

Keeping up on products and technology for the Marking & Engraving Professional

Marking & Identification Magazine

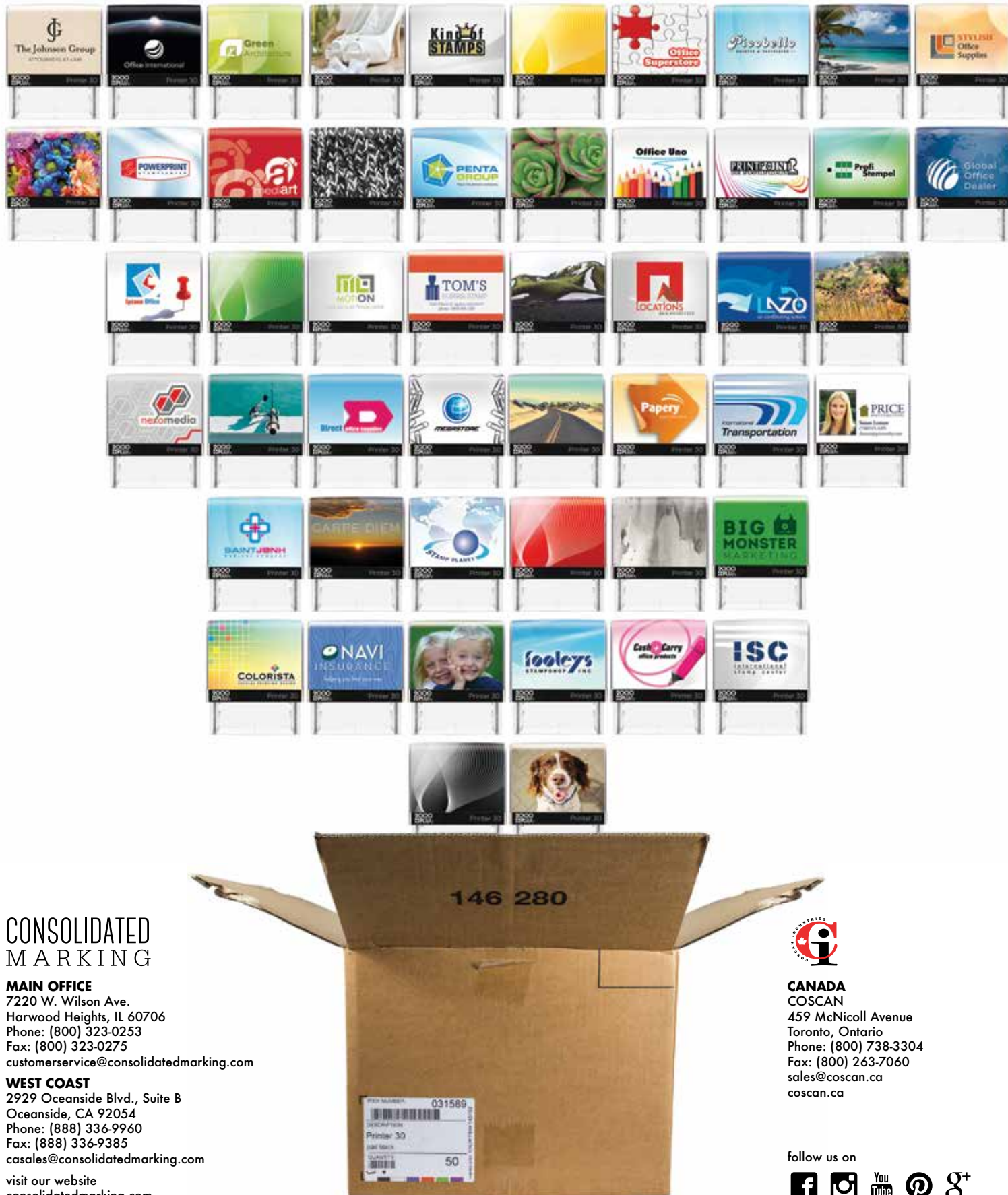


UV Printing is Growing in Popularity

Part 1 of a two part series
on how it works and what
you can print, on Page 7.



1 BOX, ENDLESS POSSIBILITIES



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The Ins and Outs of UV LED Printing

By Michael Perrelli, Marketing Manager, Direct Color Systems

Opportunities abound for owners of UV LED printers to expand their product line and enhance their business. The first part of a two-part series not only discusses how UV LED printer owners can leverage the versatility of these machines to unlock revenue potential, but also provides step-by-step outlines for specific functions. After reviewing these profit producing applications, readers will be better equipped when analyzing the next equipment choice for their business.

