PRINTING UNITED DIGITAL EXPERIENCE

TUESDAY, OCT. 27, 2020

GUIDE TO DAY TWO:

APPAREL
Screen & Decorating

INSIDE:

HOW A CUSTOM APPAREL COMPANY USED HALFTONE SCREEN PRINTING TO LAND A REPEAT CUSTOMER.

VARIABLES IN PRINTING WATER-BASED INKS.

HOW LIVE GARMENT DECORATION BECAME BIG BUSINESS.

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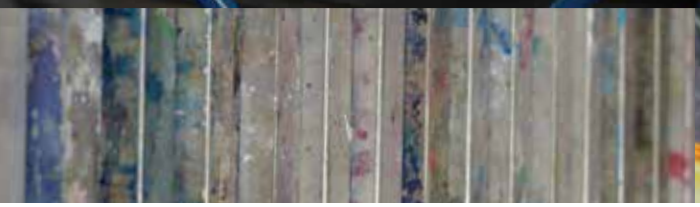

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WELCOME

Welcome to this special publication for attendees of the 2020 PRINTING United Digital Experience.

In June, PRINTING United announced the decision to transition from an in-person event in Atlanta, to a comprehensive digital platform. The PRINTING United Digital Experience, taking place Oct. 26-Nov. 12, offers attendees three weeks of live, guided programming, educational sessions, and panel discussions with the experts; along with access to a complete online exhibitor showcase featuring information about the newest industry technology, case studies, whitepapers, the chance to speak with exhibitor representatives, and more.

Today is Day Two of this 14-day event. Focused on the apparel market — specifically screen and decorating — attendees have a packed schedule of content and product demos (see the detailed agenda on page 6).

According to the latest Print Business Indicators Report for October, for the first half of 2020, apparel decorators have seen deep, widespread declines. There is a glimmer of hope, however. Although still in the minority, more apparel decorators are reporting that sales are picking up, and fewer are reporting that sales are slowing down. Although this is an erratic, painfully slow movement, this is what we want to see. It is a pivotal first step toward recovery.

Additionally, nearly 38% expect business to improve in the months ahead — but this is down from two months ago. The primary reason for this change is ongoing uncertainty about when schools will fully reopen and in-person events will resume.

Recovery has begun for our industry and the American economy. But this recession is rooted not in economics, but in biology. Although record fiscal and monetary stimulus is in place and there is pent-up demand for the things we haven't been able to do in months, this recovery will not reach full potential until we are confident enough to travel, stay in hotels, be in large crowds, and do all of the other things we did routinely prior to the pandemic.

However, no one knows when that will be. But we can't wait for the economy to make everything right for us, so we need to determine what we are going to do for ourselves to make things right.

Apparel decorators are building their competitive advantage now by following five steps. They are implementing lean manufacturing and continuous improvement principles within their business. These businesses are also reducing operating costs as best as they can. Many have implemented employee appreciation incentive programs, and others are making investments in their workflow processes, looking for ways to streamline and minimize waste. Becoming a one-stop shop is one of the most effective actions apparel decorators are taking.

As part of the product demos today, you'll be able to see products from ROQ, Hanes, and Nazdar. Again, please refer to the daily agenda for details on each of these product demo video sessions.

As a companion to the 2020 PRINTING United Digital Experience, these 14 special daily publications will provide attendees with a reference guide to the day of content, as well as much-needed insights into how print service providers can best position themselves now for the recovery — and growth — to come.

We hope this information will help serve as a valuable resource as you plan the next steps for your business, and determine where — and how — to expand and grow.

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AGENDA

DAY 2: OCTOBER 27, 2020

APPAREL: Screen & Decorating

10:00 a.m.

RESEARCH: INDUSTRY OUTLOOK FOR SCREEN AND DECORATING

Presenter: Andy Paparozzi, Chief Economist, PRINTING United Alliance

This session reviews how deeply the COVID-19 recession has affected apparel decorators and the indicators that point to improvement ahead. Additional topics include the steps apparel decorators are taking to build competitive advantage, which of the steps have been most effective, and the products and end markets they identify most frequently as growing.

10:15 a.m.

KEYNOTE: ESTABLISHING TODAY'S SUCCESSFUL SCREEN PRINTING BUSINESS

Presenter: Marshall Atkinson, Owner, Marshall Atkinson Consulting

Today's screen printers are a far cry from the screen printers of a decade (or more) ago. What does it take to build a successful screen printing business today? What pitfalls and opportunities must all business owners be aware of?

10:45 a.m.

