larger, 450-square-foot sign."

The occupancies are for an ER and ambulance service in the 18-story building that allowed Bakers' Signs to build



A custom LED sign for Providence Hospital's 24-7 Emergency Room.



to the maximum for a monument sign. Bakers' Signs also built nearly to the maximum for the four wall signs of 1,000 square feet each, representing the largest signs in Houston in 2022, Baker says.

"We were able to give the client the end product he dreamed of," Baker says.

The monument sign features a 6' x 12' 6mm electronic message center with video capacity, where Marcos plans to market his services and display his successful cases, Baker says. He says that most messaging is at 20, 16, or 12mm for a lower level of pitch and clarity with 6mm the highest resolution available on the market.

Above and below the message center is the name of Marcos' three businesses and his contact information, which are static and can't be changed.

"The potential with this sign is endless," Baker says, adding that Marcos can



Bakers' Signs used LED to bring attention to King of Cars' hiring announcement.

A custom LED pylon sign for Cadillac Express Car Wash that draws attention to the business's offerings.

change the sign's message center content from anywhere by accessing it through his cell phone. "Everyone else says, 'No, it can't be done.' We were creative in our approach. Through our knowledge of the industry and our creativity, we did something others thought wasn't possible."

THE LARGEST IN TEXAS

In another project, Bakers' Signs installed most of the signage in Montgomery County Veterans Memorial Park in Conroe, Texas, a national memorial project that landed Bakers' Sign the 2022 Frank Page Award in the Texas Sign Association's annual design contest for the arch entry. The memorial is one of the largest

national memorials in Texas, as well as in the U.S.

"It was really special for us," Baker says. "We designed nearly every feature of the park. All of the monuments we created were LED-technology based."

The LINE Memorial Wall in the park, a memorial to veterans of all military branches, has a daytime component of engraved stone with a list of names, but at night, the names are illuminated by LED modules embedded in the panels.

"Ours is unique because, at night, those lines light up," Baker says.

Large signs like the installation for Marcos and the memorial park are core to Bakers' Signs' business, composed of



Bakers' Signs & Manufacturing in Conroe, Texas, designed, manufactured, and installed a custom LED monument sign at the Javier Marcos Plaza in Houston.

custom electrical sign manufacturing and installations and state-licensed electrical installs. Bakers' Signs provides comprehensive sign services from sign design to permitting, engineering, fabrication, installation, and service and does large-scale and high-rise projects.

"We're not limited on any project we take on because we cover all those facets," says Thomas Turner, art and marketing director for Bakers' Signs. "It's those unique niches that make us stand apart. That's why we work with so many sign companies to fill that void in their services."

LARGE-SCALE SIGNS

Bakers' Signs has a wide range of services, including business lighting, electrical maintenance and installation, parking lot lighting, canopy lighting, sign revitalization, sign removal, and surveying. So far, the company has fabricated tens of thousands of signs for places like the city of Houston and the state of Texas, stadiums for teams like the Dallas Cowboys and Houston Texans, several parks and universities, and a mission control sign for NASA.

"As a company, we specialize in electric signs. We like to say the bigger, the better," Baker says.

The company was established in 1985 in Kingwood, Texas, starting with one rig in

the backyard of Baker's parents, Tim and Roberta "Bobbi" Baker, who founded the company. Now it is co-owned by Bobbi (a 2022 Woman in Signs Award winner), Matt, and Matt's brothers, Jeremiah and Joshua.

The company started out servicing and installing signs for other companies. Now, most of the company's clients are other sign companies for the projects the companies don't have the time, capacity, or resources to handle.

"We wanted to be a one-stop sign shop for electrical signs, A to Z," Baker says. "We realized within traditional sign companies, they have a set limitation on their areas and the cost of equipment and labor. We saw a market gap, and we try to structure our company and continue to grow to fill that gap."



A custom LED sign for Star Plaza announcing its buffet special.



Bakers' Signs was averaging \$1 million in annual sales, with most of the work in installation and service. By 2018, the company increased sales by 1200%, hitting the \$12 million mark.

"A lot of the processes and technology we're using today are a lot more friendly for the environment."

COMPANY HISTORY

To accommodate the growth, the Bakers purchased a 42-acre facility north of Houston in 2010 with 25,000 square feet of building space. They extensively remodeled and built the building to accommodate offices, new production workspaces, and equipment.

At the time, Bakers' Signs was averaging \$1 million in annual sales, with most of the work in installation and service. By 2018, the company increased sales by 1200%, hitting the \$12 million mark.

The Bakers also added a 10,000-square-foot production shop and nearly a dozen trucks to the fleet and some of the industry's latest technologies. Today, the company is completing its newest fabrication building, bringing the total operations to 50,000 square feet.

"Due to demand, our production has taken off like wildfire," Baker says. "We are building signs at a rate we don't have room for in our shop."

With the increased space, the Bakers will be able to bring in additional equipment and employees to streamline its fabrication and assembly processes and handle more projects with a shorter turnaround time, Baker says.

"The extra space will allow us to tackle more projects at any given time, which will definitely speed up production," Turner says.

EQUIPMENT

Currently, the company has a channel letter bender and large-format printers consistent with the latest technology in the signage business. The company will bring in new equipment, including:

- Flatbed printers
 - 3D technologies
 - Waterjet cutters
 - Advanced metal forming equipment (computerized brakes and presses for metal forming and rolling capabilities)
 - A second paint booth
 - Two state-of-the-art overhead cranes
- "Now we're using brakes that are manually operated," Baker says. "These will go off computer files. We're taking skilled

labor out of it, giving us the ability to operate more efficiently."

The Bakers also opened another two acres of yard space for sign storage and staging.

"It prevents bottlenecks and congestion," Baker says. "It allows us to be better organized and more effective and efficient. Being able to have sectors, that really helps with the process flow."

The expansions result in Bakers' Signs needing to hire another 15 to 25 employees, which will add to the current staff of 70. At the same time, Baker says that LED sign technology is less labor intensive and more efficient, cost-effective, and energy-efficient.

"A lot of the processes and technology we're using today are a lot more friendly for the environment," Baker says.

LED tubing, for example, is more efficient than neon, which can break easily, is

costly and inefficient, and requires a great deal of maintenance, Baker says.

"Now the technology has improved to the point of LED tubing having the same look as neon without the high cost and high maintenance," Baker says.

The LED technology benefits projects like those for Javier Marcos and The LINE.

"Bakers' Signs' primary goal is to become the top sign solution in the U.S. by exceeding all customer expectations," Baker says. **GP**

Shelley Widhalm is a freelance writer and editor and founder of Shell's Ink Services, a writing and editing service based in Loveland, Colorado.

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Strategic planning for ADA, regulatory, traffic, and directional signs

BY PAUL INGLE

During the Great Recession of 2007-09, we were trying to climb out of a dismal yearly loss of revenue of over \$1.1 million in just two years. Starting from \$2.2 million, that's a teeth-chattering feeling of fear that goes through your stomach and beyond. We'd just bought our business a year earlier. It was like being a heroic member of the Titanic deck band serenading the lifeboat launchings as icy water and destiny rushed up to embrace you.

As any good sign business owners would do, we spent several lifesaving weekends of what else? Strategic planning. We invited our core group of leaders and those vested in our success. We wrestled with what our team could do to get more sales since dollars were heading for the exits faster than patrons of the movie *Ishtar*. Yes, that one with Warren Beatty and Dustin Hoffman.

By the way, I encourage you, as an owner, to facilitate strategic planning each year at a minimum. It will set the course of your business and often right it when it veers off track. You will

often find that the best ideas come from your employees once they know you've encouraged their unabridged and honest input.

We set aside a commitment to scour new regional construction sites, and our sales staff renewed efforts to expand existing client opportunities and cold-calling targeted new accounts. But our heavy focus was on two major ideas: small-format signs and formal bid projects (as opposed to negotiated, design/build, or retail jobs).

ORGANIZATIONS & BIDS

We were already a woman-owned business, and we made sure to quickly join and get accredited with any organization seeking minority participation. That credibility is key in bid work. Look into these organizations if you are 51% owned by one or more persons who are economically disadvantaged due to being a member of a certain group. These groups include Black Americans, Hispanic Americans, Asian Americans, Asian Pacific Islanders, Native Americans, service-disabled veterans, and women.

Many schools and universities are looking for a vendor that is a Historically Underutilized Business (HUB) or accredited through one of many associations. These entities often require minority participation, and your company may even become a prime vendor that others will have to go through to do business with the educational end user.

We systematically called on every general contractor we could find to offer our services. But we targeted small-format signs such as ADA, regulatory, traffic, directional, cast plaques, etc. Occasionally, we were invited to bid the large-format signs like monument signs, electronic message centers, metal building letters, scoreboards, and other large-scale identification. Still, these were often in a separate bid or were "by allowance." This allowance is a monetary value associated with a dollar figure but not yet designed or known. I like those the best; you often win those by default if awarded other bids in the project, but the value might skyrocket once the sign is designed and a price submitted. But not always.



Image courtesy Direct Color Systems



Image courtesy Vision Engraving

In 2022, Federal ADA sign requirements apply to everything from bathroom and restroom signs to accessible elevator signs and room signage.

SMALL-FORMAT SIGNS

Small-format signs can fall into many categories, such as point of sale (POS) and point of purchase (POP). They can also run the gamut of countertop displays, laser acrylic letters, LED window signs, edge-lit acrylic graphics, decals, and perforated vinyl and static cling film. But our bread and butter during those years were Grade II Braille ADA signs, hanging and wall-mounted directional acrylic panels, cast plaques, and metal letters with turnkey installation.

ADA signs can be complex and include thermoformed, cold-pressed, blasted, engraved, photopolymer, and others. They can be made of acrylic, designer hardwoods, laminate, melamine, fiberglass, and metal. I invite you to seek out and partner with a leader in the wholesale ADA signage industry and learn everything you can. It saved our company.

We got good at it. We got so good; our company began to be specified by some architects for the products we provided for ADA signs. We outsourced, and we fabricated our own signs. Luckily, we found some amazing general contractors that did not nickel and dime us at each step. We also discovered some other general contractors that we would have preferred to remain on the Titanic to balance her trip to the bottom.



Image courtesy Howard Industries



Image courtesy Rowmark



Image courtesy Roland DGA

One of the many ways to create attractive interior signs is by using a CNC router. (Image courtesy Gravotech)



DIVISION 10

The Construction Specifications Institute (CSI) has a master format that is widely used as a list of divisions with section numbers and titles within each division for organizing the information and specifications for a facility's construction. This standardization improves communication among all parties involved in the construction process. For our world, we are generally in Division 10 – Specialties. Yes, we're packed into the same group as toilet partitions and grab bars. God does have a sense of humor.

In Division 10 – 1310, there are electronic architectural directories which can be quite expensive, including touchscreen types which are becoming more popular in universities for planning meeting room reservations and events. In Division 10 – 1400, architectural signs have housed our best opportunities with plaques, ADA signs, and interior signage. This area of focus for our company helped us go from five to 60 school projects per year for the next five years.

Our sales, estimating, and project management teams learned to read architectural drawings, floor and site plans, isometrics, cross-sections, landscape plans, finish details and schematics, and elevations. We did takeoffs and even found great wholesale partners that did the take-off work for us, which allowed us to allocate our resources to more bids. A synergy developed, and we started winning more and more projects. When you win 60 school projects per year, you can add \$1.5 million or more to your annual sales. That can change your trajectory in a good way fast.

GENERAL CONTRACTORS

A great benefit of most bid jobs with general contractors and school projects is that you can usually see the bid tab, the list of bidders, and their dollar submissions. A terrible benefit of a bid tab is you might find out you lost a \$26,779 project by \$34.00 with a general contractor (GC) you've worked with 12 times. You freak out and call them since you are now on a first-name basis, or you should since



Image courtesy Ark Ramos



Image courtesy Rowmark

they've spent \$349,812 with you to date. Sadly, they tell you, "Anoint, Texas ISD must take the lowest bid. And one company came in under you by \$34.00." You ask about the competitor (Nitwit Sign and Banner on the bid tab) and the GC's experience with that firm. "I've never used them or even heard of them," they say. As you get up off the floor and shriek with the phone muted, you compose yourself and, in a high voice, say, "Too bad. That's a bummer. If you get in a bind, let me know if I can help." They tell you, "I didn't really want to give it to someone I don't have a track record with." You hang up, kick your car tire or trash can, consider several adult beverages for your supper, and move on.

Can this really happen, you wonder? Yes, it did, except I changed the names to protect the parties involved. Conversely, several months after losing a large bid project we wanted to win, a GC called to award the project to us after a low bidder could not perform halfway through the project. We got to charge more than our bid in the original submission. It was a sweet victory.

You will win some, and you will lose some. Sometimes "rejection is protection," as my wise wife Nita would say. She still says that. She is right so often it is obnoxious. But I was lucky to have her as my sign partner and majority company owner. Her innate abilities at operations and financial control saved us many times. I still get to work with her every day. I hope you have a Nita in your life.

THE FUTURE

During my career, I've sold sophisticated touchscreen interior wayfinding signs that use proprietary software, high-end architectural ADA room signs that cost \$485 each, LCD interior signs for room planning and wayfinding, and everything in between. Where are small-format signs going? What does the future look like?

In 2022, Federal ADA sign requirements apply to everything from bathroom and restroom signs to accessible elevator signs and room signage. We seem to be heading to more regulations rather than less. Expect more gender-neutral restroom signs and pictograms. Wayfinding will become more critical because people have less time and want plain navigation solutions.

Digital content should continue to take a larger role in

small-format signs. Think Blade Runner and dramatic small signs with versatile changing content that becomes tailored to the viewer, as well as the massive super graphics to fortify a company's brand by taking up your visual horizon. It looks like we'll have more touchscreens in the near future, followed by signs that use the same geo-fencing technology of your cell phone. That small wall sign will recognize you and all your buying habits stored in the cloud by you simply standing before it. Creepy but interesting.

There is also 3D interactive mapping that can project signage on a wall or hologram that could provide navigation routes, digital content, tutorials, advertising, etc. A lot of bang for the buck. Then there is XR (extended reality) and other technologies like AR (augmented reality) and VR (virtual reality). These processes gamify user experience and allow the transfer of all navigation signs into virtual space. One sign can include customer loyalty programs and an improved customer experience by walking into an area where these are located.

If we take this deeper into the future, small-format signs (or any sign for that matter) may become a thing of the past as new technologies and design change our perception of what signage is or does. But I think not; signs are rooted in a fundamental human need for stability and normalcy. We need signs. We have songs about signs. They are everywhere. I think signs are part of our DNA. Consider the oldest cave painting known in Spain, a red hand stencil dated over 64,000 years ago. Maybe the first sign ever.

I've been told I'm a visionary, but deep down, I'm old school. But I do like this quote by Laura Lynne Jackson: "A sign is a message sent to you by the universe." **GP**

Paul Ingle started selling signs in 1985 and has worked with regional, national, and international accounts with custom, architectural, and production manufacturing firms. He has held various positions in sales, sales management, and marketing since 1973. From 2006 to 2017, he and his wife Nita owned Design Center Signs in Tyler, Texas (A Comet Signs Company.) DCS provided a diverse offering of branding solutions. Paul is a past president of the Texas Sign Association and its regional chapter the Greater DFW Sign Association. Contact him at paul.ingle@cometsigns.com.



RACEWAYS AND WIREWAYS

WHEN TO USE EACH, AND THE REASONS FOR THE DIFFERENCE

Yes, raceways and wireways are a moving target of “Always, sometimes and never-ever,” rules that have been either re-invented to satisfy some internal production process or were re-re-modified to fit the way it’s used at a high-volume sign shop. Over the years I’ve watched various companies create inventive reasons as to why they consider a wireway a raceway and vice versa.

But, the reality is (and make sure you are sitting down for this) it doesn’t really matter what someone calls it, as long as you and they understand the purpose of whichever is being used and to know for sure that it is the best option to implement.

Let’s take a quick look at the original intent and spirit of the wireway and raceway as it’s been most typically used by sign shops and fabricators over the years.

But first...

Let me qualify this by saying that for this article, I am referencing the design, fab and install of outdoor channel letters. They are subject to a host of challenges that affect every aspect of the letter in ways that prevent the use of many processes and materials that can be used in a controlled environment.

The raceway is simply a long square-shaped box that’s typically about 7 1/4” tall and 7 1/4” wide and comes in 10-foot lengths. The removable top cover is included as part of the extruded raceway. These offer a structurally strong and easy to work with method of providing a place for the channel letters’ guts. It is typically painted to visually blend in with the wall color, sheen and texture. You simply cut it to size, cap the ends and “ta-da,” there you go. Mount your letters to it.

I want you to think of that raceway as a box of Velveeta. We are most likely all familiar with it and have seen it in the stores. (I included a photo just in case you needed some clarification).

But, that restrictive squared-up raceway shape is limiting at best and doesn’t do much for the creative visual designer who sees more opportunity to make this letter set something really memorable -- to use creative design to reach out and speak to the store’s customer in a memorable way.

THE WIREWAY

If a raceway offers the same function as a box of Velveeta, then the wireway is that big tall can of Cheez Whiz that lets you be really creative with fancy designs on crackers and hors d’oeuvres.

The wireway is the raceway’s crazy, free-spirited, sometimes non-conforming but always creative “bad girl second-cousin” of the Velveeta cheese box shaped sign wiring enclosure family. Phew, that was a mouthful (a stupid pun for sure, but hey...)

So here is the easy-peasy way to remember which one is used for your channel letter project:

VELVEETA BOX = RACEWAY

If the channel letters cannot be mounted directly to the wall as flush mounted, and if budget and efficient installation



are a factor, the raceway is the least expensive, easiest way to provide a place to hide all the guts and wiring for the channel letter set. This is the basic rectangular raceway, like a block of Velveeta! The channel letters are mounted to it, and the raceway is then mounted to the wall.

CHEEZ WHIZ = WIREWAY



If you have to design a custom place to hide all the wiring components, even if it’s just a small housing used to hide the wires, it’s considered a wireway.

When the budget allows for a creative solution, wires and components are hidden within a visually complementary structural element of the channel letter set. By designing an exaggerated or expansive structural element that makes the entire channel letter set look more like a dimensional “sign” rather than just a set of letters all in a row.