How Do UV LED Printers Differ from Other Marking Technologies? UV LED printers jet a curable ink through an inkjet print head. Printers are equipped with a UV LED lamp(s) that instantly cures the digitally printed image. In addition to photo quality prints, higher amounts of ink can be jetted to produce texture or raised printing effects – thus providing dimension that can be seen and felt. With

the instant curing, solvent resistance, and high durability of UV inks, operators can print to a wide variety of substrates.

Unlike monochromatic marking and sign production methods, UV printing is a non-contact and completely digital process - setting it apart from its analog counterparts by providing full-color printing,



unmatched ease, and short run profitability. Whether it’s a one up job or thousands of printed products, UV LED printers are seen as an optimal and durable solution in numerous industries.

The marking and sign industries in particular, continue to lean on this technology to add value (or profit) to a product and replace currently monochromatic or inefficient production processes.

“Starting, completing, and switching to new production runs is easier with a digital process like UV LED printing.”

Simple Production

UV LED flatbed printers offer decreased (or no) set up times and the ability to print to a multitude of products with varying shapes and sizes. Simply place the product on the flatbed table in the proper position, usually pre-determined by the combination of a fixture and template in the software, then hit print and watch as your artwork is produced directly onto the product. The finished product comes off the machine ready for sale, packaging, or further fabrication.

The printers sound cool don’t they? You’re right, they are. But don’t be overwhelmed or nervous about learning a new technology. Some UV LED print manufacturers have simplified the learning curve by providing multi-day, on-site training options upon installation. This allows operators to familiarize themselves with the technology and enjoy a custom educational process, with their own products, in the comfort of their own facility.

Add Full Color, Add Value

Have 200 full-color industrial dials or retail signs to produce for a current customer that you’ve been supplying laser etched or screen



printed product to for years? Starting, completing, and switching to new production runs is easier with a digital process like UV LED printing. Stop farming these jobs out!

1. Design your art file. With full CMYK color capabilities (combined with a clear and an opaque white ink), no gradient or pantone color swatch is out of reach – even on the darkest of substrates.
2. Accurately place the product on the printer. Operators can use a jig or print the outline of the products directly to the tacky hold down mat of the printer (don’t worry, the ink wipes off the silicone mat). Don’t sweat the small stuff (or products) either. Some UV LED printers have absolute positioning accuracy of ±0.0015” so you can take solace the print will hit the spot it needs to time and time again.
3. Load your dials or sign blanks.
4. Send your art file to the RIP, select the desired print mode, and hit print!

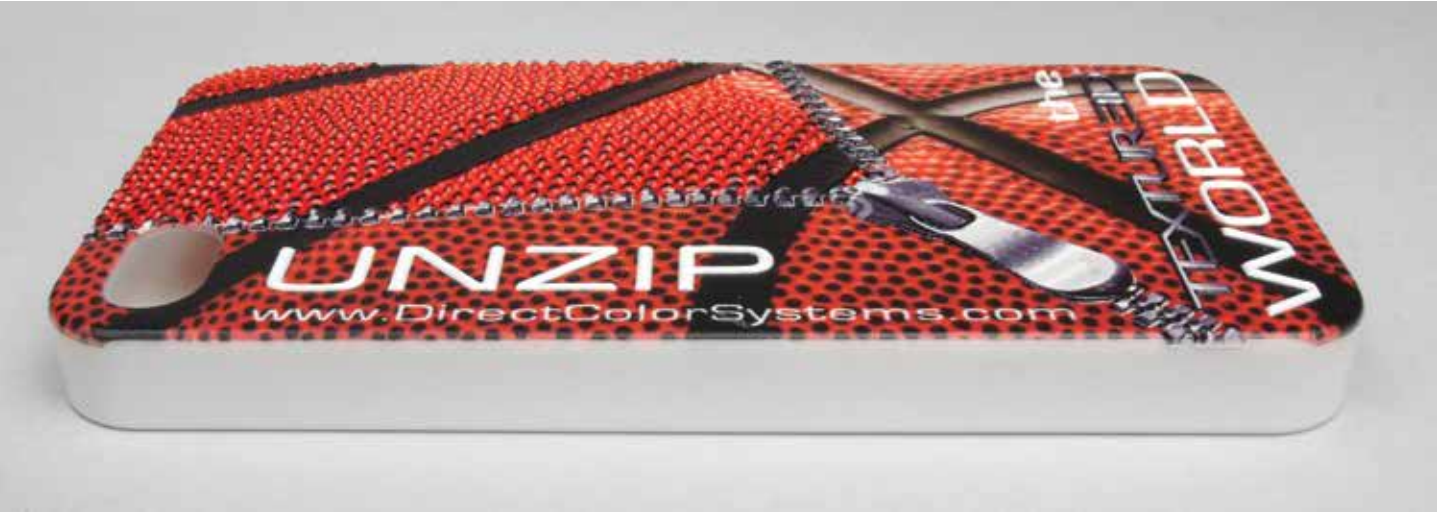
Keys to Optimize Production:

- If using jigs for product placement instead of the printed outline method, have more than one jig handy. Load and unload one jig while the other is printing.