PRODUCT DEMO: ROQ NEXT AUTOMATIC PRESS, ROQ FOLDING, PACKAGING, AND LABELING AUTOMATIC MODULAR SYSTEM, ROQ FIT AUTOMATIC PRESS, AND LOTUS HOLLAND EVO COMPACT SCREEN RECLAIMING SYSTEM

By helping shops setup, print, change over, and digitally future-proof their businesses, the ROQ NEXT automatic screen printing presses chain-drive system enables go-to pallet features for simple setup, print-from-screen functionality for quick strike offs, and faster indexing for cycles up to 1,200 pieces per hour, and future digital expansion. The ROQ Automated Packaging & Labeling Modular System presents a comprehensive automated pre-shipment solutions suite. The versatility of the modular system empowers you to build your premiere folding, packing, and labeling solution one step at a time. With a Lotus Holland EVO Compact Auto Screen Reclaim System, screens are automatically and completely cleaned for reuse. The ROQ Fit is not only fast, but has a smaller footprint than other autos and is super easy to learn.

11:00 a.m.

PRODUCT DEMO: HANES BEEFY-T AND NANO

Hanes Beefy-T was the first T-shirt ever developed for screen printing. For more than 35 years, it has set the standard for T-shirt comfort and quality. Today, it's better than ever, offering even greater durability and fit. Hanes Nano is a 4.5-oz. 100% ring-spun T-shirt that features a lighter weight and a more modern fit.

Nearly 38% of apparel decorators expect business to improve in the months ahead.

— Andy Paparozzi, Chief Economist, PRINTING United Alliance in the Industry Outlook for Screen and Decorating session.

Today's Sponsor:

11:15 a.m.

PANEL DISCUSSION: SCREEN PRINTING SUCCESS AMID COVID-19

Moderator: Justin Lawrence, Owner, Oklahoma Shirt Company

Panelists:

Amy Baker, Owner, Threadbare Print House

Rich Santo, CEO, Culture Studio

Though the COVID-19 pandemic has impacted the screen printing industry and the markets it serves, there are shops continuing to thrive. This informative and inspirational panel features screen printers sharing how they have pivoted their businesses and strategies to remain successful.

12:00 p.m.

PRODUCT DEMO: NAZDAR PRE & POST-PRESS AUTOMATION

Beth Kerfes portfolio manager, Textile Screen Inks and Equipment; and David Bolding, textile equipment sales manager, Nazdar SourceOne, walk viewers through evaluating their operations with an eye for where software automation can help improve efficiency, from prepress all the way through postpress.

12:15 p.m.

SESSION: DRIVING PROFITABILITY AND EFFICIENCY IN APPAREL DECORATION

Presenters: Justin and Erin Moore, Owners, Barrelmaker Printing

For apparel decorators, there are two choices for increasing profitability: one is to do more business, the other is to minimize costs. Join these leading apparel decorators as they discuss the essential steps every company must take to keep costs low and production on-point. Each step outlined — if implemented faithfully — can add true profitability to your bottom line.

12:45 p.m.

PRODUCT DEMO: NAZDAR DS-4000 (DIGITAL SQUEEGEE)

M&R's DS-4000 Digital Squeegee is setting the standard for hybrid printing. At production rates of 400-plus prints per hour, the DS-4000 bridges the gap between direct-to-garment (DTG) printing and screen printing.

1:00 p.m.

PRODUCT DEMO: NAZDAR AND M&R COBRA

The new M&R COBRA shares the traits of the reptile of the same name — it's sleek, quiet and super-fast. The COBRA series of automatic screen presses is the newest product evolution from M&R. They set the standard in combining quality components, durable craftsmanship and high-speed production, all in one machine.

"We're still moving forward, and thinking of ways to grow, and just keep chugging along at it."

— Amy Baker, Owner, Threadbare Print House in the Screen Printing Success Amid COVID-19 panel discussion.

Getty Images: By Ajwad Creative

How a Custom Apparel Company Used Halftone Screen Printing to Land a Repeat Customer

By Amanda L. Cole, Editor-in-Chief, and Content Director, Special Projects, Promo Marketing Media Group

With an associate's degree in graphic design, Howard Potter had a job pouring metal in a casting shop and a hobby of designing promotional materials. But Potter saw an opening for a promotional product and decoration company in his area that did its own design work, so, in 2003, he left his day job and pursued his side job to create A&P Master Images in Utica, N.Y., which focused on decoration from the start by doing sublimation in-house and subcontracting out any other decoration needs.

By 2006, the need for better quality and faster turnaround on embroidery resulted in the business bringing it in-house with the guidance of Joyce Jagger, aka "The Embroidery Coach," who helped with the launch and has trained staff for the past 15 years. With the company's decoration capabilities growing, so did the space. A&P Master Images increased its floor plan to 700 sq. ft. in 2007, and more than doubled it in 2008 in order to move screen printing internally.

Three years later, the company increased its decoration capacity and by 2013, the distributor underwent another building expansion. After outgrowing that 4,000-sq.-ft. space later the same year, A&P Master Images purchased a 5,500-sq.-ft. building with an acre of land to accommodate future growth. Six month later, demand required more screen printing equipment and the addition of vinyl graphics.