I created a basic graphic exercise that explains how a raceway can be replaced with a creative wireway. It can be designed to accomplish the same function as the cheese box-looking raceway, only with more creativity and visual interest.

Now that we have a good idea on the differences between Velveeta and Cheez Whiz, not it’s time to better understand why they are welcomed by the installers of this project.

First, let’s consider the “oh, that makes sense” mechanical logistics of channel letter installation. Here are a few key points that must always be remembered:

Every channel letter with LEDs (or other illumination) will have wires protruding out the back of the letter, and they



Photo 1: A typical example of a logo after being redrawn as a set of channel letters on a raceway. The cat head is the icon of their logo. (The raceway is pink in this example for clarity of detail only) The basic raceway option involves an enclosed box that can be fabricated or an extruded raceway, with a water-tight lid or a hinged face -- or it can be stick-built with an internal framework for larger, heavier letter sets. It's typically used when the letter set is simple, budgets are low and the client or landlord want's simplistic consistency with all of the tenant's channel letter signs.



But, the landlord doesn't want a boring "Velveeta cheese box" mounting plan for his tenants signs, they are very much interested in tenants having signs with creative wireways that utilize a unique graphic shape of something related to the business. In this case, the cat was the perfect graphic icon to expand upon.

I have created a basic, simple 3D image to help you visualize what the cat wireway might look like. FYI... I used the CorelDRAW Block Shadow and Perspective tools to quickly render this in 3D. The Channel letters are mounted flush to the face of the cat wireway. They are what I call a "channel uni-letter" which means that the letters are joined, so it's a large-shaped channel letter that results in fabricating two channel letters for attachment.

need to be connected to either the next channel letter in line, or the power supply, etc. (**Photo 1**)

Every channel letter requires at least four anchor points on the back of the letter to secure it to the wall, plus one more "through-hole" that goes all the way through the wall to the power source located on the other side of the wall. Most landlords agree that flush mounted channel letters create unsightly "bullet-hole" problems if the tenant decides to move out.

A raceway provides a less-damaging way to install channel letters. Letters are attached with the same 4-point attachment, plus a pass-thru hole. Using a raceway also provides an added benefit that saves installers a lot of time and headache. By allowing the fabricators to "mount" the channel



So this is what you get when you apply fat outlines around the letters, before you separate them as individual letter channels. Nothing wrong at all with building letters like this, as one unified joined letter, in fact it saves time and materials in most cases. How long does it take to build the letters one at a time, verses building two of these?

All the guts are hidden inside



Think about the fact that everything is contained within the wireway shaped like a cat. Could this sign be fabricated with a grounded three-prong (UL rated) plug and a long cord? How much can be saved with the installation of a GFI outlet on the wall behind where the sign will be hung vs what an electrician will need to do for a traditional electrical Hookup with a J-box?

A Section View illustrates it best



This gives us a view of one of the halves, showing what is inside the wireway and channel letters. And you are correct if you are noticing that some components are not truly shown as cut in half, and by sign designers in the sign industry, it is done that way purely for clarity of understanding. I will address "section views for sign designers" in a future article.

The wireway is the raceway's crazy, free-spirited, sometimes non-conforming but always creative "bad girl second-cousin" of the Velveeta cheese box shaped sign wiring enclosure family.

letters in the shop, it cuts the install time down to a fraction of what it was. In addition, the raceway, with the letters attached, only requires four to eight anchors, plus one electrical pass-thru, which is much less damaging to the landlord's sign band than with flush mounted letters.

The holes visible are from previous tenants. Even the paint on the wall shows the ghost of the previous letters that were mounted there.

Now, I hope you are able to visualize the Velveeta and the Cheez Wiz applications for channel letters. Now we must look at the installation site, and the challenges that are present which will help us determine which cheese product to put on our cracker.

WALL CONSTRUCTION BASICS

Understanding the materials used in the wall construction where the sign is to be installed is a nice added skill set that requires a bit of time and dedication, even specialized training to really understand the various wall constructions out there.

I like to leave that expertise to the individuals installing the sign. They typically know which anchors are needed for a variety of wall types.

However, in our world of sales and design, the most important key point to know is "What is directly behind the area where the channel letters are being installed?"

This info will immediately tell you if a remote wired or self-contained option is the best for this installation.

I just introduced to you two new terms that are directly related to raceways and wireways, and those are:

Remote Wired: When channel letters are flush mounted to a wall, their electrical components are located behind the wall,



housed within a J-box, a raceway, or other UL/NEC600 approved enclosure, with on/off switches and disconnects for safe servicing of the sign. Yes, behind the wall, so really, all of the channel letters components must still be housed inside of an enclosure, so a raceway is used behind the wall for this purpose. You would never build a wireway behind the wall for this purpose as it's not appropriate, and nobody would benefit from it as it would be hidden behind a wall.

The Velveeta cheese box is the perfect solution for remote wired, flush mounted channel letter sets. In fact, you could say that every channel letter set gets at least a Velveeta box somewhere... either the letters are attached, or it's located behind the wall (remote wired).

Self Contained: Throw this term out there and electricians like to scratch their heads as they assume you are clueless as to what this means. Whenever channel letters cannot be flush mounted due to wall obstructions, or an office area behind the wall, the channel letter sign must contain all of the wiring components it needs to operate, requiring only one single pass-thru for power, and minimal anchors to hold the sign on the wall.

If it's got all that it needs to light up, and it's properly grounded and shielded, then in all practical terms, you could put a 3-prong cord on it rather than wiring it to a J-box. This makes the sign almost portable, and allows the electrician to install a water-tight GFI enclosure for the electrical hookup directly behind where the sign is mounted. This eliminates one more unsightly pass-thru hole if the tenant decides to leave. It also allows the client to have the sign removed and reinstalled easily at their new location, without too many concerns about the wall construction at the new place.

I hope this helps you visualize the differences between raceways and wireways. Some fabricators create their own terminology,

Charbo Notes

The following is to be sung to the tune of "My Favorite Things"

**"Raceways and wireways, there's quite a selection
providing us places to hide wire connections
Pre-fab or stick-built with built-in lift rings,
These make your install a wonderful thing"**

and assign certain parameters to each of these terms. Don't let that worry you a bit, simply find out what terms they are using for this, and adopt that for them accordingly, but never forget the basics of when and why each of these two methods are used. Good luck, feel free to send me your photos of really unique wireway designs you have worked on. I'd love to see them! **GP**

Matt Charboneau started his career in the sign industry in 1985 as Charboneau Signs, later changing it to Storm Mountain Signs. In 2017, he published the Pre-Sale Sign Survey Field Guide, and provides sign design training at his site: [Learn Sign Design.com](http://LearnSignDesign.com). Contact him at Matt@stormmountainsigns.com; www.learnsigndesign.com; and 970-481-4151.

NOT ALL

Paint Protection Film

IS CREATED EQUAL



BY JASON SCHANER

The global paint protection film (PPF) market has doubled in just the last five years, with installations soaring both domestically and globally. Formerly a niche application for luxury car owners and enthusiasts, PPF now is a billion-dollar industry enjoying more widespread acceptance among new car owners.

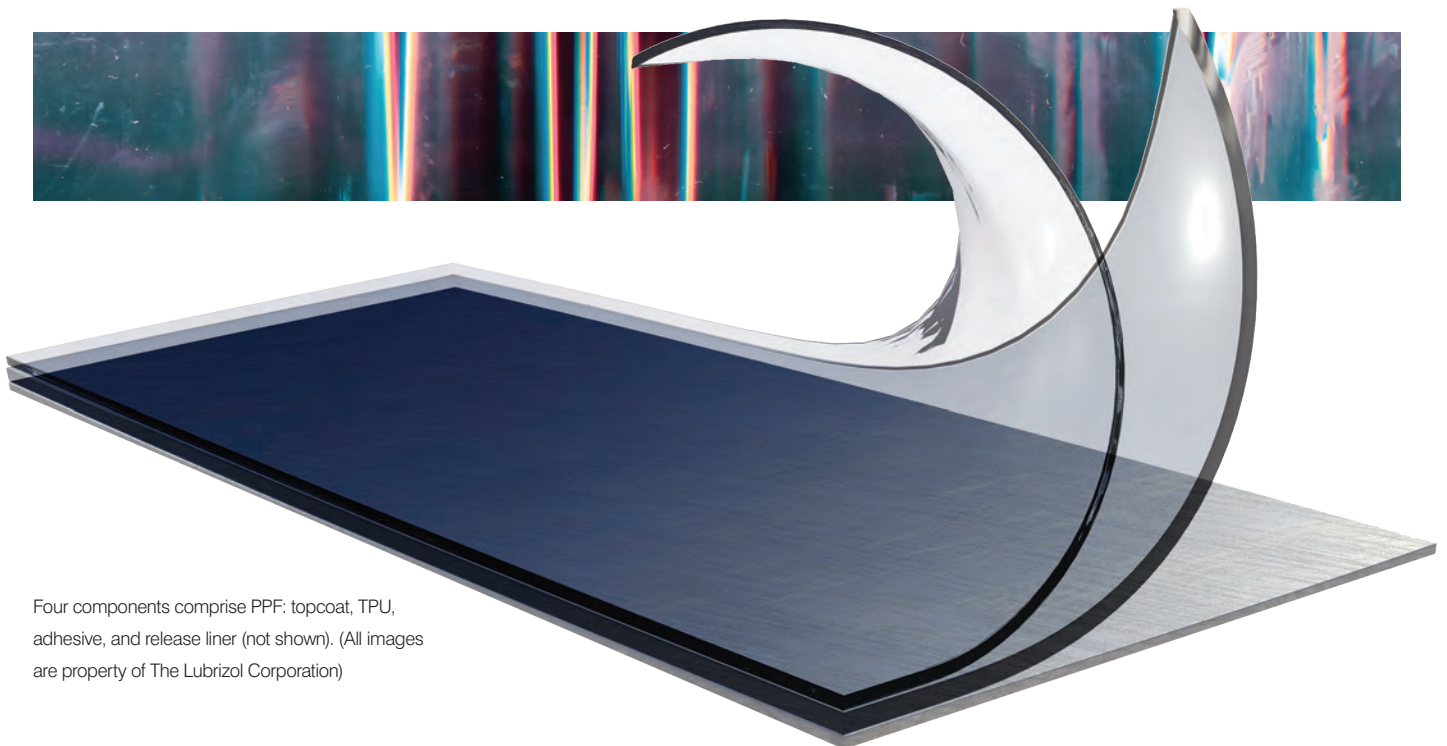
The case for mainstream adoption is compelling with the average new car price higher than ever – \$48,000 overall and \$44,000 for non-luxury models¹. And people are driving those cars longer – an average of 8.4 years for all vehicles and anywhere from 9.7 to 11.4 years for the top 10 new car models². Premium PPF keeps the car's paint looking showroom-new over that time and increases the

vehicle's value when it's sold or traded in. There are many variables in used car pricing, but a rough estimate from Kelley Blue Book suggests the difference between a 2015 Honda Accord sedan in good condition and one in excellent condition is more than \$1,700 – an increase of 14% and enough to cover the cost of a typical PPF installation.

Of course, over the life of the vehicle, PPF also prevents chips and scratches and eliminates the need for certain repairs. Minor repairs may cost just a few hundred dollars, but showroom-quality paint jobs can run anywhere from \$2,500 to \$20,000. That could be a preventable expense with the installation of a premium PPF at purchase.

1 - <https://gpro.link/newvehicleprice>

2 - <https://www.iseecars.com/how-long-people-keep-cars-study>



Four components comprise PPF: topcoat, TPU, adhesive, and release liner (not shown). (All images are property of The Lubrizol Corporation)

“Instead of seeing rock chips, scratches, and degradation over time, they get peace of mind by fossilizing the paint job in perfect condition,” says John Lilley, owner of South Jersey Automotive Coatings in Paulsboro, New Jersey. “We’re seeing large, exponential growth in PPF sales. It’s huge.”

THE DIFFERENCE IN PPF

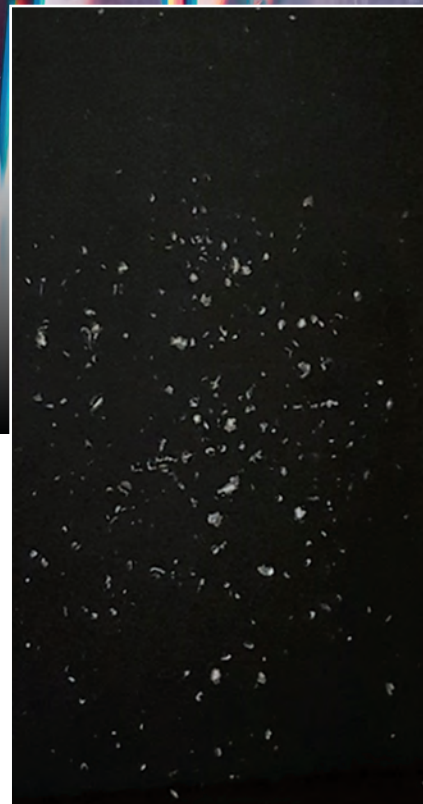
There are many PPF products on the market, but the quality of those products can vary significantly. Premium PPF can be stretched without permanently compromising the integrity of the film, is more malleable to enable faster, cleaner installation, lasts longer – 10 years or more in most cases – and maintains pristine optical clarity even in extreme climates. Non-premium PPF makes for tougher installations, can tear and sag when stretched, and may have a tendency to yellow as it ages – a process accelerated by exposure to the sun’s UV rays. Non-premium products often need to be removed or replaced by the vehicle’s initial owner.

To understand the differences in PPF – and more to the point, the differences in how various products perform – we need to understand how it’s made. There are four components, which together are roughly 10mm thick (0.25mm):

1) The surface layer consists of a thin coating, usually acrylic or urethane-based and is designed to provide stain resistance or self-healing properties.

2) The next layer is considered the core, and is made of thermoplastic polyurethane (TPU). This TPU influences how stretchable, long-lasting, and durable the PPF is.

3) Below the TPU is a thin adhesive layer, most commonly acrylic-based, designed to bond the TPU layer to the surface of the vehicle.



While chip protection has been the primary reason for using PPF, advancing technology has changed the PPF value proposition to include scratch resistance, self-healing, and stain resistance.



A comparison stretch test illustrates the difference between premium and non-premium TPU. PPF Made with ESTANE TPU withstands the puncture attempt.



The ability of the PPF to stretch is critical to installers to accommodate the most complex and intricate vehicle geometries. In a comparison stretch test, non-premium PPF required extra force and the application of heat to stretch, while premium did not.

The differences between premium PPF and non-premium alternatives can be stark, and no one understands this more than the installer.



ESTANE TPU undergoes rapid testing before going to film processors, including prototyping with Lubrizol's extrusion pilot line.

4) A liner film made of polyester protects the adhesive and is peeled off just before installation.

The key differentiator in PPF products and performance is the TPU, and the characteristics and overall quality of the TPU depend on the raw materials used and their formulation. That chemistry can be changed and tailored to meet specific needs – to enable consistent stretch-and-return properties, protect against weathering and yellowing, or even to enhance the look of the film with different colors or finishes. Compromises in TPU quality can result in yellowing, peeling, or cracking. Simply put, with a lesser ingredient, PPF performance suffers.

HOW YOU CAN TELL THE DIFFERENCE

The differences between premium PPF and non-premium alternatives can be stark, and no one understands this more than the installer. Any installer who has been working with PPF long enough has experience with non-premium products. These films are far less conformable and much more difficult to install. They lack the necessary stretching properties, either stretching without returning to their natural shape or, even worse, tearing or puncturing when stretched as needed during a routine installation. Removal can be difficult as well, leaving residue behind or even peeling the paint as the PPF is pulled away.

Making matters worse for the installers, these non-premium brands typically suffer from inconsistent performance, making it impossible to adjust to the PPF over time. The same brand that stretched around a mirror casing one time may tear the next. The learning curve with these products is a circle.

Even if installers can manage to apply a non-premium PPF properly, the performance of the film is likely to lag expectations. These products tend to degrade and lose optical clarity, peel around the edges, and become brittle and crack after exposure to the elements. This will manifest in the form of dissatisfied customers who inevitably become former customers.



End users and installers are increasingly recognizing premium PPF performance attributes, such as premium aesthetics, durability and conformability.

HOW WE TELL THE DIFFERENCE

Premium PPF betters those non-premium alternatives across the board thanks to the use of higher-quality raw materials, the application of advanced materials science, and accelerated qualification testing that correlates to real-world conditions. That testing ensures the product that reaches the PPF brand owner and, eventually, the installer meets installation and performance expectations.

Traditional testing for PPF performance is difficult, time-consuming, and expensive. Weathering and UV tests, for example, were commonly done by subjecting film to long-term exposure to the elements. The time and expense involved in long-term testing discourages innovation and pushes brand owners to stick with the known ingredients. Qualification tests that take months or even years have no utility in a market moving as quickly as today's PPF market.

Accelerated testing equipment and methods can shrink timelines from years to days and enhance data collection and analysis, allowing for more aggressive research and development and streamlined innovation in material formulation. Using an EYE Super UV Tester, for example, can compress years of damaging UV radiation effects into just days or weeks of testing time. Then, materials scientists with expertise in correlative studies of the behavior of polymers and performance additives can work with product developers to quickly validate results with high relative predictability to real-world outdoor exposure.

Lubrizol invested in these resources to enable and encourage a broader approach to PPF development that can transform product development to stay ahead of the red-hot market. Along with accelerated testing capabilities, Lubrizol added a new pilot film

line and a PPF installation simulator just in the past year. The pilot film line allows in-house engineers and clients to examine new formulations for consistency in the extrusion process and refine those formulations as needed. And the PPF installation simulator does just what the name suggests – it gives installers a chance to apply PPF in a controlled setting to evaluate the installability of the product. That tactile feedback is invaluable in regards to developing TPU that meets the installers' needs.

WHAT'S NEXT

TPU chemistries will continue to evolve to meet the needs of today's PPF market. The continued optimization of surface capabilities is always the focus, with improvements in stain-resistance and self-healing properties among the most significant areas of interest. Interest in full-body coverage also is increasing, as is the focus on optimizing TPU thickness to provide the appropriate protection and ease of installation for various surfaces. And, as more of the vehicle is covered in PPF, brand owners and their customers are increasingly intrigued by creative approaches to colors and finishes to provide aesthetic enhancements.