- Don’t forget to take advantage of the complete bed size/printable area – thus using economies of scale to optimize print time.
- All substrates should be tested for image receptivity, adhesion and durability.
- Resolution and print speed adversely affect each other. The lower the print resolution, the faster the print speed. Higher the resolution and the print speed slows down.

2. The greater the contrast between the black and white areas, the more texture the output will have.
3. Make adjustments to the ‘curves’ to build greater contrast. The darker the color, the more ink (and relief) will be output.
4. Render the adjusted grayscale image to a multi-tone bitmap. Then convert the image to a spot white bitmap.



Add Texture, Add Value

Fact: Texture printing amazes people. Imagine an alligator exhibit sign that feels (and looks) like real gator skin or a training room sign where you can feel (and see) the laces of a printed football. It can literally add a new dimension to your products. But at what cost you might ask?

It’s key to note that some UV printers cannot produce texture in a single pass. They simply layer ink on top of previous passes through the machine – not an ideal proposition for production. As the old adage goes, time is money.

Look for systems that can not only do it in a single pass, but also use the tonal quality of the image to develop the ‘peaks and valleys’ of each individual print. It adds a wow factor to products that some customers say they can charge 3x more for – more than enough to justify the added print time and ink cost when compared to flat printing.

1. Start the texturing process by converting a copy of the art file to grayscale. Depending on whether the image has a black background or not, the grayscaled image may need to be inverted.

5. Place the spot white, multi-tone bitmap directly over the original image.
6. Load your blank material or products to be printed.
7. Send your art file to the RIP, select the desired print mode and hit print!

What’s Next?

Two themes are present in the first paragraph of this article – opportunity and versatility. This first part illustrates the opportunity available for those in the industry to supplement current technology (full color), simplify current processes (digital vs. analog), and add value (color or texture) to their products.

In the next issue of Marking & Identification Magazine, we will further cover the versatility aspect of UV LED printers. Think of printing the items outlined above, plus bottles or cylindrical objects, plus digitally producing ADA-Braille signage, and growing marking capabilities with one single piece of equipment. It’s possible and gaining more and more momentum every year. It’s time to pay close attention to what UV LED printers can offer.

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Part 2 of UV Printing Products you can make

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Hiring Entry Level Employees, and more





The Ins and Outs of UV LED Printing

Part 2

By Michael Perrelli, Marketing Manager, Direct Color Systems

“Looking to maximize production speed? Look for a printer that has the ability to print ‘inline’ ”

In the September issue of *Marking & Identification*, we covered a general overview of UV LED printer technology and the versatility that these pieces of equipment can provide to business owners across numerous industries. Please reference part one for insights on optimizing production and adding value with full color or texture prints.

For part two, we can dive right into what I like to call ‘exciting’ applications...the types of applications that have the ability to broaden product offerings, open new doors for your business, or enhance profits in a big way. I’m talking (or actually writing) about applications that save time, are easy to do, and are in high demand. But it gets better! All of these exciting applications can be done with one single piece of printing equipment – a UV LED printer.

ADA-compliant/Braille UV LED Printing Technology

Walk into any hotel, government, or public building and you have undoubtedly noticed ADA-compliant signage, complete with raised pictograms, letters and Braille dots.

As a requirement of the 2010 ADA Standards for Accessible Design (which are published revised regulations for Titles II and III of the Americans with Disabilities Act of 1990 “ADA” in the *Federal Register*), the need for these types of signs provides a fruitful market for various sign production technologies. While signage is only a small portion of the Americans with Disabilities Act, it is an impactful one. Whether it’s new construction or renovation, every public room, exit, stairway, etc. must have this type of sign present. These signs must be produced to the guidelines and placed at the appropriate height/position.



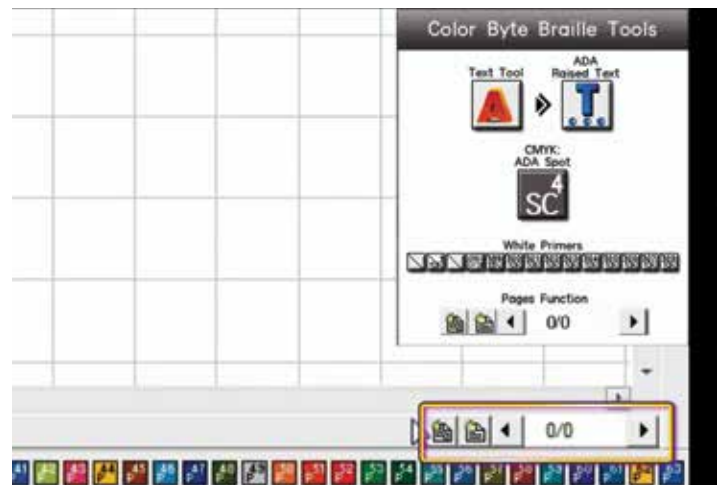
In addition to digitally printing the signs with a UV LED printer, other production methods include an extremely labor-intensive process (engraving/raster bead) and an extremely expensive and time consuming process (photopolymer). With UV LED printing, an operator can save 29 steps (when compared to engraving/raster bead) or countless hours of production time (when compared to photopolymer.)