Online stores and fulfillment offerings also help to service more than 5,000 customers in 15 states and five countries, but bringing

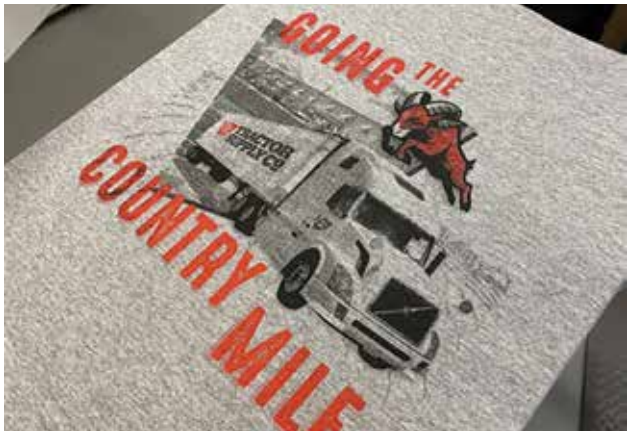
decoration internally has played a large role in A&P Master Images' growth and subsequent success.

"It allows us to control the quality, turnaround time, and handle all size orders to keep our customers getting what they, need, when they need it," says Potter, who co-owns the business with his wife, Amanda.

Recently, a distribution center for Tractor Supply Company was looking to purchase screen printed T-shirts, but only had a hand-sketched design that an employee had done. The A&P team pitched the idea to use halftone screen printing to bring the sketch to life.

"With creating the design from the sketch, it gave us a head start in the right direction and it was just a matter of getting the vision to come to life, which we were able to do," Potter says. "Halftone screen printing is used for print photographs, which you are using dots to create the image by ripping it in Photoshop to print like an old film negative. [It] allows you to print high-end detail with using a high mesh screen. Printing halftones also helps with print doing the simulated printing process, which allows you to blend colors. The halftone that we designed allowed us to create a design that gave the image depth and allowed for more detail to be seen in the design."

Halftone designs typically require test printing to see how many hits per color are needed to get the detail to print as clean and clearly as possible. Potter already does this for every test print phase, and he ran into no issues with the decoration. The finished product, which the client planned to give to employees who hit set goals, was such a hit that it evolved into an online company store for fulfillment and future business with the client on other projects.



The completed halftone screen print. Credit: A&P Master Images.

"They loved it," Potter says. "It got the message across that they were looking for and led to more orders."

Shirts printed with Aquarius Soft Base CMYK, showing the ability to capture a wide spectrum of color with just four screens plus a white highlight screen. Credit: Jenny Ortolani.

Variables in Printing Water-Based Inks

Review these tips before starting your first water-based print job.

By James Ortolani, Sales Account Manager, PolyOne Corporation

The fashion world has been decorating fabric with water-based inks and dyes for decades, and now finished-garment decorators are taking up water-based printing as well. Today's water-based ink systems offer a full range of products for textile screen printers that can be used across a wide scope of fabrics including cotton, polyester, 50/50, and tri-blends.

In some ways, it can be easier to teach water-based screen printing to someone new to the process than it is to train a person who has only printed with plastisol, because old habits are hard to break! For example, plastisol printers are accustomed to leaving the inks in the screens overnight or waiting a few hours to clean up after a production run, but screens used with water-based ink need to be cleaned immediately after printing to prevent the ink from drying in them. Another difference is that plastisol printers are not in the habit of flooding the screen with ink when walking away from the press, but this is also necessary when printing with water-based inks. Flooding the image area prevents it from drying in the screen prematurely.

Water-based printing is easy, but it's wise to review the main variables in the process before printing your first job.

Art

Creating artwork for water-based ink printing is not much different from designing for plastisol. Add a little thickness to fine lines and detail until you get familiar with printing water-based inks and select a 55-line dot pattern for simulated process jobs or halftone shading in the design.

Screen Emulsions

The screen emulsion needs to be water-resistant to keep the stencil from breaking down during the print run. Screen emulsion chemistry has improved significantly in recent years and it is no longer necessary

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to use hardeners for water-based inks, even on long runs. Dual cure emulsions work extremely well with water-based inks and the mesh can still be reclaimed after use. Alan Howe from SAATI Chemical explains, "Proper complete drying of the stencil is especially true in dual cure and diazo products where water molecules prevent cross-linking, as these will be the soft spots that start breaking down on the screen."

Squeegee Selection

Water-based printing is similar to traditional screen printing when it comes to squeegee selection: A softer squeegee will lay the ink on the surface of the garment and a harder durometer blade will drive the ink deeper into the fabric. A 60-durometer squeegee with a sharp edge is a good standard squeegee for manual or automatic water-based printing.

Some printers have upgraded to a triple durometer squeegee, like a 60/90/60, where the soft 60-durometer edge lays the ink on the surface of the garment and the 90-durometer core keeps the squeegee from deflecting.

Mesh

Coarse screen meshes have historically been a common choice for printing water-based inks, but today's systems now use much finer screen meshes. A 110 mesh is still a good choice when printing a water-based dye migration stopper or when printing high solid water base on dark garments, but many of today's water-based inks can be printed all the way up to 305 mesh! Or, try printing with the "S" screen mesh. The thread diameter is smaller and allows for a larger percentage of open area in your screen, resulting in a noticeable difference in print opacity when compared to standard mesh.