These improvements are made possible through advanced materials science that produces state-of-the-art TPU for PPF, with a focus on meeting the needs of a demanding end-user no longer limited to luxury vehicles, and with the installer firmly in mind. **GP**

Jason Schaner is an Applications Engineer, Surface Protection, with Lubrizol Engineered Polymers.

THE INS AND OUTS OF Thread



Know how your thread affects your profit

BY KRISTINE SHREVE

Thread may be the backbone of a machine embroidery shop, but few embroidery shop owners know the ins and outs of thread. While some embroidery owners may understand thread, how it works, what matters about it, and what makes a thread good or bad, others may only be thinking about popular or trendy colors or where to find the least expensive brand.

Thread inventory may be chosen based on whatever brand of thread came in the box of supplies received when the machines were purchased. Or the purchase decision may be influenced by

whatever brand is cheapest. Sometimes the decision to buy is based on which manufacturer offers a particular color that may be otherwise hard to find. For some embroiderers, brand loyalty is paramount, and all their thread inventory will come from one manufacturer. For others, they may use thread from two or three or more manufacturers, generally because of the durability of the thread or the availability of a certain color that is a favorite of a large client.





Image courtesy Madeira USA



A consistent thread will also sew out correctly, time after time. (Image courtesy GPX)

CONSISTENCY

Regardless of what factors influence a purchase decision, one thing that should always be considered is the consistency of the brand of thread being considered. Consistency, when it comes to thread, means that the thread retains the same properties over time. Dye recipes are followed precisely, so the hues of the thread don't vary from lot to lot. The tensile strength and durability of the thread stays constant, so the thread sews consistently stitch-out after stitch-out. Basically, the first experience a shop has with a thread should be the same as the 51st experience they have with that thread. Consistency allows a shop to rely on the color palette they've created, and the procedures they've put in place to ensure a successful and speedy stitch-out.

Thread that is manufactured in an inconsistent manner will have weak spots, and perhaps knots. It will break more easily, fray more quickly, and cause production slow-downs or stoppages. A consistent thread will also sew out correctly, time after time after time. You won't have to mess with tensions, deal with bird nesting or slow the speed of your machine. A

consistent thread will sew out at the same speed and tension every time. It won't create embroidery that is "set it and forget it," but it will create a smooth and efficient sew-out and give a predictable outcome.

COLOR

Having a consistent thread matters for several reasons. Any shop that has found the perfect color of thread for a large job, and then had the hue change in subsequent batches, knows the pain of trying to explain why all the sew-outs aren't exactly the same color. Or trying to convert colors between brands in hopes of finding a precise match.

Dye recipes need to be followed exactly to ensure that the same thread color from different dye lots is the same shade. Thread manufacturers that are sloppy about dye recipes and the dying process may produce thread that varies in hue from lot to lot. When selecting a thread to buy, it may be wise to inspect cones of the same color from different lots to make sure the color is consistent. Or compare a cone of thread to a thread card and see how closely the two match. Variations in color can cause issues with customers, production



When it comes to wasting money, inferior thread can cost a shop a lot more than it may seem at first glance.



Image courtesy Madeira USA

slow-downs and stress. Making sure candy apple red or Carolina blue are always consistently the same color before you buy can save you a lot a headaches and dissatisfied customers.

Another question concerning color is the dye practices of the manufacturer. Some thread manufacturers will re-dye thread that has been incorrectly dyed. Ideally, the manufacturer would scrap the incorrectly dyed lot, but that is expensive. So, instead, some manufacturers re-dye the thread, usually to black. That is why black thread is often a thread color that suffers more breakage or weakness. Since the black thread may have been through the dyeing process twice, it may be less durable and more brittle. Not every manufacturer follows the re-dyeing practice, but it is something to consider and ask about when selecting a thread brand to purchase.

DURABILITY

Consistency also counts when it comes to the durability of the embroidery thread used. Because durability is so important, many shops have switched from rayon, which used to be the thread of choice to polyester thread. Rayon was once popular because it had a pronounced sheen, while the original polyester thread was more matte. Since the introduction of tri-lobal polyester thread, however, that has changed, and embroiderers can get sheen and durability in one package. Polyester is also more washfast and colorfast, which makes it ideal for embroidery that will undergo washing and drying on a regular basis.

When it comes to durability, the concern is that the thread has some stretch and will stand up to the stress that running through a machine and through material places on it. Storage can have some impact on durability, as thread that is not stored properly can dry out and become brittle. Thread should be stored away from sunlight and in a room with a reasonable humidity. A room that is reasonably humid will be humid enough to keep the thread from becoming brittle, but not so humid that the thread becomes sticky or moldy. To keep it from dust, thread should be stored in bins or covered in the plastic bags or sleeves in which many brands of thread are sold.

One way to test durability of thread is to do what's called a snap, pull, or tug test. Whatever the name used, the idea is to test the durability of the thread in question. To perform the test, unwind at least six inches, but no more than a foot of thread, and hold the thread firmly in both hands. Wrap the thread around your hands, like you would a tug of war rope, and pull your hands slowly apart until the thread breaks. A clean snap of the thread means the thread is in good condition and will likely sew properly. A thread that shreds or snaps unevenly or in pieces is thread that is past its prime and will likely cause issues if used. A thread with an unclear snap is thread that should be removed from inventory and no longer used. The likelihood of a decent sew out with thread of this type is small, and the possibility of frustration for the machine operator and production slowdowns is high. The snap test is a simple one but can save a lot of wasted time and effort.

THINGS TO AVOID

One way to ensure that embroidery thread stays in good condition, besides being concerned about the quality of the thread and how it's stored, is to make sure the thread gets used often. For some shop owners, the urge to own all the colors is huge. A thread card, with its vast array of color choices, can make owning every shade of pink, or 14 variations of blue almost irresistible, but wise shop owners will resist despite the urge.

The smart way to manage a thread inventory is by starting with the basic colors. Most shops will use white and black, so stock up on those. Do some research and figure out what common school and corporate colors are in your area and add those colors to your inventory. If you do work often for a particular holiday that has a precise color scheme, add those colors as well. Resist the urge to buy all the colors simply because they're available. Also resist the urge to show customers the entire color card from your thread manufacturer or manufacturers of choice. Color can be like candy, once you see the full array, you want a bit of everything. Try to avoid buying thread for a specific job, unless the job will be repeated. What you want to avoid is having a clutter of partially used cones that sit, becoming brittle and dusty, because there's no demand for that particular color on a regular basis. That's a waste of money and, eventually, product.

When it comes to wasting money, inferior thread can cost a shop a lot more than it may seem at first glance. As with most things, the cost of the item is not the only cost that's paid. When it comes to thread, a brand that is low quality can cost in terms of production time, in terms of ruined garments or missed deadlines, and in frustration and stress for the machine operator and shop owner. Make sure to always do the math when selecting a thread to purchase. One thing that shops often neglect to consider is the production value of the thread. To figure out what a shop's production value is, calculate the shop's income per hour when machines are sewing out at top speed and



Image courtesy Madeira USA

then subtract the time it takes to repair each thread break. Every second of production time lost reduces your income for that hour. A thread that is poorly made, or which breaks often, may seem cheap when it comes to dollars and cents, but could end up costing you a mint in lost time and stress and frustration. Value isn't always just about price and doing the math can help show which thread brings the most value to your shop. **GP**

Kristine Shreve is the founder and CEO of Kristine Shreve Consulting, which offers writing, marketing, and business development services. The company can be found at www.kristineshreve.com. Kristine is also the creator and host of the Business + Women podcast and is also the Director of Marketing and Outreach for Applique Getaway. Kristine was the Director of Marketing for Ensign Emblem and EnMart from 2006 to April 2020.

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APPAREL DECORATOR STRATEGIES

ADAPTING AND CHANGING WITH THE TIMES

Independent business owners need to know how to rapidly adapt, even transform their businesses in today's market. To be successful despite the ever-shifting political and economic climates, here are some growth strategies to keep in mind.

1 Leverage your suppliers. Supply chain issues have put quite a whammy on nearly every industry worldwide. Get in touch with your account representatives at your most frequently used suppliers. Ask about inventory levels. Ask about inventory that they are expecting soon. Ask about any new products that you could show to your customers. If you are unable to get enough of a specific product to complete an order, your account representative may be able to recommend a comparable product that is in stock. They are an excellent inside track on being able to find the inventory to complete your orders, especially as we head toward the end of the year.

2 Make changes visible. With all the changes because of the pandemic, including work-from-home models, supply chain issues and the mass exodus from the workforce, in order to survive, much less succeed, you may have had to adjust your entire business model. Tell your customers and

potential customers how you have adapted. Do you now offer easy online ordering for reorders? Do you know show size specifications on your website so that customers can place orders with greater confidence and know that they are ordering the correct sizes? Will you do sales presentations via Zoom if someone is unwilling or unable to meet with you in person? Will you send samples to the customer so that they can evaluate them in person before placing their order? Make these options visible and known on your website, your email signature and on your social channels. It may be the one thing that makes someone call you instead of another apparel decorator.

3 Increase your online presence. In the long-ago time of "before the pandemic," early 2020, I was firmly in the camp that an apparel decorator did not need an online shopping solution for their business. People wanted to touch, feel, see the sizes of the products before placing their orders, and that was best done in person.

Now, people are much more comfortable buying anything and everything online without experiencing it first in person, including apparel. If you do not have a website that allows customers to view products and place orders, it is likely that potential new customers will move on from your site to another one that does offer those options. There are many solutions available to you, from creating a custom website to partnering with your favorite wholesale supplier and creating a webpage using the systems and tools they offer, to going with a Shopify or Etsy seller account, or connecting with one of the industry-specific solutions that are now available for apparel decorators. If customers cannot find your business online, then you will not get any customers. This is the new normal way of buying things, and it will not revert to the way it was.

4 Reach a wider audience with partnership marketing. The first step is to have a crystal-clear idea of who your ideal customer is. You may even have several different categories of ideal customers if you work in different markets or



Image courtesy Krissi Dane



Images courtesy Susan Walters, Walters Embroidery

industries. For example, we got involved in the local building industry and became their preferred apparel decorator. That would be one category of my ideal customers – builders, contractors and skilled trades people. We also served many of the local businesses in our community and the surrounding communities.

Local business owners would be another category. The next step is to figure out what other businesses or services are or would want to do business with the people in your ideal customer categories. What companies offer products or services that compliment what you offer? Our builders and contractors needed and used a decent amount of signage, but we never evolved into sign making in our business. I partnered with a local sign company and brought them into the home builder organizations I served. In doing so, I helped my customers, and I gained access to new potential customers.

5 Work with micro-influencers.

Influencers get paid to bring your products and services to the attention of their followers. Reaching mainstream influencers is more expensive and more difficult than ever, with fewer and fewer results to show for it. Micro-influencers, on the other hand, hold quite a bit of sway

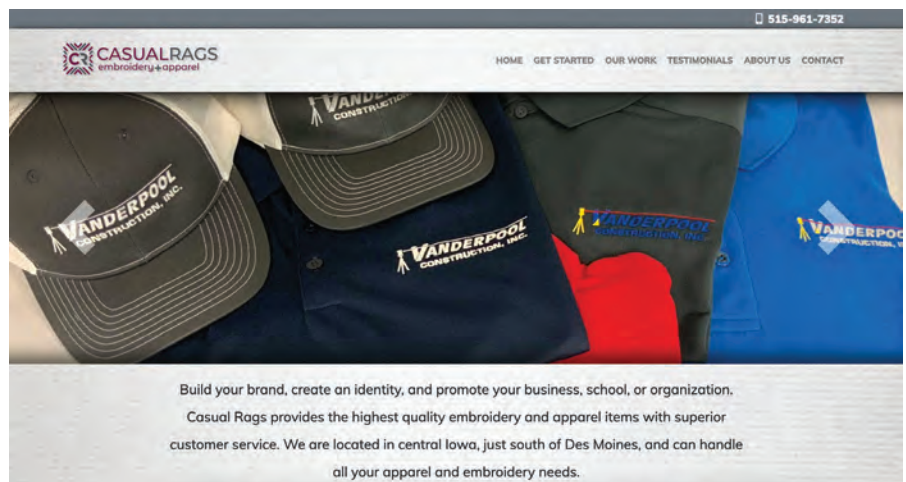


Image courtesy Stacie Baker, Casual Rags Embroidery & Apparel

and may be a perfect way for you to reach a very specific audience. Using the builder's example from above, I got involved in the leadership of the local home builders association. I served on the board of directors. I got to know all the "big" guys in the inner circle of this industry in my area. I gave them free products with the local HBA logo on it, and that often opened the door for me to then become their apparel decorator. They told all their tradespeople to call us for their shirts, hats and jackets.

No matter where you live, from a big city to a small community, there are opportunities to grow your business. Change

is hard. And things have changed in so many ways because of the pandemic. We have to keep in step with the changes or be left behind. With the right perspective, not only can your business survive, it can thrive! **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.



SHARK TALES

DROPPING JAWS WITH T-SHIRT WORK IN LONG BEACH



We were tasked with illustrating and designing for high speed DTG (Direct to Garment).
(Images courtesy Lon Winters)

In the summer of 1975 Steven Spielberg released the motion picture “Jaws.” It was the most terrifying film of its time. The plot? A summer spent on Amity Island and beach goes becoming shark bait, one by one. The movie sent chills down the spine of everyone who saw it. We learned how terrifying great white sharks could be. Folks refused to go to the beach after seeing this thriller. Since that time, our fascination with this terror of the seas has spawned countless movies. The “Jaws” franchise would go on to produce multiple films. We have all become enamored with sharks so much so that Discovery channel’s Shark Week has become an annual celebration of these predators. Filmographers seek footage from all around the globe. What is it about them that captures our curiosity? People actually pay to go down in cages to get a close and personal glimpse of these toothy ocean dwellers.

BEACH THEME PRINT JOB

We played off that theme to create a piece for a trade show in Long Beach, California. The client requested the design be a beach theme, but they weren’t specific on what that should look like other than sun and surf. There are plenty of sharks off the west coast, so why not have one laying out for a little beach time? That made perfect sense.

We were tasked with illustrating and designing for high-speed DTG (direct-to-garment). Being digital, and having no screen limitations, meant the sky was the limit in colorization. We could use hundreds of colors and expect beautiful results. Full-color tonal prints, with proper file prep and optimization, that is.

As is so often the case with us, this too began with a pencil concept. Of course,

this couldn't just be any kind of shark. It had to be a big, bad great white, beach bum enjoying sunset fishing while sipping a tropical drink. Putting it in chair was challenging since sharks rarely sit. What shark would be worth his salt without teeth? Lots of teeth! We opened those jaws nice and big for a winning smile.

The hard line work for the outline was done in Adobe Illustrator. We made subtle changes to proportions and line weights. Like an oral surgeon, we moved each individual tooth and scaled them appropriately.

The other accessories, tiki cup, beach chair, sign and surfboard were completed in the same manner. Once the outlines were made to separate elements, we colored in the detail. The pen tool allowed us to make paths for the smooth parts for superb rounding and straight aways.

Like traditional painting, we blocked in the base colors as the foundation in which to build the rest of the finer rendering. Digital art is not so different from the traditional in that it is just another medium. It's not as messy as oils, however. The base colors were now on separate layers for selection purposes and acted like masks. The painting process was then applied, changing values and color without disrupting other color blocks within a specific area.

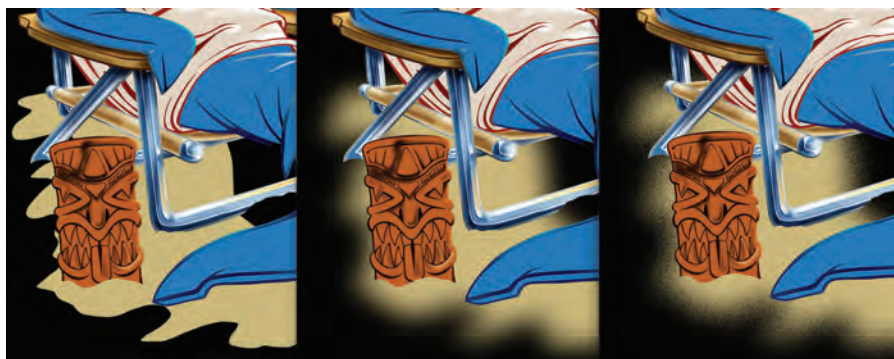
The sandy beach framed in the bottom and tiny grains disbursed as if actual sand. Under the Filter menu we used the Blur option and applied a Gaussian blur. By changing the Layer mode on the blurred sand from Normal to Dissolve. Boom! Sand.

The sunset was created through a series of photographic references. Those colors had an impact. Many of the elements came from photo references as well. A little realism was great for reference and



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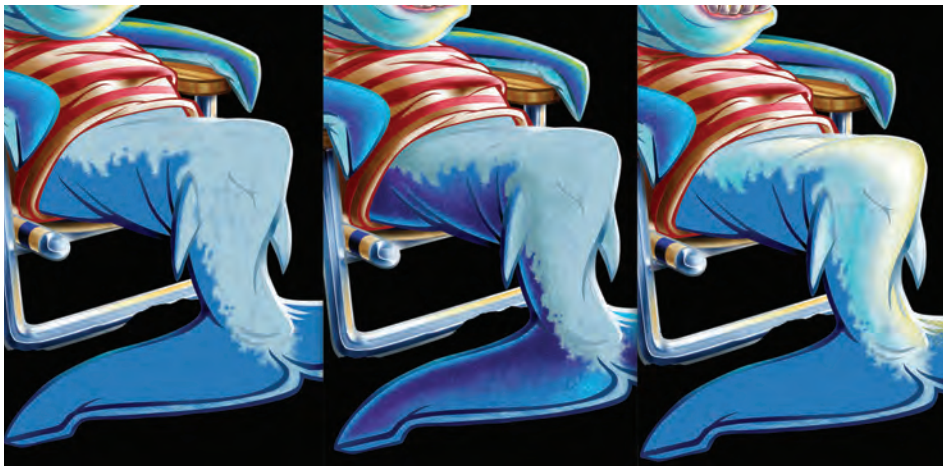


The hard-line work for the outline was done in Adobe Illustrator. We made subtle changes to proportions and line weights.

SOFTWARE TO SUBSTRATE



What shark would be worth his salt without teeth? Lots of teeth! We opened those jaws nice and big for a winning smile.