Direct Color Systems, a UV LED printer manufacturer based in the US, has multiple patents in place for their innovative UV LED ADA-Compliant Braille sign printing process. The steps outlined in this article follow that process.

Base Material - By law, ADA-compliant/Braille signs can be produced on a variety of substrates that have a non-glare finish. However, when it comes to printing signs with UV LED technology, not all substrates are compatible, while others will require some preparation before printing. In some cases, an adhesion promoter may be required. Substrates should always be tested for compliance, receptivity and/or adhesion by the end user.

Creating the Art File – Similar to the other production methods, the process must start with the design of an art file. The ADA

Modules in the Color Byte software give you the tools needed to easily make a compliant ADA/Braille sign.



1. Simply select the Braille text tool and sans serif font before typing in the sign blank area. As the text is entered, the Braille is automatically generated and translated below it. Accurate spacing, height, and width are all handled by the software. Note: the Color Byte software will notify the user (via pop-up) if a font is not compliant.
2. Braille dot properties can be adjusted if needed; including Grade 1 or Grade 2 Braille translation (the software can translate in CA Grade 2 as well).
3. If needed, import a pictogram from the library.
4. Apply appropriate priming percentages (for accurate tactile and dot height)

**Complete video tutorials and documentation are available to any customer with the Color Byte ADA modules.*

Print Process – Once the art file is designed, the production process is extremely simple.

1. Load the sign material, set the printer to the proper head height, and ensure it is in the print home/start position
2. Send the art file to the RIP
3. Right click the file, and select PRINT

Let the machine do all of the work! As the signs are printing, operators can start designing the next job or project, fabricate other signs, or carry on other tasks. Upon completion of the print, the sign will be ready for mounting, packaging, or further fabrication processes.

'Rounding' Out Your Capabilities

Most (not all) of the popular UV LED printers are considered 'flatbed' printers. However, that doesn't mean they can only print texture or photo quality prints on flat material or products.



With the addition of a cylindrical attachment, UV LED printers can print directly to tumblers, water bottles, candles, and much more. These printers enjoy easy 'changeover' as it only takes a minute or two to go from ADA/Braille sign printing to water bottles.

1. Install the optional cylindrical or rotary attachment
2. Design your art file and spin it's orientation (portrait vs. landscape) for the product you are printing to
3. Send the art file to the RIP
4. Place cylindrical object onto the attachment and push it into the machine.
5. Set printer to print home/start point.
6. Right click the file, and select PRINT

Let the machine (and software) do the work! Sensing a trend here? Even though you are printing on a rounded object, the software has been set to print a small width of the print with each pass – thus avoiding blurry prints and providing the highest quality possible. Just remember to select the right print mode and there is no need to scale the artwork.

Looking to maximize production speed? Look for a printer that has the ability to print 'inline' – i.e. white and color simultaneously. Staggered print heads can't cover as much space once the cylindrical print modes are in use.

DTG? No way? Yes way!

While DTG or t-shirt printing isn't on everyone's radar in terms of a product offering, you can't ignore it. The market is huge. It's important to remember that following the appropriate production steps in conjunction with a correctly formulated ink (one that carries CPSIA compliance once cured) is paramount to t-shirt printing with UV LED inks. DTG printing is another big opportunity for owners to leverage this technology.

UV Printing – Versatility, Ease, Profitability

Not all shops or companies will be interested in venturing into some of the applications we have highlighted in this two part series. Just know that they are available to you. Whether it's everything from 20 custom bottles for a fundraiser to a small amount of 250 printed shirts a year, or replacing the pad print marking of industrial parts and big ADA/Braille sign production runs, each application is another revenue stream that is available to you. Stop farming these jobs out! Up sell to your current customers, build upon that loyalty, and keep your machine running at an optimal – and PROFITABLE – rate.

All interested parties are urged to have samples produced when analyzing the possibility of bringing this technology into your shop or business. Ask the questions that are important to your business and your production needs. Don't get caught up with the features of every machine... instead, analyze the benefits. There is a big difference between features and benefits – and they vary from company to company.





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