According to Ray Smith, field tech services manager, PolyOne, "With water-based inks, the goal with mesh is to achieve the most open area possible while maintaining a clean image edge. Mesh counts between 110 and 230 are recommended for vector designs to provide good ink deposit. Higher mesh, such as 230 to 305, could be used in halftone printing if needed."

On-Press Considerations

When printing water base with an automatic printer, Smith recommended setting up the flood bar with at least 1/32" space off the screen to create a heavy flood over the image. "Add a generous amount of ink in the screen to allow a good flood over the image area," he adds. "To improve the screen life, a wing flood bar keeps the ink in the middle of the screen, aiding the flood deposit."

Smith also notes, "To prevent over-flashing, heat up the shirt platens to 120 degrees F, and set the quartz flash to 80% power with a three to four second dwell time to attain an ink surface temperature of approximately 200 degrees F. Add a cool-down station to allow the garment to drop in temperature between 140 and 150 [degrees] F

Black 100% cotton T-shirt printed with Aquarius High Solid water base by PolyOne Corporation. Credit: Jenny Ortolani.

Three-color psychedelic design printed with Aquarius Bright Discharge Base ZF. All discharge colors are printed with 200 mesh and one squeegee pass for each color. Credit: Jenny Ortolani.

before printing the next color."

Note: The comments above are only applicable to high solids (HS). Soft base and discharge should be printed wet on wet.

Plastisol vs. Water Base

When printing white plastisol on dark garments, a common technique is to print with a 110 mesh, flash and print a second highlight white screen with a 230 mesh to increase brightness. To achieve this same effect with water-based inks, that process is reversed. First, print HS white through a 230 mesh and flash (to seal the surface of the garment). Then print a second HS white ink through a 110 mesh to achieve a bright white.

Mixing Water-Based Inks

When mixing custom colors, it is important to have a digital gram scale for accuracy in mixing ink formulations. With water-based inks there are three main systems — soft base, HS, and discharge — and they are all mixed with water-based pigment concentrates to achieve pantone colors. The pigments are typically universal, meaning they can be used across all water-based types.

The soft base (for printing light-colored garments) is great for printers starting out, because these inks are easy to print using a wide variety of mesh counts (all the way up to 305), and they print nicely on cotton, tri-blends, or polyester. Printing with HS water-based inks on dark garments takes a few more steps and a good understanding of the variables associated with printing on dark garments, including EOM, squeegee durometer, screen tension, mesh count, squeegee angle, squeegee speed, squeegee pressure, flood bar settings, off-contact settings, and flash cure temperatures.

Discharge Water-Based Inks

Discharge water-based inks are a great way to achieve bright colors with a very soft hand, but it's important to only use garments that are dyed with a reactive dye that is suitable to work with the discharge printing process. Printing with discharge inks requires a discharge additive to be mixed into the ink just prior to printing. (Gently remix the ink prior to adding to the screen.) The additive deactivates the dye in the garment with a bleaching effect and removes the color of the garment in the printed areas when run through a hot-air convection oven. The end result is a bright and soft hand water-based print! Discharge water-based inks are available containing formaldehyde (ZF) and non-formaldehyde (NF). Best results are proven to come from one squeegee stroke with discharge inks; multiple strokes will lay down more ink that can slow down the discharging process in the oven.

Special Effects

Special effect water-based inks include suede, metallic, reflective, and pearlescent, and can be mixed with pigment concentrates to achieve custom colors. Plastisol and water-based printing require similar mesh counts for printing special effect inks, such as glitter through a 30 mesh, pearl base through an 80 mesh, and suede inks through a 200 mesh.

Additives for water-based inks include retarders to keep the inks flowing in extra hot and dry shop conditions. Most water-based inks offered today are made to print straight from the bucket, so use additives sparingly and only as necessary.

Curing Water-Based Inks

Three categories of heat are used in curing textile inks: conduction, radiant, and convection. An example of conduction curing is the use of a heat press to cure a screen-printed image, and an example of radiant heat is the use of an electric infrared oven, such as what's used to cure plastisol inks. Convection heat is the optimum choice for curing water-based inks, because the hot forced air accelerates the evaporation of the water from the ink and allows the ink to cross-link and cure.

Most graphic supply houses sell water-based startup kits and this is a great way to get started with water-based printing. By following the guidelines in this article and reaching out to your ink supplier, you will be on your way to adding water-based printing to your print shop's services!

This article originally appeared in the Fall 2019 edition of the SGIA Journal Apparel Edition.

Nickolodeon teamed up with YR Store to launch a live decoration customer experience in Topman featuring SpongeBob SquarePants clothing. Credit: YR.