The pen tool allowed us to make paths for the smooth parts for superb rounding and straight aways.

values to manipulate in the coloring process. All the light and shadow was applied. There were 10 separate layers making up the different colors and values. Seem excessive? We controlled all those subtleties and, ultimately, editability.

To simulate the shark's skin, we used a Texture brush with a stipple pattern. As the painting proceeded with the different colors per layer, we got this nice buildup of the textures that worked effectively in the shadow recesses and highlights for the whole shark.

The sign was a smaller detail in the overall image but important. For a weathered look, using the Burn tool, we darkened it up and chipped the paint using an imported texture from an adjusted photo.

One favored element had to be the teeth. Sharks are so defined by their rows of teeth and are certainly the most menacing thing about them. The fully rendered teeth are jagged and a little crooked to emulate a ferocious mouth and, like



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SOFTWARE TO SUBSTRATE



The M&R Polaris.



In the DTG world there are no separations. Just file prep and optimization.



Lastly, we picked a brush style font and used the Skew option under the Edit menu from the Transform submenu.



Of course, in the DTG world there are no separations. Just file prep and optimization. In this case the client ran those steps and the print turned out awesome!

the sign, is an easy breakdown of layers and values. We created two separate values of shadowing. One a warm darkened bone color and an earthy purplish coloring to play off of the purple throughout the image. We added just a touch of sunny highlights.

Lastly, we picked a brush style font and used the Skew option under the Edit menu from the Transform submenu. The text had to be dynamic, too. We used Layer Effects to add dimension. The bottom is a construct of the original face of the font with a stroke added around and then made for thick border. Then we

applied the Bevel & Emboss layer effect to add highlights in orange and turquoise. The inline yellow is a flat color to give a hard edge. The wood texture was a vector object with a good contrast between the grains.

Of course, in the DTG world there are no separations. Just file prep and optimization. In this case the client ran those steps and the print turned out awesome! We did get a package in the mail shortly thereafter. Apparently, our friends thought it would be cute to play with the word “long”. Clever eh? Love it! Thanks guys. **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.



VERY SPECIAL EFFECTS

PHOTOSHOP'S DYNAMIC SPECIAL EFFECTS INTERFACE

As you probably already know, layers are essential to Photoshop's workflow. Separating visual elements so that they are accessible at any time, accelerates speed and maximizes efficiency when compiling an image. Furthermore, layers enable all sorts of editing capabilities that would otherwise be difficult or impossible to achieve.

ENTER LAYER STYLES

Layer Styles are built-in special effects that enhance layer content. Whether a realistic shadow, a glowing border, a satin surface or an artistic bevel, these types of embellishments add character and drama to your picture. Layer styles jazz up your images with eye-popping, realistic effects. In Photoshop, creating these enhancements is a simple process. Efficient and user-friendly, they streamline what would otherwise be labor-intensive filtering and channel manipulation.

LAYER SETUP

When you upload a photograph to your computer and open it in Photoshop, it appears as a background in the Layers panel – the default for all new images. The background layer is flat and doesn't support transparency nor can it be moved

higher in the stack. Backgrounds don't support layer styles either. It is therefore necessary to convert the background to a layer.

There are several ways to convert the background:

- Double click on the background and the New Layer dialog box is displayed. (Fig. 1).
- Select the Background on the Layers panel. From the Layers menu choose New > Layer from Background. (Fig. 2)
- Many of the layer styles are applied to the edges of the content therefore select the region of the image with a selection tool and choose New > Layer Via Copy or Layer via Cut from the Layer menu. (Fig. 3)

• If you're working from multiple documents, drag and drop layer content or cut and paste it to the destination document. Photoshop will automatically create a new layer.

When a layer style is applied, the entire layer is affected. There is no direct way to mask areas that you want to leave untouched, therefore it's important to isolate the desired content to a single layer. Isolating the content to a layer has many other advantages too, such as the ability to control blend modes and transparency or to be able to make changes to the layer at any time during the workflow.

CONTROL CENTER

The Layer Style dialog box (Fig. 4) is the control center where the layer styles are chosen and specified. There are several ways to open this dialog box. I prefer just double clicking the layer's thumbnail. This technique defaults to Blending Options. Click on the name of the layer style to display its control panel.

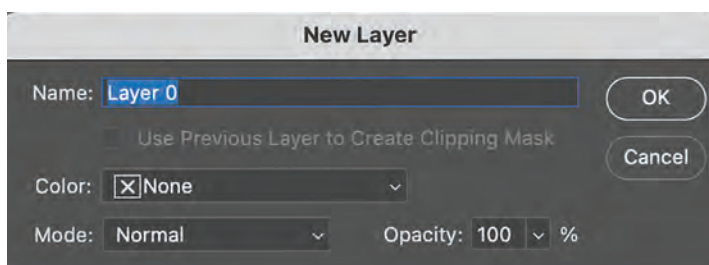


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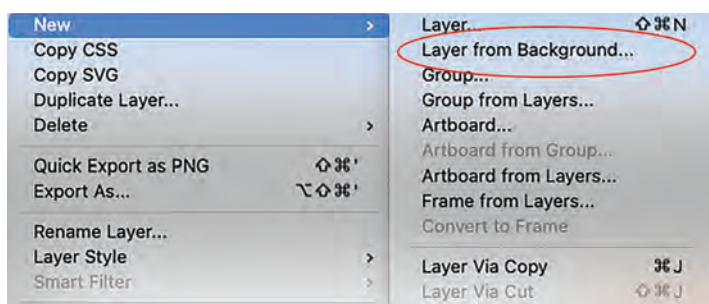


Fig. 2. Before applying a layer style, copy or cut the image to a new layer.

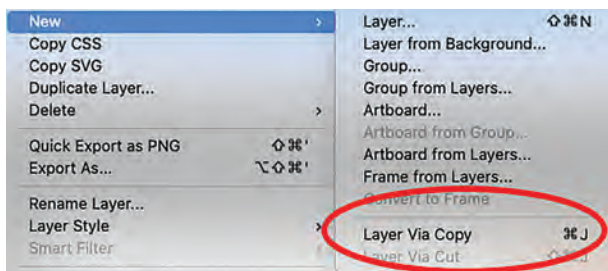


Fig. 3. Many of the layer styles are applied to the edges of the content; therefore, select the region of the image with a selection tool and choose New > Layer Via Copy or Layer via Cut from the Layer menu.

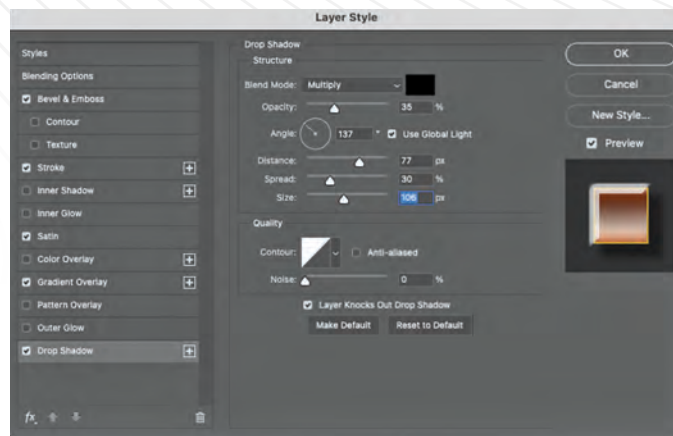


Fig. 4. The Layer Styles dialog box is the control center where the layer styles are chosen and their characteristics are specified.

Another method to open the dialog box is to choose a specific style from the list labeled *fx* at the bottom of the layers panel (**Fig. 5**). The controls of the selected style are automatically displayed.

Click the name of the style in the list on the left side of the dialog box to display the specific controls. Just clicking the checkbox applies the default style and doesn't display the controls, so be sure to click the name. Many of the controls have similarities and understanding the characteristics of one will help you understand them all. Apply the style with the Preview box checked to see the result of your efforts on the image in real time. The square swatch under the Preview check box demonstrates the effect and displays the cumulative results of combining styles.

Each layer style provides a unique and potentially complex set of options. Experimentation with the controls, with the Preview box checked and by combining styles produces the best possible results. Minor tweaks that are possible by slightly adjusting the sliders can make a huge difference.

GLOBAL LIGHT

What is the mysterious checkbox located to the right of the angle slider on several of the layer styles? It's the Global Light checkbox to be checked on the Drop Shadow, Inner Shadow, and the Bevel and Emboss styles. This feature assures that the light source will be consistent on all

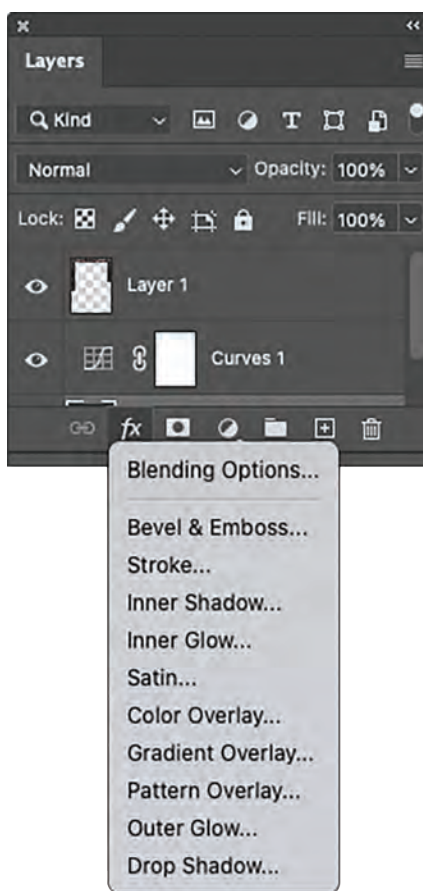


Fig. 5. Another way to open the Layer Style dialog box is to choose a specific style from the list labeled *fx* at the bottom of the layers panel.



Fig. 6. A drop shadow is a silhouette of the shape of the pixels on the layer.

layers that are checked. Any adjustments to a layer style on a single layer will affect all the layers that have the box checked.

EDGE STYLES

The styles you'll use most often affect the edges of the layer content. That's why it's crucial to surround layer content with transparency. An edge style, a glow, bevel, or stroke, affects the outermost pixels of the layer content. Color, texture, noise, contour, opacity, and blend modes can be assigned to most of these effects for further enhancement. Here are descriptions and illustrations of each effect:

- **Drop Shadow (Fig. 6):** Every object casts a shadow if placed in the path of a light source. Drop shadows are a key element in credible, realistic images with visual depth. A drop shadow is a silhouette of the shape of the pixels on the layer. The Drop Shadow control panel displays two sets of controls. Structure determines the opacity, size, softness and position of



Fig. 7. An inner shadow is cast inward from the edge toward its center.



Fig. 8. Outer Glow produces a glowing halo of light around the outermost edge of the content. The glow can be hard or soft depending on the settings you choose.



Fig. 9. An inner glow is a soft-edged, light-colored stroke that radiates inward.



Fig. 10. Stroke creates an outline of a specific color and width around the layer content.



Fig. 11. The Bevel and Emboss style applies a highlight and a shadow to the layer content to create the illusion of three-dimensional relief.



Fig. 12. To produce the effect of light and shadow bouncing off a satiny surface, Photoshop applies a soft-edged shadow across the middle of the layer's content.



Fig. 13. Adjust the color's opacity with the slider or apply a blend mode to further enhance the color.



Fig. 14. Like Color Overlay, Gradient Overlay applies a gradient to the pixels on the layer.

the shadow. Quality determines the contour of the shadow's edges and its texture. The angle wheel repositions the shadow. A shadow can also be repositioned manually by dragging the shadow in the image window to the desired position.

- **Inner Shadow (Fig. 7):** A drop shadow is cast outward, away from the layer content; conversely, an inner shadow is cast inward from the edge, toward its center. Model your image with this style or use it to create inner depth. The settings are like the Drop Shadow for controlling the structure and quality of the effect. "Choke," a term used in the printing industry to indicate an inward expansion, replaces "Spread," a term for outward expansion.

- **Outer Glow (Fig. 8):** This style produces a glowing halo of light around the outermost edge of the content. The glow can be hard or soft depending on the settings you choose.

- **Inner Glow (Fig. 9):** The best way to describe this effect is a soft-edged, light-colored stroke. Use Inner Glow to create a halo from the edge of the layer's content inward.

- **Stroke (Fig. 10):** This style creates an outline of a specific color and width around the layer content.

- **Bevel and Emboss (Fig. 11):** The Bevel and Emboss style applies a highlight and a shadow to the layer content to create the illusion of three-dimensional relief. There are five styles of embossing, each of which applies a different kind of contoured edge. The sliders on the Structure field control the size, depth, and softness of the effect. Shading options control the shadow, color and gloss of the bevel. There are checkboxes for contour and texture that display controls to further refine the appearance of the bevel with several contour options.

SURFACE STYLES

These styles affect the entire area of the layer content by applying specific fills:

- **Satin (Fig. 12):** To produce the effect of light and shadow bouncing off a satiny



Fig. 15. Pattern Overlay superimposes a selected pattern on the layer content.



Fig. 16. After you apply the effects and click OK, you'll see a style list under the layer.

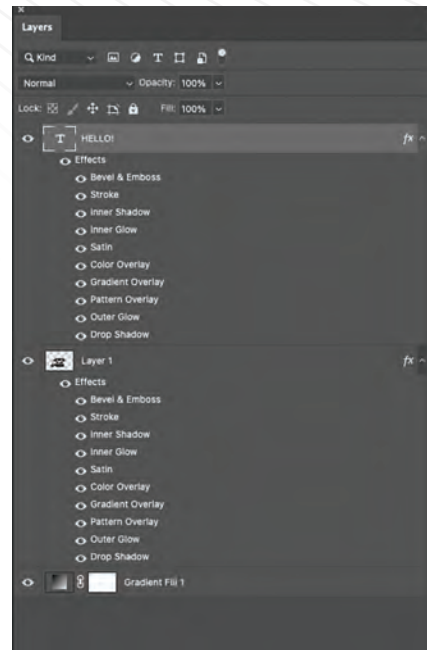


Fig. 17. Save a layer style to the Styles panel for future use.

surface, Photoshop applies a soft-edged shadow across the middle of the layer's content. The controls determine its size, position, opacity, and contour.

- **Color Overlay (Fig. 13):** This style fills the layer's content with a color that you select by clicking the swatch. Adjust the color's opacity with the slider or apply a blend mode to further enhance the color.

- **Gradient Overlay (Fig. 14):** Like Color Overlay, Gradient Overlay applies a gradient to the pixels on the layer. You can choose a gradient from the current Gradient panel or create one clicking the Gradient switch to display the Gradient Editor.

- **Pattern Overlay (Fig. 15):** Use this style to overlay a pattern on the layer content as an effect.

- **Fill Opacity:** In the layer's panel you'll notice the Fill control. This option controls the opacity of layer content independent of the layer style. If you reduce the opacity of the layer content by dragging the slider, the layer style remains opaque. You can further alter the effect by applying a blend mode to the layer style.

COMBINATIONS

Multiple layer styles when combined, add pizzazz to your image. The Layer Style dialog box is an ideal tool to design colorful signage with complex bevels and shapes. After you apply the effects and click OK, you'll see a style list under the layer in the Layers panel. (Fig. 16). To the left of the style's name is a visibility icon that turns the effect on and off. Using this feature allows you to quickly compare various combinations. If you click on any style name, the Layer styles dialog box is displayed to readjust the controls until you are completely satisfied with the effect.

SAVING LAYER STYLES

If you've applied one or more styles to a layer and you're happy with the result, you may want to save the style for future use. Click the New Style button and you'll be prompted to name the style. To apply the new style to another layer, go to Window > Styles to display the Styles menu. Click the new layer in the Layers panel to highlight it. Click the icon that represents your new style and bingo! The style is applied. (Fig. 17).

It's hard to imagine what an everyday Photoshop workflow would be like without layer styles, not to mention what our images might look like. Layer styles add dimension and sparkle to images. They instantly apply cool realistic effects that help enhance any image. Try using layer styles on text layers to pop the words off the page and into the eye of your viewer.

The beauty of Layer Styles is the tremendous potential to combine unique multiple effects and to be able to save those styles as presets for future use. Features such as Photoshop's Layer Styles encourage creativity and experimentation and challenge you to push your creative envelope to new extremes. **GP**

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

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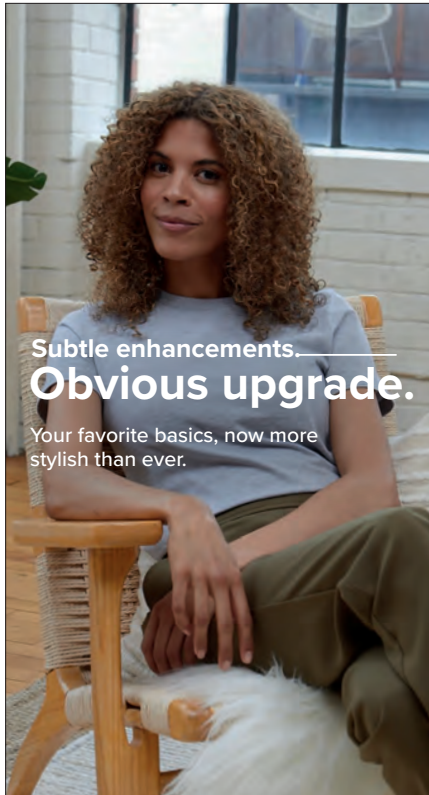
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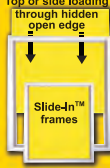
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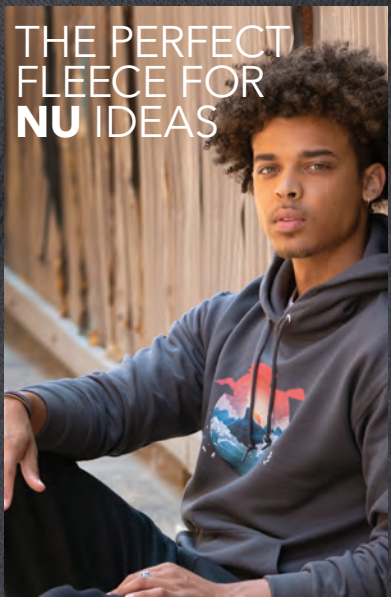
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FALL CLOTHING LINE

SanMar announces its fall 2022 new arrivals, including styles from the company's newest brand, Mercer+Mettle, which has more than 120 products for the season. There are also new expansions of the District Perfect Tri collection and the Sport Tek Drive Fleece.

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GP

LASER ENGRAVING REPORT



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LASERS Powering Ahead

2022 Laser Engraving Market Survey

With the world figuring out the way forward after the pandemic, laser engraving companies are reporting a mixed bag in terms of business in 2022. The market has undergone some major changes over the last few years, with one of the biggest pieces of the puzzle being the ever-increasing number of online retailers selling products through sites such as Etsy and eBay.

This increase of smaller shops has led to an overall reporting of less income per respondent, with just 49% of survey respondents reporting laser engraving income of greater than \$10,000 per year. Compare this to 63% from just two years ago, and we see a pretty big increase in smaller operations.

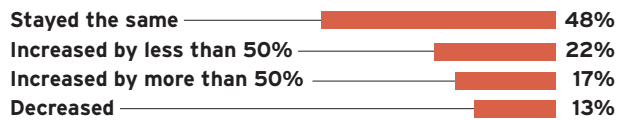
This year's survey results were also heavily influenced by the continuing supply chain problems hounding nearly every industry these days. 73% of our respondents say that supply chain issues are having some effect on their business, with 18% saying it is having a "major" effect.

This survey was conducted through electronic mail via SurveyMonkey.com and complied with all CAN-SPAM act laws and NBM's privacy policy, as found here: nbm.com/privacy-statement. Respondents were selected from the GRAPHICS PRO subscriber database and all survey recipients were provided the same version of the survey, which was distributed in January of 2022. Some survey totals equal more than 100% because readers checked all the categories that apply. **GP**

Here are some other findings from our survey:

87% of respondents reported that sales in the last 12 months have either stayed the same or increased.

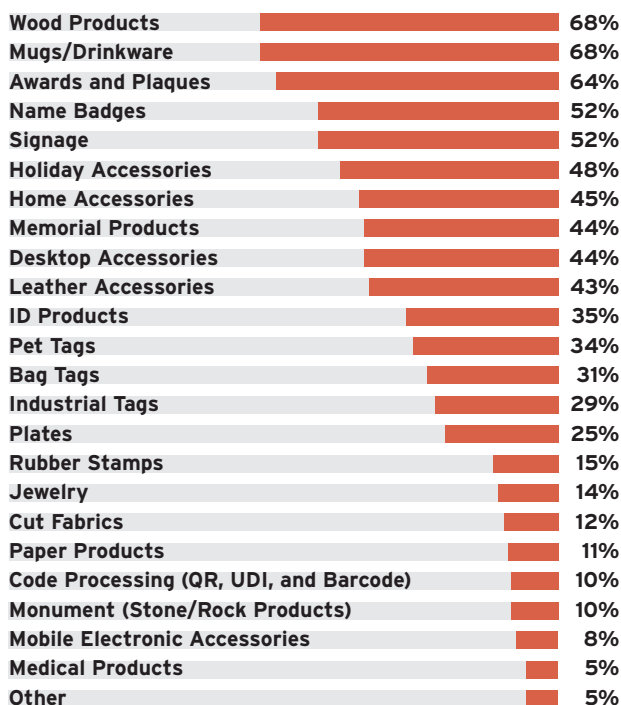
Sales in Last 12 Months for Laser Engraving:



Survey respondents indicated customer service and reliability of the laser as the top two factors when considering the purchase of a laser engraving system.

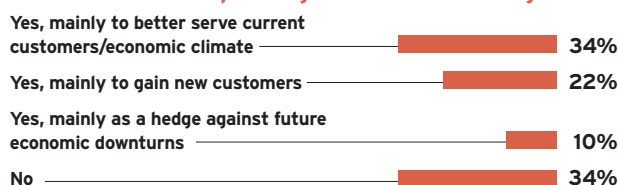
Survey respondents reported that wood products and mugs/drinkware were the top laser-engravable products sold in their shops.

Top Laser-Engravable Products Sold:



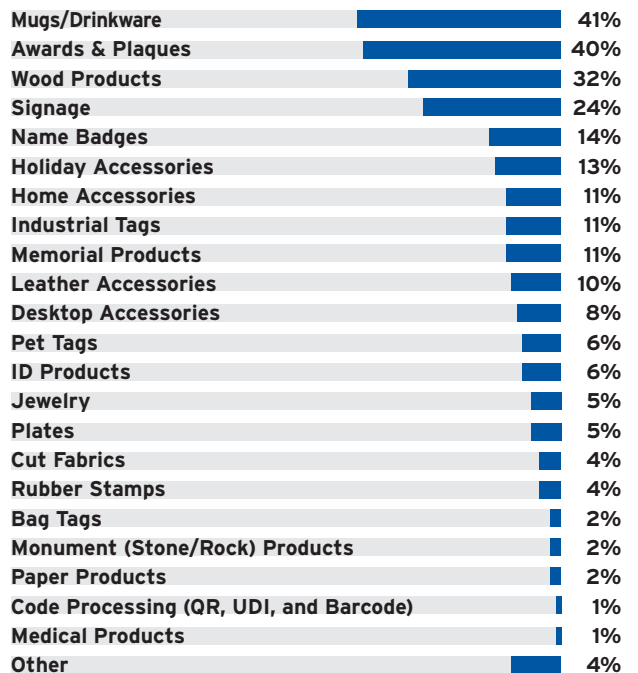
The majority of respondents (66%) indicated that their business was expanding into other technologies.

Are Businesses Expanding into New Technologies:



Survey respondents listed mugs/drinkware as the top revenue-earning products.

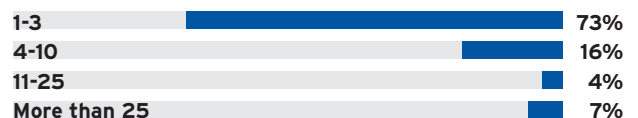
Top Laser-Engraved Products by Revenue:



Respondents feel competing with online alternatives is the greatest challenge to laser engraving businesses.

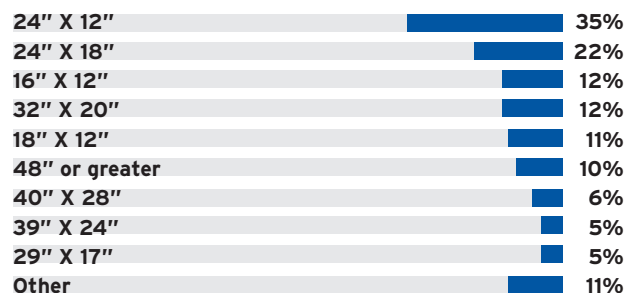
Most shops (73%) reported having 3 or fewer employees.

Current Number of Employees:



35% of survey respondents reported using a 24" X 12" table size for their laser engraving business.

Table Size for Laser Engraving:



GP

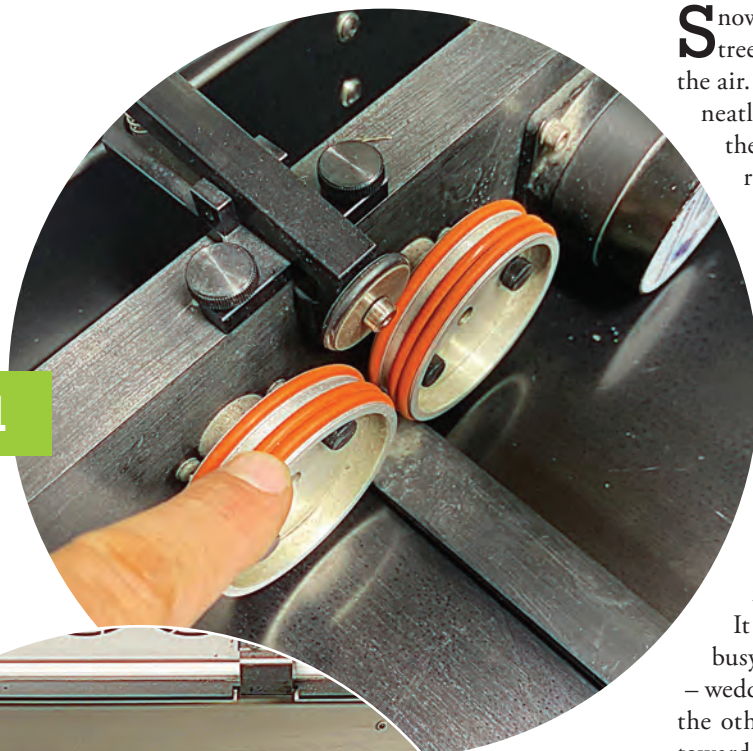
Laser Maintenance Musts

Make all the seasons, especially the holidays, a success



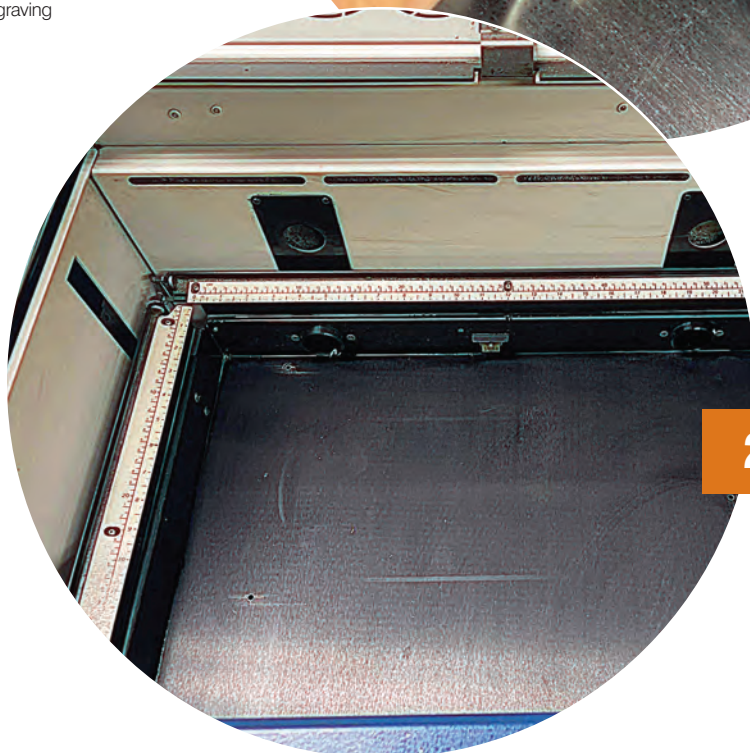
By Deanna Ramm

1



All images courtesy Deanna Ramm / Centex Laser Engraving

2



Snow is falling. The lights are on the tree. The smell of baked goods is in the air. And the presents are all wrapped neatly under the tree – it sounds like the picture-perfect Christmas scene, right? Except it's not ... at least not yet!

As I write this, it has been over 100 F, for what feels like forever in Texas. While the thoughts of Christmas and colder weather only feel like a distant memory and a fervent wish, we know that time will fly by – and the busiest of seasons will be here before we know it.

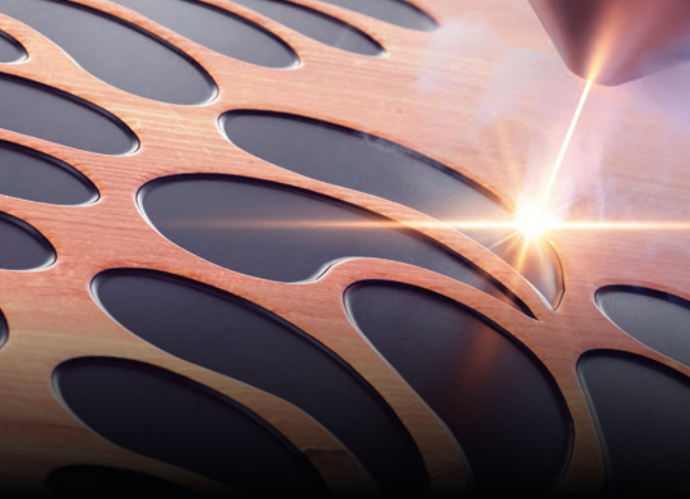
In the personalization business, it is always Christmas?! Yes and no. It may not always be the Christmas busy season, but it is always a season – weddings, back-to-school, etc. And all the other seasons are really moving us toward what is the most wonderful season of all.

No matter your stage of laser engraving ownership (crafter, entrepreneur, full-time or part-time customization, retirement, etc.), the holiday season will likely be the biggest and brightest time of your year.

MACHINE MAINTENANCE

One of the key steps to success throughout all the seasons is machine maintenance. Did I just hear a few of you groan? I know it isn't the most glamorous of topics but is certainly one of the most vital things you can do to keep things running smoothly.

In our business, we have two of the famous blue and white lasers (both are six years old) – and they can best be described as workhorses. We have engraved countless



tumblers, wood and acrylic items – and with that comes a lot of dirt and debris.

We are asked frequently why our machines have virtually no issues – and the answer is maintenance.

Our cars require oil changes, tune-ups, the occasional car wash, etc., so how would lasers be any different? Because generally, better maintained = better output.

Whether we used the lasers once that week or 500 times that week, they are cleaned every Monday – top to bottom, side to side, inside and out. No matter the laser type, the basics are the same.

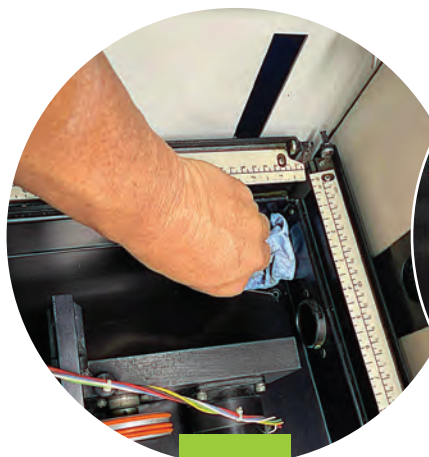
No better place to begin than at the beginning – here is what we are starting with. Yes, the laser really is that clean in the before picture (not too bad for being six years old). (Fig. 1 & 2)

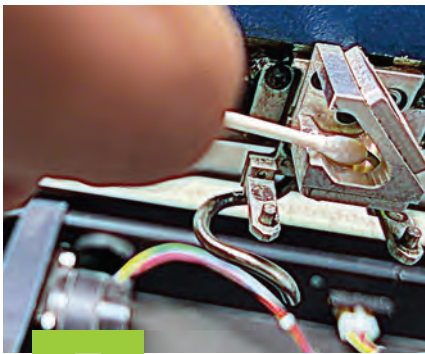
As you can see, there is a bit of dirt and debris on the bed and the wheels of the rotary. And when cleaning – do not forget the exhaust ports. They work hard for you, and the cool breeze provided by a can of compressed air makes everything alright again. (Fig. 3 & 4)

Let's not forget what we use to clean. Zep 505 is a great all-purpose cleaner. We use it to clean our tumblers and many of the other engraved items, and we use it to clean the bed and inside of the laser. Don't use this for the more sensitive areas, we'll get to that shortly.

Scrub-a-dub-dub with a little Zep and a blue shop paper towel in all the nooks and crannies, and the rubber on the wheels of the rotary. Everything sticks to them, and the smallest bits can change how a tumbler rotates – clean around and in between.

Spray the cleaner onto the paper towel. Don't spray cleaners directly inside the laser bed – they will go everywhere and again, you don't want them on any of the more sensitive parts. (Fig. 5 & 6)

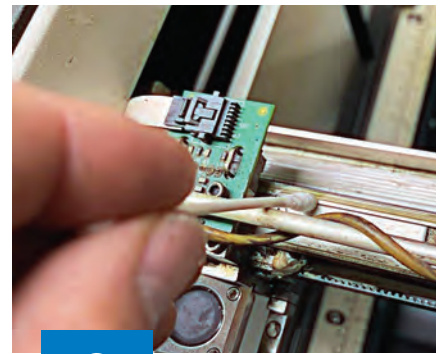




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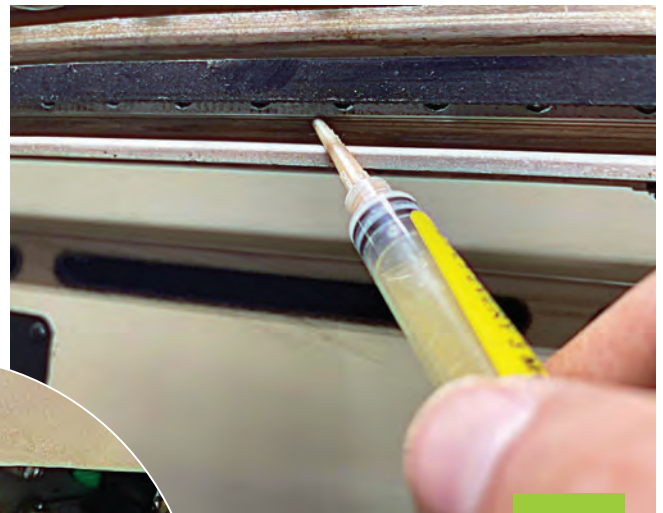
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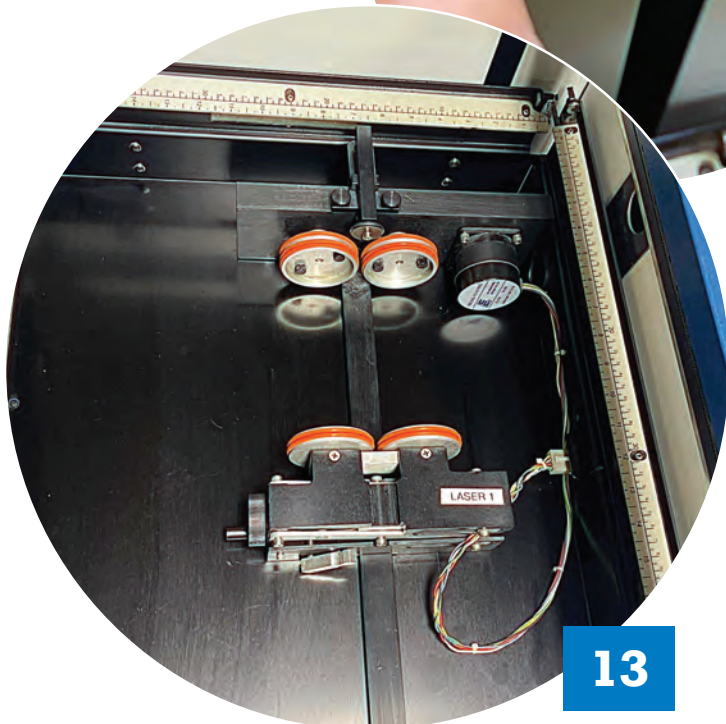
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12



13

For the more delicate areas (like the head, lenses, and encoder strip), cotton swabs and denatured alcohol are your friends. (Fig. 7, 8 & 9)

And last but certainly not least – keep all of the pieces and parts well-lubed. (Fig. 10, 11 & 12)

Sparkling and shiny – the lasers are ready for another week! (Fig. 13)

Remember, our lasers are 50-watt Helix – and the maintenance steps shown, while they are specific to our machines, can be easily adapted to any make/model of laser.