How Live Garment Decoration Became Big Business

By Tim Williams, CEO and Co-Founder, YR Store

I first heard about live screen printing in 2008 when a friend told me about the individuals behind the infamous Hit + Run live screen printing experience. Originally based out of Los Angeles, they had successfully franchised their business model in the United Kingdom just a year or so prior. It was a very novel concept at the time, and I cherished the T-shirt that had been made right in front of me at an event using the various bits of artwork I chose from a piece of paper. Around this time, my business partner, Tom, and I were on the verge of starting our own business based on our invention, the digital graffiti wall.

Our business grew, and a small part of what we did was live printing on the digital graffiti wall at events using designs created by the guests. We primarily printed onto stickers and mugs and some T-shirts — all of which was created via inkjet transfer. The problem, however, was unless the person creating the art was an artist, the T-shirts, stickers, or mugs rarely looked very good. And, of course, inkjet transfer was never a high-end print solution!

Fast forward to 2018, where live garment decoration at events is a growing industry in almost every country. Though many of the principles and basics date back to when we first started, our business has continued to change and pivot. The market for live decoration has transitioned dramatically from small screen printing events, and providers spanning the globe now offer a variety of techniques on a huge range of products.

For event organizers, the big selling point of these services usually centers around the experience — it's a new, interactive opportunity for people. Combined with software, the services tap into event goers' understanding and love of using apps as well as their desire to see something different and new. Whether it's a retail store opening, conference, expo, or anything in between, a live, on-site garment decoration activation means guests have fun, more interaction and something unique, which they have designed, to take home. There are many keys to success with live activation, and with such a huge

range of options and providers, quality will undoubtedly vary in terms of end product and experience.

Creating a Memorable Experience

It's important to get the experience right the whole way through. This means starting with easy-to-use design software on tablets or bigger touchscreens and ensuring the team running the activation are friendly and knowledgeable. It also means creating a seamless, understandable process for guests to create designs and ensuring the item they receive looks great and is high-quality.

Growing demand means the live print industry is always looking for what's new — new products, new print or embellishment techniques, and new, fun ways to create designs. At YR, we are seeing the conversation shift from a cutting-edge, fun event activity to a sustainable way of producing merchandise that has the added benefit of being a unique experience.

However, the growth in demand for live, on-site design and print has created unique challenges for service providers like my company, YR, and Family Industries. For example, some customers insist on printing on cotton garments, and if event organizers also require high volumes, a screen printing service might be a better option. That said, many event organizers simply do not know this industry even exists. Therefore, we still have work to do in making live on-site production a truly sustainable market.

One of YR's live activation setups was at a New York City Macy's Ralph Lauren department, where customers could customize products. Credit: YR.

A Lucrative Opportunity and Market

The promotional merchandise market is worth $22 billion in the United States alone — that's everything from pens to mugs to teddy bears and, of course, T-shirts. While that's a big number, often the cost of producing a non-customized item in advance is about 10 to

YR did a Star Wars custom print station at Selfridges in London. Credit: YR.

100 times less than producing it at an event. Let's look at a T-shirt as an example. A bulk T-shirt printed with a brand's message for its expo can be sold to 1,000 attendees for $3 each. Produce them live on-site, and the cost skyrockets to a minimum of around $15 each. This clearly will not appeal or make sense to every promotional merchandise buyer.

Despite the costs, there are many providers now offering an array of services for live activations, such as engraving luggage tags, embroidering bags, and printing tote bags with names. This has driven a new excitement in all parts of the garment decoration industry. There are now compelling reasons why equipment should be smaller and cheaper, inks better, and blank products higher quality.

And it doesn't stop there. Suddenly, all these parts comprising the live decoration service are visible to the consumer or event attendee. How many times have you seen a cheap heat press at a retail store or at an event? It's really exciting seeing the new wave of current and upcoming technology that not only looks great but gets the job done better. Who knew just how much people's desire to add their own custom touch to T-shirts could impact and drive change across the entire industry?

This concept is not just limited to events. Retail stores and malls all over the world — particularly in the United States and Europe — are suffering. Toys "R" Us is a prime example of how no business is too big to fail. Physical retail stores are changing as consumers opt to buy more on mobile or online, but it's not all bad news and actually presents unique opportunities.

Consumers expect more when they visit stores — they want the whole brand experience. Some brands have mastered this, and a great example is Nike. Its stores have always been places to visit and enjoy — buying things is almost secondary to having a great experience with the brand. Consumers will even get on their mobile devices while in the store to compare prices and make purchases to avoid carrying anything home with them.

This retail revolution has opened new opportunities for live garment decoration. Why not enable a consumer to customize the new Nike jersey he/she is buying? It's not exactly new, but integrated into the store in the right way, live activation creates a unique piece in a seamless, exciting experience that brings retail shopping to life. That integration can be achieved by having the same software experience in store as available online or capitalizing on the fact that since this is a special event or location, the software can be less Web-based and more exciting to use.

Mass Appeal

When implemented at events and retail stores, live garment decoration has been acknowledged as exciting, innovative and providing a great experience. However, with the financials involved, this will tend to be a marketing exercise for companies that have large enough budgets. In other words, it's nice to have, but the event or retail store will survive without live design and print or design and embroidery.