And no matter where you are on your personalization journey, keeping a consistent maintenance schedule is one of the keys to making all of the seasons a success! GP

Deanna Ramm is owner/operator of Centex Laser Engraving in Austin, Texas.

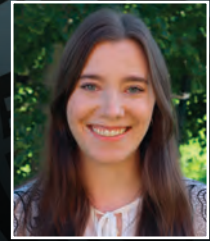
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Celtic Heritage Meets Laser Engraving



By Marie Fennema

Virginia-based Celtic Tides celebrates heritage and culture through laser engraving



John (right) and Mary Jo Morman (left), the owners of Celtic Tides. (All images courtesy Celtic Tides)



Engraving of a coat of arms.

Even before owning an engraving business, Scotland-born John Morman was no stranger to lasers. A British Royal Navy veteran, Morman worked as a mechanical engineer for 34 years where he gained extensive knowledge of industrial lasers within the fabrication industry. With this knowledge in mind, in 2003, Morman's brother-in-law Mike Esler approached him about his recommendations for sandcarving equipment.

Esler, owner of Irish Eyes, a Fredericksburg, Virginia-based embroidery shop, was looking to expand at the time and wanted Morman's opinion. As Mike rented within a historic building with limits to the physical changes that could be made, Morman instead recommended going the laser engraving route. From there, Morman began researching the early 2000s laser engraving market for appropriate equipment for his brother-in-law. After six months of research, he gave Esler his recommendation — who then decided to reinvest within his existing embroidery business.

"Of course, by that time, I had caught the bug," says Morman. After all that research, John and his wife, Mary Jo Morman, took the plunge and bought themselves a 30-watt Universal Laser engraving machine.

GETTING STARTED

Living in San Diego, California, at the time, John set up shop in their garage and began work for their first retail customer, Irish Eyes. Once that was established, they began searching for more clientele.

"We knew there was a Celtic store on Coronado Island, and we knew the people really well — we had been customers of theirs for years," explains John. "So, I did some work with their surname." He then engraved the owner's clan crest and coat of arms on glassware and plaques, as well as laser marking on stainless steel and pewter pieces.

He continues, "And I took it over to them and said, 'Here's what we're doing. If you'd like us to do some stuff like this, you're welcome to, and you have these as display pieces. If you're not interested, it didn't cost me very much, and you've got a Christmas present.'"

From there, the owners of the Celtic shop agreed to work with them. In addition, the shop also did many Celtic festivals/



A laser engraved guitar back, featuring Celtic imagery.



Engraving of a clan crest.



Celtic history provides a lot of opportunities for product personalization.

highland games and asked John and Mary Jo to travel with them to promote the engraved products. “And we trundled along quite happily like that for the better part of two years,” John says.

During that time, John and Mary Jo also conducted self-promotion by visiting different Celtic stores in the area as well as by looking at Celtic-specific publications and mailing fliers. They also attended a major Celtic buying show where they picked up more clients.

RELOCATION AND STARTING FRESH

However, by this time, many of John’s clientele were leaving California, and Mary Jo’s full-time job was ending. “It came to the point that we realized we were going to have to relocate,” explains John. “We figured we were faced with at least a location change, and we thought we might as well make a complete change.”

He told his brother-in-law, who mentioned that there was a Celtic store in Lexington, Virginia, he did embroidery work for that was getting ready to retire and sell. John and Mary Jo visited Lexington in late 2004, fell in love with the town, decided to relocate across the country, and bought the store — named Celtic Tides — in early 2005.

“The store itself was existing, but it really was on its last legs,” remarks John. “The owners had lost complete interest in running the store, there was very little inventory, and the community had basically lost faith in the store.”

John and Mary Jo decided to make the store into a broad-based Celtic shop, expanding the old inventory with jewelry, grocery items, custom apparel (supplied by Elser), and, of course, engraved products.

“We just kept the store name,” John says. “We kind of think it reflects both the waves of Scots, Irish, and Welsh immigrants that moved over here, and hopefully evokes the memories of people who have been to Scotland and Ireland who remember seeing the tides coming in on the islands and cliffs.”

They also made the decision to stay open seven days a week — including Sundays. “At that time, we were one of the very few businesses in town that was open on a Sunday,” explains John. “But we had to get people to realize that we were there, and we



"Last year, we had our best Christmas season ever — about 30% of that being our engraving products," says John Morman.

"Don't be prepared to take on anything. If it's a physically big job, make sure it's going to fit on your machine. And you should also never override the interlocks — it's not a good idea."



Celtic Tides bought their first laser engraver in 2003.

were serious about running the store. We had to restore confidence in the community."

UPS AND DOWNS

Although they had relocated across the country, John and Mary Jo didn't have much issue getting the new business established. "Everybody made us very welcome, and we had customers coming in right off the bat," states John.

He continues, "One of the things the previous owners told us was that they did a couple of local festivals. So, we went along to those couple of festivals. And to cover for periods where the store got seasonably slow, we grew to about six festivals a year."

However, in 2008, the financial crash hit. "We realized that continuing on with festivals, and in fact doing more festivals, was the only way at that point we could see the store surviving," John says. "Up until COVID, we had grown our festival commitment to 26 festivals a year — most of which were weighted to the second half of the year. So, on average, we were away from home every other week."

Then the COVID-19 pandemic hit. "We survived with the store through the first part, and as things began to open back up, we became a location for people to come to," John says. In addition, as John and Mary Jo got back into festivals, they started to attract customers who were coming up from neighboring states. "So, our location was a big help once people knew we were out there," explains John.

The business continued to rebound and grow from there. "Last year, we had our best Christmas season ever — about 30% of that being our engraving products." So, from essentially nothing in the store when we first opened here, our engraving business has grown to be between 35% to 40% overall." The shop expanded into doing jobs for local businesses and universities, as well as churches, the local police department, and the fire department. "Those have really helped us cement the engraving to the point where we had to replace our first engraver," explains John.

Then, at the beginning of 2022, John and Mary Jo looked at how their business was running and decided to add a second machine. Now, they plan to cement the growth they've seen coming out of the pandemic and scale down the number of festivals they attend. "We're 20-some years older now than when we moved here, so the festivals are becoming less attractive only because there is a lot of physical work involved," John says.

ADVICE TO NEW BUSINESSES

With over 20 years of experience in the engraving business, John offers some words of wisdom for new businesses starting out within the custom graphics industry:

1) Get involved in your community

"Getting involved in your community can be a huge bonus for your business — if you're not already," offers John.

John and Mary Jo have been very active within their community, working with local businesses and organizations — and

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In 2022, Celtic Tides added a second laser engraver.



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even playing the community's Mr. and Mrs. Clause. "The most rewarding aspect of getting involved in the community has been exactly that," John says. "The closeness of the community is fantastic here."

In addition, three years ago, John was named small business-person of the year by the local chamber of commerce. "You don't do these things for the pats on the back and hoping someone's going to walk in from those events and offer you business," John says.

2) Do your homework

For those looking to get started in engraving, John stresses doing your homework beforehand.

"Be sure that things like safety, both personal and customer, are at the top of your list," advises John. "If you're going to be doing things like plastics, you need to be aware that the exhaust fumes are not only very corrosive for your machine but also toxic."

John also stresses learning the limitations of your machine.

"Don't be prepared to take on anything," he warns. "If it's a physically big job, make sure it's going to fit on your machine. And you should also never override the interlocks — it's not a good idea."

In addition, he also recommends contacting other shops that do what you would like to do and asking for information and advice from them, as well as reading trade magazines. "There are a lot of things that you might not immediately think of," he explains.

3) Look for new opportunities

John also emphasizes the importance of looking for opportunities through new markets.

"I can't stress it enough — don't get tired of looking for potential customers. They're not going to walk in and look for you because they don't know what you do," he explains.

He recommends that, once you get into the groove of running your business, start looking for opportunities with your local school district, businesses, farmer's markets, community fairs, etc. and brainstorm how you can expand your services to meet their needs.

4) Be ready for the long haul

Finally, John recommends preparing yourself for the long haul of the ever-expanding journey. He advises that businesses be prepared to take the time to learn and experiment. While suppliers are great resources, he stresses the importance of gaining experience and learning for yourself.

"You never know everything; there's always more to learn," John says. "You've got to be prepared for the learning curve — and the learning curve never stops. It gets narrower and less steep, but you're never done with the learning." **GP**

Marie Fennema is the editor of GRAPHICS PRO Today, covering news and guidance in apparel decoration, awards and engraving, and sign and digital printing.

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Etsy Enthusiast to Wholesaler



By Paula Aven Gladych

Bumble and Birch ramps up its laser game



Bri Gates, owner of Bumble and Birch. (All images courtesy Bumble and Birch)

Bri Gates, owner of Bumble and Birch, got her first taste of laser engraving after starting a small Etsy site during the pandemic selling wooden earrings she designed with a wood-burning tool.

“I didn’t think anything would stick really,” she says, but “lo and behold, three months in I was bombarded with sales and requests from people interested in my work.”

At that point, she began looking for an easy-to-use laser cutter because hand burning her jewelry was not fast enough to keep up with her orders. In January 2021,

she purchased her first cutter, a Glowforge desktop laser cutter that was marketed as a plug-and-play setup.

“That’s honestly why I started with the Glowforge because it was super easy, looked pretty intuitive and I had no laser experience,” Gates says.

When it arrived, she realized that the company didn’t lie about its product. It was easy to set up and it came with materials, allowing her to play around with the laser cutting side of things. “It was so different, in a good way, than hand burning. What I was able to do with hand burning could not be compared to what I can do with the laser. Way more intricate designs and I can produce them so much faster too and that was really a big portion of the appeal of getting a laser cutter,” she says.

Gates has always had a passion for woodworking, so she says it came naturally to her to use wood as her medium. She went to a craft store and bought bass wood to create nature-inspired jewelry, bringing in woodsy elements to create a natural feel. That has held true throughout her designs as she has expanded and built up her business.

When she bought her first laser, she started making jewelry because that is what she knew how to do at the time. But the laser allowed her to expand into other things, including wooden bookmarks, which is one of her biggest sellers, and wood-covered journals, which are her best sellers across the board.



Gates went from doing strictly direct-to-consumer, one-off pieces to selling wholesale on a marketplace called Faire.



Adding a laser engraver allowed her to expand into wooden bookmarks, which is one of her biggest sellers. Wood-covered journals are her best sellers across the board.

“It definitely expanded the possibilities of what I could do, and I was able to play around more with the creative side of things. Because I wasn’t hand-cutting and hand-burning everything, I could really lean into it,” Gates says.

Before her career took a creative turn, Gates was an environmental microbiologist by trade who played around with wood burning as a personal interest and passion.

When the pandemic hit, she had plenty of free time on her hands, so she was able to focus on the things that brought her joy. She began documenting her creative journey on social media and “that’s what drove the sales and visibility of my shop to allow me to go full time in this,” she adds.

Gates only had the Glowforge for six months before she decided to invest in an industrial laser and get serious about building her business. “The real nail in the coffin for me was when I started selling wholesale,” she says.

Gates went from doing strictly direct-to-consumer, one-off pieces, to selling wholesale on a marketplace called Faire.

“I quickly realized I had to get my process a lot quicker to keep up with wholesale demands. Within maybe three weeks to a month of consistent selling on that Faire wholesale site, I was investing in an industrial laser,” she says.

When she purchased her Thunder Laser in December 2021, she had to get a commercial space for the first time to accommodate it because it was four times the bed size of her Glowforge at 5' x 4'.





She found that she was able to produce so much more with the Thunder than with the Glowforge.

“What would take me 15 minutes on the Glowforge would take me five on the Thunder. When you’re working at a wholesale scale, doing mass productions of pieces, those 10 extra minutes really matter,” Gates says.

Bumble and Birch now sells about 1,000 units per week across all SKUs and, Gates says, the industrial laser has already paid for itself because of how much it has increased her turnaround.

LEARNING CURVE AND GROWTH

Going from a desktop laser engraver to an industrial machine was a “massive” learning curve.

The biggest benefit of the Glowforge was that it was user friendly. “You don’t have to learn the inner workings of the laser and what all of the jargon means in the laser cutting world in order to operate the Glowforge, which was a blessing and a curse,” Gates says.

It took Gates a little time to get comfortable with the larger industrial machine. Luckily, she says, the Thunder laser team was very responsive when she had questions.

She was able to double the amount she put into the bed of her original laser. She could make six bookmarks at a time on her smaller laser and 12 at a time on the Thunder.

Getting comfortable using the software, LightBurn, made the entire process go faster.

“You are able to set up duplicate runs instead of dragging and dropping. It is all automated in LightBurn,” she says.

Bumble and Birch has added part-time help to keep up with demand for its products. “Right now, wholesale is 80% of my business but I still absolutely like to sell to retail



Bri Gates got her first taste of laser engraving after starting a small Etsy site during the pandemic selling wooden earrings she designed with a wood-burning tool.



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When she purchased her Thunder Laser in December 2021, she had to get a commercial space for the first time to accommodate it because it was four times the bed size of her Glowforge at 5' X 4'.



A lot of my work is nature-focused, especially for journals, they are made of sustainably sourced wood.



customers as well," Gates explains. "Most are nature lovers I would say. A lot of my work is nature-focused, especially for journals, they are made of sustainably sourced wood and those that are environmentally conscious love that aspect of it."

Her customers range from bookstores to boutiques. Gates still makes wood-engraved earrings but she is starting to move more toward the stationery side of things.

"I have started to play around with actual coloring. I have done (the) paint backfilling technique because it looks like an inlay into the wood," she says. "I haven't perfected it yet, so I don't have too many product categories on that, but that is something I'm really interested in expanding into."

The journals are her favorite item to date because she loves the accent page beneath the cover. Her most popular journal features an engraving of mountains and a forest on the cover, but a cutout in the wood shows a picture of the night sky, giving the journal a 3D look.

"It was the first one I made, and I'm very glad I made it. It has done wonderful things," she says.

The journals are made completely in-house using heavy-duty paper cutters and binding machines that will punch holes and wire bind the journals together.

Gates added that never in her wildest dreams would she have thought she could do this job full-time.

"It was intended to be a creative outlet for me but then I saw that potential and got that entrepreneurial bug I guess and just went for it," she says.

Her scientific background has set her up for success in business.

"A lot of times in my business I will seek out opportunities to test things out. I will do the general hypothesis testing they teach you in school. I treat it as a scientific test to be honest. It has worked out wonderfully and it is fun for me," she says.



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Her most popular journal features an engraving of mountains and a forest on the cover, but a cutout in the wood shows a picture of the night sky, giving the journal a 3D look.



Gates' business is doing very well, thanks in part to her use of TikTok. She credits the social media platform with helping her connect to other business owners and interested customers and allowing her to forge partnerships that have lasted two years and counting.

At the beginning, she used social media to follow her journey in the business, detailing things she was looking forward to doing, things that caused her friction, and things she didn't know how to do and was trying to learn.

Her newest product is a line of wooden greeting cards.

"They are so cute, and I've had so many requests so far," Gates says. "This is the best part of business owning. I can lean into my 2 a.m. impulse to make wood cards. It has been super fun." **GP**

Paula Aven Gladych is a writer based in Denver, Colorado, who has been covering the graphics industry since 2014. She can be reached at pgladych@gmail.com.

Making a Mark



Colville Inc. makes custom labels for its Alaskan oil fields

By Shelley Widhalm

As project manager of Colville Inc., Heber Hatch uses a laser engraver to make labels for his company's uses but, at least for now, isn't selling them.

Hatch was tired of using stickers to label the face plates, switch covers, control panels, and hose panels used in the field by Colville Inc., a group of oil field supply companies based in Prudhoe Bay, Alaska. He researched engraving systems and began labeling everything that needed a sticker.

"If you can print on it, I will," says Hatch, who lives in Robin, Idaho, and has worked for Colville Inc. for 12 years.

Colville Inc. is named for the Colville River, near where company founder Mark Helmricks' father had homesteaded prior to the development of the oil fields. Helmricks founded the company about 30 years ago to provide bulk fuel delivery from Fairbanks, Alaska to oil fields, drill rigs, and other operations needing fuel.

"We are so remote up here; we do a lot of our own builds making face plates and panels," Hatch says.

STARTING WITH STICKERS AND LABEL MAKERS

Initially, Hatch used stickers and label makers for labeling the functions of panels, covers, and hoses but was tired of their short lifespans. Hatch and his wife, Christina, purchased a laser engraver for her hands-on learning tools company, Hatching Curiosity, to cut out



Hatch, project manager of Colville Inc., in Prudhoe Bay, Alaska, built a control panel inside a lube truck and printed the labels to indicate the purpose of the panel's individual switches and controls. (All images courtesy Heber Hatch)



Hatch printed the face plate for a control panel with labels indicating lights, switches, and plates. Hatch uses CerMark metal marking spray paint on metal plates he etches.

wood-crafted curriculum products. Hatch, curious about how the machine cuts, engraves, and scores a variety of materials, wanted to learn more and researched how to use the machine, realizing he could solve his labeling problem.

“I got into laser engraving for the quality and professionalism of it,” Hatch says.

Six years ago, Hatch started making labels at home, then would transport the items to Alaska during his rotations — he works three weeks on, then has three weeks off for his shifts. Last year, Hatch purchased a second machine so he could make the labels on-site.

“Instead of stickers, it made it real nice to etch for the longevity and the look of it,” Hatch says.

Hatch’s laser engraver can either engrave or cut and score depending on the material, making the markings by using a CO₂ light laser. The material can be almost anything, including wood, plywood, acrylic, stone, brass, aluminum, stainless steel, and leather, but the majority of Hatch’s work is done on stainless steel.



Hatch printed a strapping chart onto a stainless-steel panel that can be mounted on a wall of a lube truck. A strapping stick with inch gradations is used to determine the number of gallons of fuel.

MOVING ON TO LASER MARKING

To make its marks and cuts, the printer uses a focused, high-powered laser beam, but unlike other laser engravers, it doesn't

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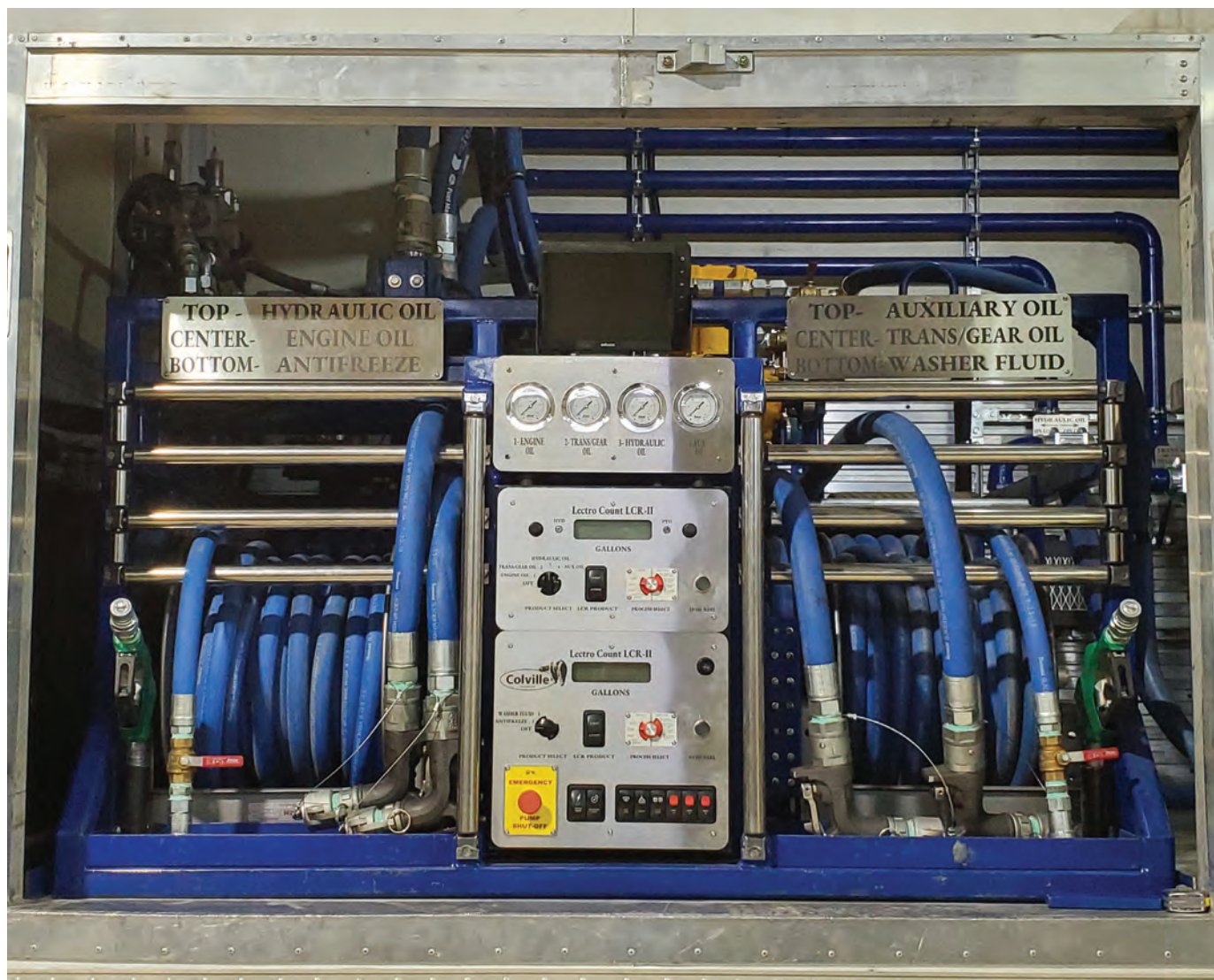
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A control panel and gage plate for a lube truck used by Colville Inc. in Prudhoe Bay, Alaska, with labels indicating the functions of the different hoses.

Initially, Hatch used stickers and label makers for labeling the functions of panels, covers, and hoses but was tired of their short lifespans.

use ink to transfer the desired image onto the material. The laser beam instead directly etches or cuts the material with the desired image, which is drafted using a comma-separated values, or CSV, file format.

The intensity of the light beam is controlled by the settings and controls on the engraver, depending on the material used and the desired output of color, type of cut, and cut depth.

“By increasing them, it becomes hotter. That’s when you start cutting wood, acrylics, and other types of materials,” Hatch says. “If you dial it back to etch or score, that’s where you’re not burning all the way through.”

The laser scars the subsurface of the materials, essentially burning part of it away, Hatch says. Since everything is under glass and the focal point is so small, and heat isn’t transferred, the material doesn’t get hot, he says.

Hatch uses CerMark metal marking spray paint on metal plates he etches. He applies the special paint to the material he wants to label so that when the light comes into contact with the laser marking spray, a chemical reaction occurs. Wherever the laser beam hits the spray, that area turns into a permanent black mark.

“Without it, you wouldn’t see anything. It requires the paint to show itself,” Hatch says. “It’s sharper, crisper, and the black mark it leaves is so much deeper in color.”

SOME SPECIFIC PROJECTS

Hatch makes labels for Colville’s lubrication, or lube, trucks that deliver oil, for control panels to indicate the purpose of individual switches and controls, and for gage plates, diverter valves, and strapping charts, often including the company name and logo on the different items. He just finished a two-year project last winter that included labels and panels to identify the many fittings, hoses, and valves at the company’s tank farm — the farm consists of tanks connected with plumbing, piping, and pumps that are used to store and transfer fuel. The labels are for the tanks, pump shacks, and trucks at the farm.

Another use of the laser engraver is for Colville's QR codes used in its maintenance program to track individual truck repairs. Hatch printed QR code tags for each truck that link to the inspection form for that particular unit so that drivers don't have to scroll through a long list of maintenance items to find what they need.

"Drivers have to do pre- and post-truck inspections before they take them out," Hatch says. "I've been printing the QR code on anodized aluminum, so the drivers can scan it. It won't wipe off, fade, or degrade. It's very versatile."

WORKING WITH THE SETTINGS

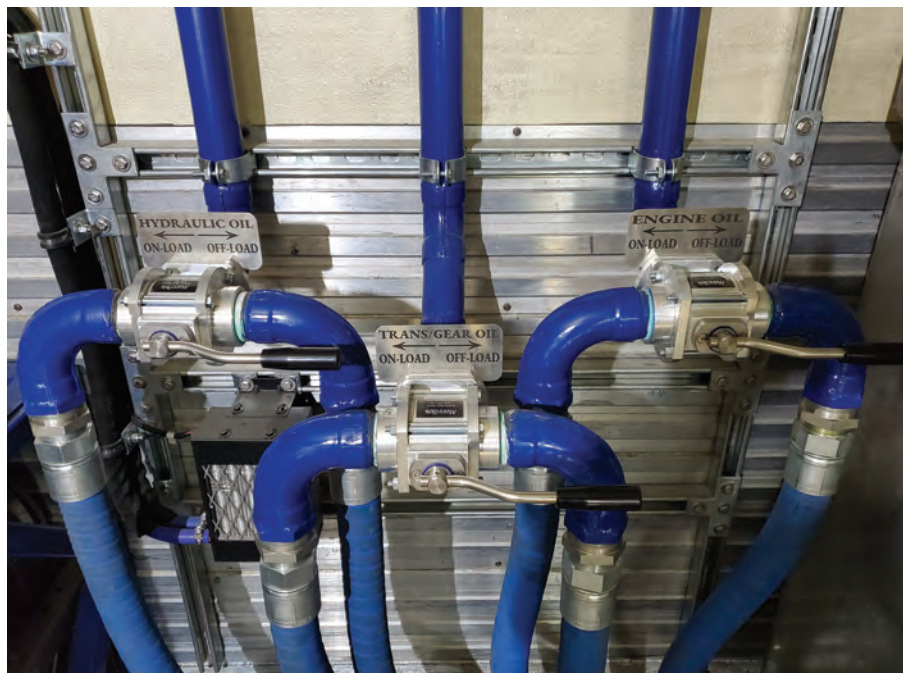
Hatch tried several variations of the settings, seeing that with larger fonts and longer prints, he experienced slight warping in the material. He identified his print failed to break up the printing into six stages and to flex the material in between prints, using pinch clips in the crumb tray to help pin down the metal. He also figured out the optimal settings when working with stainless steel to control the intensity of the light and speed of the laser. He set the speed at 600 and the lines per inch, or LPI, at 670 — the higher LPI results in a higher fill rate and a better laser job, he says.

"It makes the time for the print longer or shorter, depending on how deep of a contrast of the letter you want to come out," Hatch says. "Those settings were the final settings I settled on that deliver the best results and the fastest engraving, but also the best quality."

Stainless steel is harder than something like brass, which would not require the same intensity of laser work, Hatch says.

"I can go a little bit quicker on that," Hatch says.

Hatch makes labels but not for cutting out the shapes and sizes of the metal panels — he hires that out. He uses a 3D CAD program to draw what he wants to cut and sends the specs to Richards Sheet Metal, a company in Ogden, Utah, which uses a special laser to cut the material. Hatch then engraves on the cutouts that Richards returns to him.



Hatch labeled the diverter valves inside a lube truck, marking the directions to turn the handles for different operations.

"They cut the tags and the metal pieces I want to engrave ... with clean edges and (access) holes in them," Hatch says.

Hatch likes seeing the end product of his labels and the fact he's saving Colville on expenses.

"It's also a very professional end product that meets the needs of what we want," Hatch says. "I like seeing how clean it is and how long it lasts. It looks very tidy."

Hatch also likes that everything he makes is custom crafted.

"It's that feeling of creating your own product versus buying something," Hatch says. "It's built to do one job especially. It's fun to see it come together." GP

Shelley Widhalm is a freelance writer and editor and founder of Shell's Ink Services, a writing and editing service based in Loveland, Colorado.

Beyond Personal



Business-to-business laser engraving

By Charity Jackson



Over-engraving sheets of tags gives us back-up stock for rush and repeat orders. (All images courtesy Charity Jackson)

Our first engraver was a used New Hermes rotary engraver purchased from eBay almost 25 years ago. It arrived in pieces in a box, and my husband rebuilt it. About 15 years ago, we bought a nearly new Roland EGX-600 rotary engraver from a local real estate company that rarely used it.

Over the years, we've dabbled in engraving, always offering it as an option but never pushing it. We had never defined what we wanted to do with an engraver – mainly offering name tags, desk plates, and ADA/Braille signage, but it was more of a side service rather than something that generated steady revenue.

We became interested in laser engravers and were amazed by their capabilities, and after attending the Maker Faire in the Bay Area where Epilog had a booth, we connected with a local Epilog distributor. It's



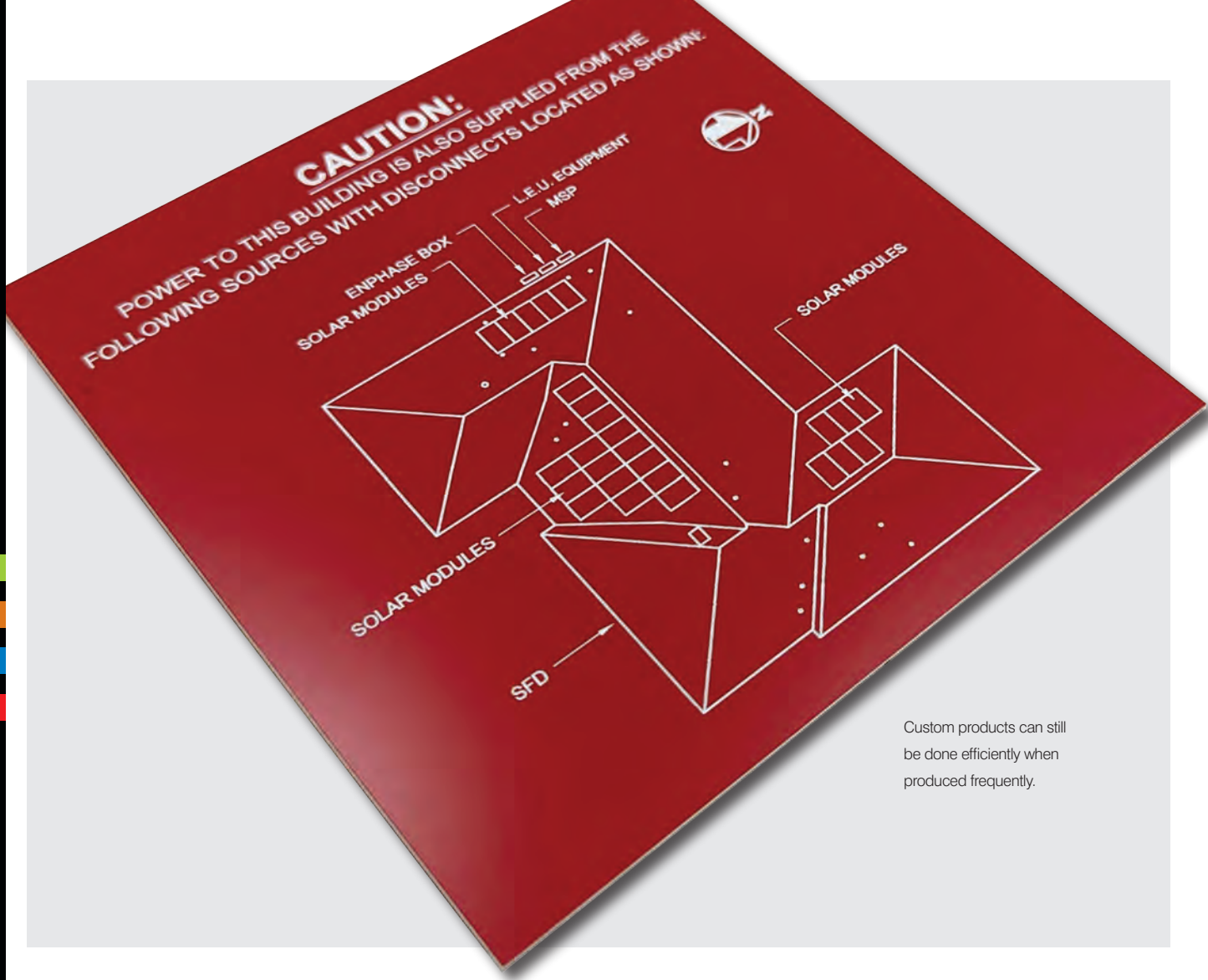
Pre-taping sheets of material before engraving makes the finishing process much faster. Completed tags are bagged and labeled.



Rotary attachments and specialized products like CerMark spray improve the engraving process.

been nearly six years since we purchased an Epilog Fusion M2 laser engraver. When we pulled the trigger on purchasing the engraver, we still weren't sure where we would focus our efforts. These machines are relatively pricey, especially at the larger size we chose to go with, so we knew we would need to develop a product or service that would be a moneymaker.

Personalized items are probably the most common thing you see advertised. Companies like JDS Industries and Johnson Plastics make it easy to buy bulk, quality items that can be customized. We started in this area too, and we still offer personalized products, but the service that keeps our laser engraver the busiest came to us organically.



Custom products can still be done efficiently when produced frequently.



SOLAR TAGS

Our shop is primarily business-to-business, which means we work with many contractors and small to big companies. It's important to us that we build relationships and help our customers find products that meet their needs. What started out as vehicle graphics jobs, soon expanded into laser engraved plates since our capabilities met their needs.

With nearly 300 sunny to partly sunny days here in California, we're one of the top states for total solar energy production. Solar panel installation is a big business that comes with many regulations requiring proper labeling of the equipment.

We work with several local contractors that install solar panels requiring engraved tags and map plates to meet these regulations. Some cities or counties don't require that the tags be engraved, so you'll see printed labels offered, but in our area, and

I'm sure in many other cities, engraved plates are required. The school of thought is that if a label is painted you lose the information and safety it provides, while an engraved plate can still be read even if it's painted over.

BULK

One of the great things about offering a product like these solar tags is that we can produce many of the tags in bulk to meet the needs of multiple contractors. So, while we may get an order for 50 of a particular plate, we'll go ahead and fill a sheet, storing the extra for the next order or having them ready for an inevitable rush job. They're also typically produced on red/white, white/black, or yellow/black engraving stock so we can purchase the sheet stock in bulk, saving costs while eliminating extra inventory that comes with personalized items.

Even when a tag needs to be customized for a particular job site, there's still a general layout that we can build upon. We keep this template on file and then change out the specifics quickly.

Map plates are customized tags for each job. They show where the shutoffs and specific equipment are located on each unique project. We either get a PDF from our customer showing the map specifics, or we get the whole plan set and have to extract what we need. Since it's something we do frequently, we're able to offer a custom product at a reasonable price.

EFFICIENCY

We've also picked up a few tricks over the years to streamline the process. Different counties and cities have specific ordinances regarding how the engraved plates are attached. Some require the plates to be epoxied on, but most of our contractors prefer double-sided tape. We use a thin, strong tape that we get from Bron Tape.

We realized how time-consuming it was to apply double-sided tape after they were engraved and cut apart, so we started taping long lengths of the plates before cutting them apart, but this wasn't the most efficient process either. So, now



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When we do personalized products, we focus on our corporate accounts that typically order larger batches at a time.



we purchase 12" wide rolls of double-sided tape from Bron Tape. A roll of tape is mounted on our laminator, as you would with a roll of laminate, and it's fed through the roll where we apply the tape to the backs of 12" x 24" sheets of blank engraving material.

Sometimes we'll get large orders of plates at once, which need to be produced quickly — having stacks of engraving material pre-taped speeds up the whole process. Once the plates are engraved, and the edges of each tag are scored, we snap the completed plate and then run our knife through a stack to finish cutting through the tape to cut them apart.