But that's not where the story ends. Nobody wants to order 3,000 pre-printed T-shirts with a company or event logo for an expo and then have to trash 2,000 due to overestimating numbers. In retail, having massive overstock is a constant concern. Last year, H&M famously announced they had $3.8 billion worth of products in inventory, some of which would be printed or embroidered "standard" products. So why not print on-demand? Why not wait until the customer orders a design to print or embroider rather than buy thousands of units of one design in advance?

Of course, some companies have been doing this for some time. Amazon is one, but also lesser-known brands, such as the sportswear brand Champion. The benefit of not having massive overstocks and featuring both an online/mobile and store experience could be huge. And that same principle of viewing customization as "print-on-demand" to reduce inventory and an opportunity to engage with guests or consumers in a more meaningful way also works for events. Suddenly, that price differential of pre-printed versus live print starts to make sense: Why have 10,000 $3 T-shirts no one wants when you could offer 2,000 $15 T-shirts that people love creating, would tell all their friends about and continue to wear because of the personal value they have invested in making it their own?

Right now, the garment decoration industry is shifting. Though there is still a place for large-volume print runs, there is a new frontier in print-on-demand, and it's happening now. It might be at an event or in a store, or you might not even know about it when you go on your mobile device to order a printed Levi's T-shirt. Either way, it's happening, and the change will be rapid. And that is exactly how live garment decoration became big business.

This article originally appeared in the Winter 2019 edition of the SGIA Journal Apparel Edition.

Moneyball
Screen Printing

By Michelle Moxley, Director of Innovation, The M&R Companies

The term "moneyball" is often associated with the Oakland Athletics baseball franchise, which in 2002 assembled a competitive team through rigorous statistical analysis. But how does this concept translate to other industries, specifically the apparel industry?

"Moneyball" screen printing is a method used to improve productivity and profitability through data collection. The following outlines an example in which we implemented the method presented to improve a factory without further capital investment.

Factory A is a Central American factory, an 11-press automatic shop. They had four oval 12-color/32-station automatic presses. They had seven carousel 18-color automatic presses. Initially, the factory had severe workflow issues and low performance. It had a large labor force, unskilled with reading and writing, and lacking computer skills. We held trainings to establish proper data collection methods and to place personnel in key roles.

Factory A maintained less than 25% below minimum orders of 288 pieces per single setup. Factory A created retail

The six unique data points and their percentage of weight in Factory A's success. Credit: The M&R Companies.

goods with a six-month sample to production turn. They maintained at least 25% special effects volume on their largest-volume customer.

Data Points

There are six unique data points that contributed to Factory A's success. The data points had a percentage of weight in the overall success of the outcome. These included waste at 40% — the largest contributing factor to the success of the model. Usage, at 10%, included consumables used daily by each department. At 5%, testing included durability results and non-retail or "B" grade product. Inventory at 15% included inventory for samples and pre-printed samples for reorders. Finally, setup times were at 20%, and "other" factored in at 10%.

"Other" accounted for several important key elements. For example, the print information sheet included screen count, flash count, equipment requirement, cost and price, image size, and special effects. This data was compiled for accurate scheduling at any stage of the process to avoid bottlenecks. "Other" also included shipping costs on consumables and machine maintenance.

Factory A collected data on the setups including "screens per day average" and "flashes per day average," for water base and plastisol. "Time per setup" was also collected as this was relevant for us to create daily maps for the operator workflow.

For example, if the average number of screens was eight, the average number of flashes was four and the average time was 40 minutes. We could provide the operator a map for the day based on the 40 minutes along with staging areas for flashes, reducing the need to chase down peripheral equipment.

Collection Methods

Setup in Factory A was the time it took from touching the first screen (the first action in a planned map), to handing the quality control a finished printed garment. If quality control

rejected the garment for a printing error, the setup time continued. If they rejected the garment because of an art or screen error, the style would start over and add to "per article rate" as a negative. If they rejected the style for aesthetic reasons, it moved to the quality control report.

Next to be observed was "per screen setup." This is important because if a factory is running a long average (e.g., 15 minutes per screen), you can target a reduction to 14 minutes/screen, which is easy to achieve and reward. When employees are tracking their success, it is important to incentivize them. It is easier to use per screen setup as the basis for creating goals, rather than setting the goal of decreasing a job time from 50 to 40 minutes. They may not see this as achievable because the next job could only take 30 minutes due to a reduced screen count.

We collected "special effect screen average" next. This is important because it identifies the anomalies and helps you see where there may be some inefficiencies. Typically, effects take longer to set up than flat inks. The data collection might show you that one operator is much faster at setup and approvals on high-density printing, creating an opportunity for cross-training with another who is losing time. It also provides reasons for "out of range" setups and helps stabilize the data.

Lastly, "setup materials" — how many pieces were used to set up the job — was ultimately tallied against waste data.

Factory A Analysis

When Factory A was initially analyzed, we established the setup time as 48 minutes per screen. Over a two-year period of data and analytics, they established a time of nine minutes per screen. We reduced 158 setup pieces to a standard 32 pieces per job — or one round on the oval machine.

It is also important to note Factory A's results were supported using incentives and positive reinforcement. If the team achieved goals, they would win meal tickets to the cafeteria. We only gave incentives to teams and never to individuals unless there was a contest. Contests only took place during training scenarios. For example, to win a meal ticket in samples, the team had to produce three setups per day per press operating in samples. For every day they completed the target, they would win a meal ticket for the team. They could only win if they completed the entire sample season on time with aesthetic efficiency. The team never lost in the duration of the program, which is why employees considering such tactics should be prepared to follow through and be proud to provide rewards.

The goals were always small steps that were easily achievable. If teams showed any challenges achieving their goal, we created training based on the data collected. At one point, for example, there was an issue with quality control rejecting the aesthetic during samples. It was happening frequently and causing delays. We held a contest in which the tested printers received rewards individually on achieving several aesthetic and hand-feel challenges, which improved overall efficiency.

Inventory data included "blanks for setups," "printed reorders," and "per article rate." "Per article rate" was essentially an efficiency rating showing how many times a style was set up before we produced it. After initial training, the factory performed at a 2.0 per article rate; after efficiencies and corrections, the factory achieved 1.15 per article rate.

Using a linear regression model, we anticipated sample orders and reduced the per article rate. We used pre-printed inventory to minimize multiple setups and reduce cost. We added any excess inventory into production orders at the end of the season.

The factory created a "B" grade report with 25 data points related to product failure during quality control. We gave each line item a percentage of failure to contribute to the overall reject rate. Development could then address the core issues and measure success through

Inventory included an analysis of how many times Factory A set up a style before producing it. Credit: The M&R Companies.

Daily ink reports showed consumption of all products in grams, which helped with targeted training in cases of misuse. Credit: The M&R Companies.

durability and B grade data. For example, lint was a 20% failure rate, and when development added a lint removal screen, the lint failure dropped to less than 6%, which improved overall durability.

The daily ink report showed consumptions of all products in grams, which helped with targeted training when we saw misuse. The average also helped in consumable order accuracy.

The daily screen report showed all screens made, humidity levels, broken screens, and reclaim waste in grams. We also measured HD screen emulsion in grams by crosschecking emulsion usage, which reassured measurements taken by the micrometer were accurate.

Lastly, waste data showed the largest margin increase to the factory's profitability. It provided the most opportunity for behavior improvements and reduced waste.

To begin waste monitoring, they used an opportunity to print 1.5 million water base units with a left sleeve imprint. The process required three screens of white ink, labeled as A, B, and C. We standardized flashes, squeegees, screens, and flood bars. We took 30-kg drums and placed them on the floor and labeled them, A, B and C, while labeling the production ink A, B, and C. We removed all the trashcans. We instructed the team that any "garbage" ink would go into the corresponding 30-kg receptacle. The ink room took the 30 kg container and removed anything truly "dead," refreshed the rest, and returned it to the floor the next day. At the end of 1.5 million units, we had one 30-kg drum full of "dead" ink. This ink was refreshed using a strong additive for the particular product, and we used the ink for training and contests. Essentially, at the end of a 1.5-million-unit run with a consumable product that has potential to create waste, we had zero waste. We then took the experiment shop-wide.

Waste measured in grams was reported by inks and screen reclaim daily. Each week the target percentage reduced through mainly on-press training and handling procedures. After we finished initial ink training, set-up shirts were also reduced. We set a reasonable amount of setup shirts and included it as part of the operating cost. Anything in excess was "out of range" and targeted and reduced. Initially, the factory was measuring 27% consumable waste. At the end of the program, it was less than 2%.

Factory A's Final Results

Factory A had a significant margin increase — more than 35% — as the factory was not profitable when the program started and was well within target at its completion. The factory saw an increase in business from 4 million to 12 million units with the retail brand they had already established and additional retail brand growth. Finally, the factory was the first factory outside of Asia awarded a Vendor Speed Award.

Michelle Moxley is a career research, development, and innovation expert in the apparel and fashion industry. With 24 years of print industry experience and a BFA focused in Media Arts, 2D and 3D Animation, she is skilled in screen printing, special effects, separation, graphics, pre-press, digital printing, and textiles. She is a creative artist and printer, always on the cutting edge of technology, ink, printing, equipment, and art.

Having been previously employed with Gildan, Virus, and other top production companies, she is currently director of innovation at M&R Equipment (Roselle, Ill.).