NICHE

While solar tags and map plates make up a significant portion of the laser engraving we do, there are other products we also offer. The key for us is to create products and services that meet the needs of our primary business, which is other businesses, instead of catering to individuals. It's also essential that with whatever products we offer, we're pushing for efficiency — bulk orders, creating and using custom jigs for holding multiple products, and finishing techniques to speed the process.

Yeti mugs or wholesale drinkware we order from our suppliers are common products we laser engrave and sell in larger batches. Setting up a custom logo or name for a project and then only engraving one item makes it difficult to compete with your pricing while still making a profit. If you can create the artwork, charge a fair price to cover your time, then engrave multiple items, you can spread the setup cost out over the entire order.

You can purchase jigs for specific products or create your own, but utilizing these templates to hold multiple products adds to your efficiency and profits. We also use a rotary attachment for curved products, Precision 123 Blocks for holding down thinner materials, and CerMark spray for engraving stainless steel products. Each of these items speeds up or improves our laser engraving.

ADA/Braille signs are another product we offer. We use the laser engraver



Having a laser engraver means we can produce quality, custom products in-house.



to create layered, custom wayfinding signs, adding in the braille by engraving the holes for the braille balls on our Roland rotary engraver. Typically, this isn't a product that we get requests for only one or two items. Usually, our customers update an entire office or add a batch of signs to ones we've already done. Either way, doing them in bulk or repeating previous orders means we're more efficient.

Laser-cut acrylic letters and cut-to-shape acrylic signs are other great products we can produce in-house. For big dimensional letters or really big jobs we still like to order our letters from Gemini, but for small custom projects, doing the job in-house is more economical.

Since personalized items are not something we specialize in, there's more room for error on our part. If we engraved cake

knives, champagne flutes, or fancy wooden clocks all the time, then we would have our settings down pat for each type of material. We would also have a whole set of tips and tricks to create efficiency and accuracy. But, since we don't specialize in this area, we refer any requests to another engraving shop

in town that does focus on these types of items.

Just like with any other service within the sign industry, I think you should find your niche, and within that niche, you can build ways to be more efficient and profitable. You can offer many different products, especially as you introduce a new service, but then as you see a particular product or service start growing in popularity, you can focus your energy and time on building that area. 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 nearly 30 years. You can visit her website at www.vhsigns.com.

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CREATING A Lasting Laser Legacy

Tips for expanding into
engraving services



By Howard Potter

Our company A&P Master Images has been in business for 19 years. We offer everything from graphic design, embroidery, screen printing, promotional items, uniforms, vinyl graphics, and sublimation; our latest service is 2D and 3D laser engraving. Years ago, we were always interested in engraving but back then never found the right piece of equipment at that time.

Two years ago, during COVID, my wife and I had time to do some research on the process and some of the options out there and became quickly surprised on how the technology had progressed to speed up production and the quality of the detail that could be produced. Fun fact: the machines not only have a lot of output, but they take up very little space.

At first, we were researching the flat-bed units since you can put several pieces in them and walk away, but we learned very quickly that if you wanted to get into drinkware, they would or could take six to eight minutes to produce one piece, which would be too slow for us. We knew right away drinkware was already a hit for us with our clients, and we also knew we wanted this process to help us sell more items on our online stores. Another great thing about drinkware is the size of the image. It is usually no larger than a business card and takes, on average, 30 seconds to laser engrave one piece of drinkware. The other thing we paid attention to was what materials we could laser and





what was the largest size design we could engrave. Our first machine two years ago was the CO₂ laser, and right after that, we invested into a fiber laser.

CO₂ LASER

With our CO₂ laser, we focus on our drinkware products. Our laser came with a rotating table that can hold up to four pieces of drinkware at a time and rotates each time a piece is done to speed production up. Our CO₂ laser is a 3D version, which I highly recommend. It allows you to laser engrave without losing any artwork distortion up to a certain point, which is key when dealing with curved surfaces. Our CO₂ laser can engrave up to a 12" × 12" design and our fiber laser can engrave up to a 6" × 6" design.

When laser engraving, you will think the larger the engraving size, the better, but from our experience, that is not really the case. The larger the field, the longer one design can take, and the goal for our company is to maximize how many pieces we can produce in an hour.

When you look at a process like a laser, the math simply speaks for itself. How many processes out there can you net at



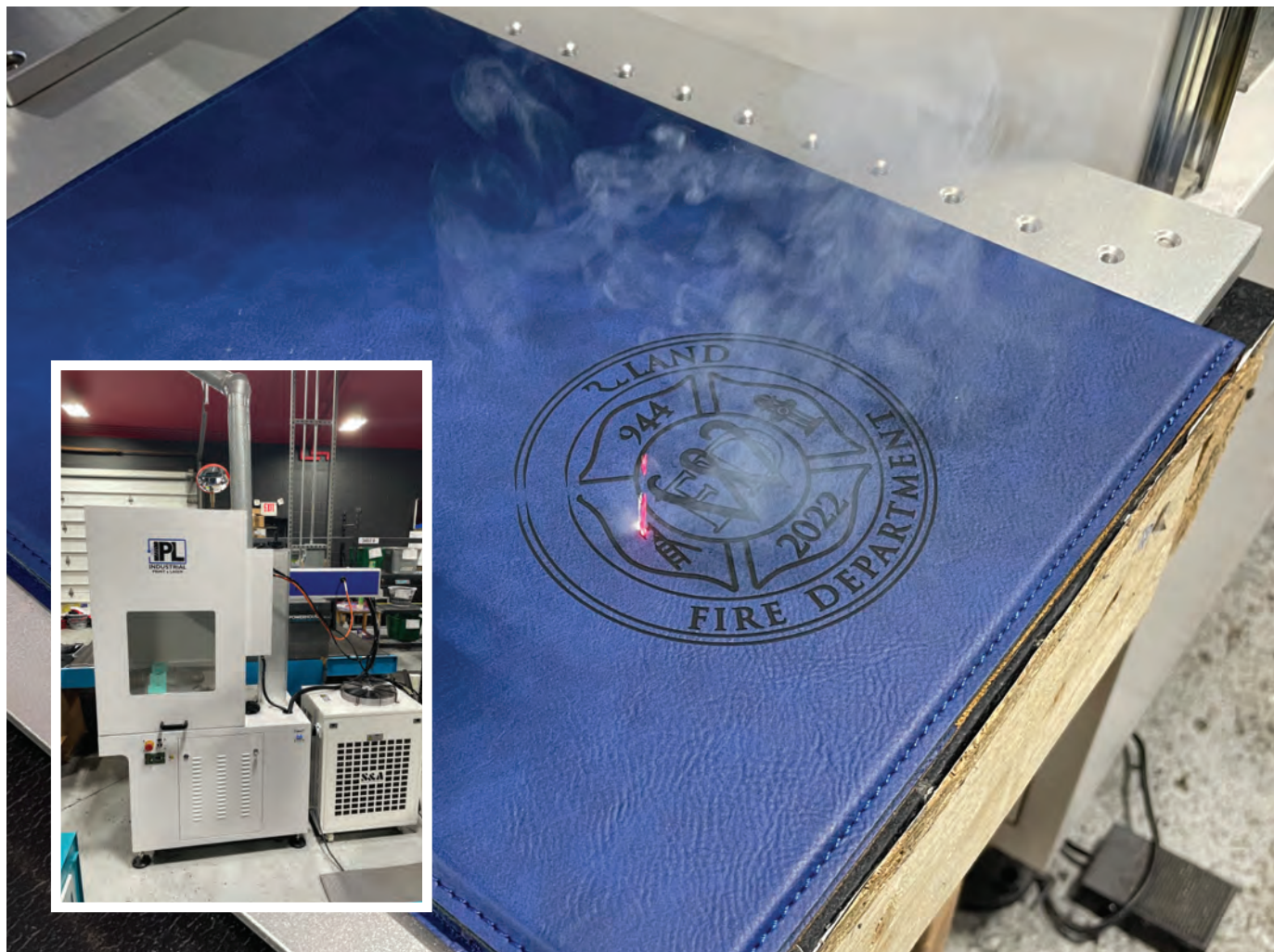
All images courtesy Howard Potter

EXAMPLES

TRAVEL MUGS: Take an average of 30 seconds to run one, which equals 120 units completed in an hour. 180 X minimum \$3 net profit = \$540 net in an hour

KEYCHAINS OR LEATHER PATCHES: Take an average of 20 seconds to run one, which equals 180 units completed per hour. 180 X minimum \$2 net profit = \$360 net in an hour

PENS: Take an average of 10 seconds or less to run one, which equals 360 units per hour. 360 X minimum \$1 net profit = \$360 net in an hour



The math simply speaks for itself.
How many processes out there can
you net at least \$360 an hour?



least \$360 an hour? From one machine, you can generate up to \$748,800 simply by having the machine running eight hours per day, 52 weeks a year. We are very happy we made the investment for our company. It is easy to run and has a very low error rate, which allows you to keep your net profits high.

The laser engraving machines do not consume much power at all either. Both of ours run off a 30-amp breaker and sit side by side. By setting up the lasers side by side, we can have one employee run items on the CO₂ laser, which can take a little bit more time due to the size of the imprint. While they are waiting, they can run other items on the fiber at the same time, which really boosts output and allows you to invest in your employee as well.

Running the laser engravers is more repetitive work than it is back breaking work, which is the great part about the process. It is very easy to do and rewarding for the owner and employees all at the

same time. From a customer standpoint, we have really been able to expand the in-house line of products that we offer, which is very important to our company. The more items we can offer, the more we keep the customer coming back in the door, and the more we can offer online for customers with one-piece orders.

ENGRAVING AS MARKETING

Many do not look at laser engravers as a great marketing piece of equipment. What do I mean by that? Our company knew right out of the gate that we initially did not have many customers with our new laser equipment, but the important piece was getting everyone’s attention. How do you do that? Simple! One way is to always have extra blanks on site, and when you have an existing customer that is great to work with, take five minutes and laser a tumbler in front of them and let them know they can take pics and video of it running their logo. They will post it all over social media and tag you, and it costs you under \$10 to do so. Another way we market this is by us personally taking pictures and video of the machine running and posting this on all of our social media platforms.

Few people know anything about the customization process. So, let them have a sneak peek and get them excited about how their products are made with your equipment.

As a business owner myself, I really wanted you to get a full view of what you are investing in. It is a process that can really help you out financially and takes very little space, but like any process, you must be committed to learning, maintaining, and growing it. **GP**



Howard Potter has worked in the promotional industry for 17 years, from designing to building brands and a family-owned business. He is the co-owner and CEO of A&P Master Images LLC with his wife Amanda. Their company offers graphic design, screen printing, embroidery, sublimation, vinyl graphics, and promotional items. Howard, his family, and the business reside in Utica, New York. For more information, please visit mastery-ourimage.com.





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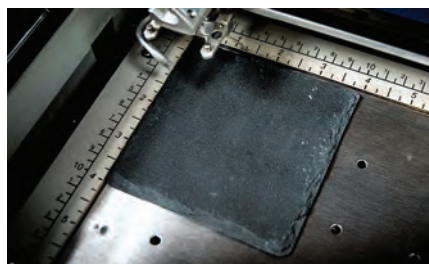


By Paula Aven Gladych

What products you make determine what machine you should get



A laser engraver is capable of producing high-quality photographs on a variety of substrates, including anodized aluminum. (Image courtesy Kern Laser Systems)



Engraved slate makes for an excellent personalized gift. (Image courtesy Trotec Laser)

Shops that are new to laser engraving should determine what types of products they want to engrave before purchasing a laser. If they want to engrave on a variety of substrates, a CO₂ laser is a good option. While it can engrave on plastics, wood, glass, and leather, it can't engrave on bare metal, though it can leave black marks on coated metals.

If your main mission is to engrave directly onto base metals, a fiber laser is your best choice. Fiber lasers can engrave on silicon, gemstones, plastics, polymers, ceramics, thin films, and stone.

Many companies want to get into engraving personalized items like insulated mugs, glasses, or leather items. Before attempting to personalize any of these products, Adam Voigt, Kern Laser Systems, recommends doing a test run with different wattages and speeds to find the right settings.

Mike Dean, Epilog Laser, agrees, saying that learning the power and speed settings is something easy to do that becomes intuitive after a while. The settings recommended by each laser manufacturer are a good starting point. From there, the shop can play around by changing the power and speed until they get the desired result.

Another point new users should consider is graphics. Laser engraving is "very straightforward and pretty simple. The learning curve is in creating designs," says Mandi Smallwood, AP Laser. "The graphic design side is where people get hung up."

To help, most manufacturers offer training for their users. For example, every person that buys a laser machine from AP Laser gets eight hours of training—two

hours on the laser and learning about laser maintenance and six hours on CorelDRAW, iD Works, and Photograv, the software programs that come with its laser engraving machines.

Epilog Laser offers its customers a training suite that walks them through a couple of exercises to teach them how to operate the laser. "Learning the laser is 5% of the process. Anybody that knows CorelDRAW or Illustrator can be up and running in a matter of a few minutes," notes Dean. "Over 90% of our customers already have graphic experience because they are doing sublimation or something along those lines."

David Stevens, Trotec Laser, agrees that learning the graphics software is the hardest part. "If the user is already well-versed with a graphics program, the next step is the preparation of the designs specifically for laser processing," he says.

HOW DIFFERENT SUBSTRATES AFFECT LASER ENGRAVING

It is important to learn how a laser reacts to various materials, which can take time and some trial and error. "Some manufacturers offer additional online educational resources as well as in-person workshops that will support your ongoing laser knowledge. With these means, the user can learn quickly and easily from step-by-step tutorials, get their questions answered promptly, and become comfortable with the laser," Stevens states.

Some offer customers cheat sheets with the speed and power necessary to engrave on different substrates. "For instance, wood is typically medium speed and high power because the wood absorbs



It is important to learn how a laser reacts to a variety of materials. For example, wood requires different settings than marble. (Image courtesy Trotec Laser)

laser energy, so you have to slow the machine down, unless you have a 120 watt and then you can run full speed,” Dean says. “For lasers that are 50-watt or 60-watt, you have to slow the laser down so that you get enough depth into the wood.”

But if a laser engraver goes too slowly over wood, it can leave a charred mark, notes Voigt. It also depends on the type of wood being cut or engraved. Some woods are more porous than others and will leave grains behind when engraving. Hardwoods are always a good choice.

Engraving plastics is different. “Vaporizing the cap sheet on engraver’s plastic can be done at high speed. Those are the two primary variables that control the laser: speed and power,” Dean states.

For glass, the laser should be on medium speed and high power, but you might want to adjust the artwork to 70% or 80% fill instead of being 100% because when the laser hits the glass, it chips the engraving surface. If you reduce the fill, you aren’t applying as much heat to the glass overall, and it doesn’t chip as much.

If you want to use a CO₂ laser on metal, you must first apply a metal-marking spray onto it. When the laser hits the coated surface, it creates a thermochemical reaction that bonds the spray to the metal, producing a permanent black mark, says Dean.

Other metals, like anodized aluminum, produce a nice white contrast when engraving without applying a metal-marking spray

first, Dean adds. Powder-coated metals can also be lasered. The laser vaporizes the paint and exposes the shiny subsurface beneath it. Most colored stainless steel mugs are powder coated.

Leather is a great product for both cutting and engraving. Shops can laser engrave a logo onto leather for keychains or luggage tags and then cut them out. Set your laser to high speed/low power, and it will produce a nice, charred mark on the leather, which creates a high contrast.

Stone is yet another popular substrate for engraving. Granite and marble are used for headstones and monuments. Typically, the names of the deceased will be sandcarved onto the stone, and then a photo or saying will be laser engraved onto it. It is much easier to engrave a picture or design with a laser than to develop a stencil for sandcarving, argues Smallwood. A 50- to 100-watt laser can engrave on granite and marble.

Another big industry for engraving is bricks. Hospitals, schools, and even sports complexes sell engraved bricks to help raise funds for projects. In the past, those items were only sandcarved then painted. With a laser engraver, the intense heat turns the engraved area black, so the engraved area doesn’t need to be painted or touched up down the road. “Bricks are a huge moneymaker in the business,” notes Smallwood.

On the bigger side of things, Kern’s lasers are used for many industrial purposes, like large point-of-purchase displays, shower and bathroom doors, lighting, and aerospace. Much of it is laser engraving UPC bar codes or parts numbers on ID tags, tools, and control panels.

It’s clear each substrate has its own set of guidelines. “It is important to use the appropriate laser parameters for each material to achieve the best result,” adds Stevens. “For example, engraving paper usually requires less power than engraving wood or engraver’s plastic, and when engraving acrylic, you typically achieve the most uniform results when using lower power. It’s also important to note that going too slow could result in a fire depending on the material, which is why using the appropriate settings is so important.” **GP**



Relief carving can make for some very high-end looking awards. (Image courtesy Trotec Laser)

Paula Aven Gladych is a writer based in Denver, Colorado, who has been covering the graphics industry since 2014. She can be reached at pgladych@gmail.com.

PRODUCT SPOTLIGHT: Laser Engraving

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



LASER CUTTERS & ENGRAVERS

Johnson Plastics Plus offers the Flux Beamo and Beambox laser cutter and engravers. The compact Flux lasers allow users to engrave, mark, and cut products in their homes, shop, or on the road.

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troteclaser.com



POSITIONING SYSTEM

GCC America Inc. offers the new SmartEYES CCD function for the GCC LaserPro S400, which is a camera located on the top lid that enables viewers to see the working area. Users can also capture from CorelDRAW/Illustrator through plug-in software.
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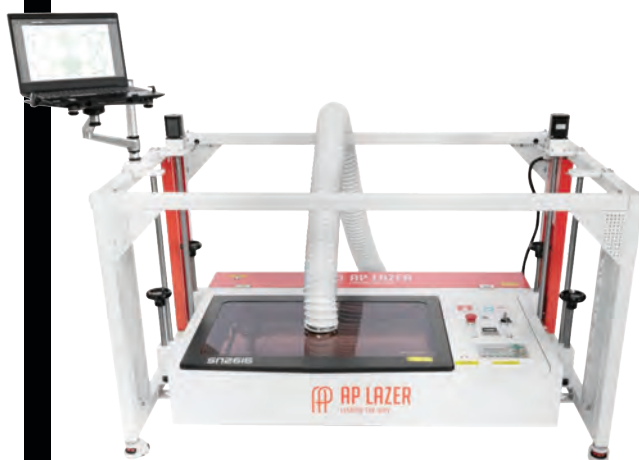


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