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PRODUCT DEMO VIDEOS

ROQ Highlights Automation During PRINTING United Insight Days

The onslaught of COVID-19 greatly impacted our industry nearly overnight, but as we changed the way we talked about our business and further embraced our relationships within our field, the ROQ community thrived. By helping shops setup, print, change over, and digitally future-proof their businesses, the ROQ NEXT automatic screen printing press's chain-drive system enables go-to pallet features for simple setup, print-from-screen functionality for quick strike offs, and faster indexing for cycles up to 1,200 pieces per hour, and future digital expansion. The ROQ Automated Packaging & Labeling Modular System presented a comprehensive automated pre-shipment solutions suite that may be purchased together or individually. During this packed video demonstration, the ROQ team and some of the PSPs using their equipment touched on many of the solutions the company offers, from locations around North America:

- Ross Hunter from ROQ U.S.
- Chris Blakeslee from Bella+Canvas, Los Angeles, Calif.
- Danny Gruninger from Denver Print House, Denver, Colo.
- Brett Bowden from Printed Threads, Ft. Worth, Texas
- Josh Merrell from Liquid Graphics, Santa Ana, Calif.
- Alexis Cary from In-House Prints, Frenchtown, N.J.
- Luc Regimbal from ColorTex Screen Printing & Embroidery, Ottawa, Ontario

Hanes Highlights Beefy Product Demo

Mike Abbott, director, Research & Development, and Tim Gibson from Hanesbrands took this opportunity to demonstrate the Beefy-T and Nano-T products, designed for use with screen printing equipment.

The Beefy-T is a 6-oz., 100% ring spun cotton tee, while the Nano-T is a 4.5-oz., 100% ring-spun tee. Both are made with 100% U.S. grown cotton. The Beefy-T was first released in 1975, and the Nano-T is a more modern option, with a lighter-weight material.

Nazdar Demonstrates a Wide Range of Solutions

During PRINTING United Digital Experience, Nazdar SourceOne presented three different videos highlighting a wide range of the company's solutions. The company presented major new product launches in conjunction with its partner M&R to help demonstrate the development of advanced manufacturing-level screen printing technologies. A few of the technologies viewers were able to learn more about included:

1. Nazdar SourceOne M&R Cobra Automatic Textile Screen Press

The M&R COBRA is sleek, quiet, and super-fast. The COBRA series of automatic screen presses set the standard in combining quality components, durable craftsmanship, and high-speed production in one machine.

2. Nazdar SourceOne M&R Global Copperhead Pro Max Textile Screen Press

M&R Global's Copperhead automatic screen printing presses combine quality components, leading class craftsmanship, and high speed production at a competitive price. Light weight honeycomb pallets with soft top rubber pads avoid excess overheating after flashing, which is one of the key features for printers using water-based and discharge inks.

3. Nazdar SourceOne M&R Global Copperhead Pro Mini Textile Screen Press

M&R's Copperhead Pro MINI is a versatile, all-electric automatic screen printing press. The Pro MINI is designed to use minimal power to operate, doesn't need an external compressor, and is a simple,

low-maintenance machine. It can produce 10-10,000 prints on items such as T-shirt neck tags, masks, HD logos and labels, pockets, sleeves, socks, bandanas, gloves, jean pockets, vests, underwear, innerwear, caps, transfers, and more.

4. Nazdar SourceOne M&R DS-4000 Digital Squeegee Hybrid Printing System

M&R's DS-4000 Digital Squeegee is setting the standard for hybrid printing. At production rates of 400-plus prints per hour, the DS-4000 bridges the gap between direct-to-garment (DTG) printing and screen printing. Since the Digital Squeegee prints on top of a screen-printed underbase, a wide array of fabrics — including synthetic and performance blends — can be printed digitally, opening the door to new market trends and cost-effective, high-end digital textile imaging.

5. Nazdar SourceOne M&R Maverick Industrial High-Speed DTG Printing System

The Maverick exemplifies M&R's commitment to future technologies in the garment decoration process. With fast print speeds, expanded color gamut, and rugged construction, the Maverick has a dual-shuttling platform that allows independent pallet shuttling based on the operator's needs, the Maverick can print images one-off or as multiple copies.

PRODUCTS

Products included in this section were updated as of October 13, 2020. For additional products within this category and others, please visit digital.printingunited.com/new-products.

EXILE Technologies Spyder III Computer-to-Screen System

The Spyder III brings considerable benefits to print shops that currently produce 25 screens or more per day. The Spyder's industrial build quality and its absolute accuracy has helped to make it a leader in the industry. With this unmatched imaging system, print jobs are generated with greater efficiency and twice the resolution of any inkjet printer on the market, all while delivering the traditional benefits of a CTS system.

Nazdar SourceOne M&R Cobra Automatic Textile Screen Press

The new M&R COBRA shares the traits of the reptile of the same name – it's sleek, quiet, and super-fast. The COBRA series of automatic screen presses is the newest product evolution from M&R. It set the standard in combining quality components, durable craftsmanship and high-speed production all in one machine.

Nazdar SourceOne M&R Global Copperhead Pro Max Textile Screen Press

M&R Global's Copperhead presses are the benchmark in automatic screen printing presses, combining the highest quality components, leading class craftsmanship, and high speed production to give you one of the finest presses, at an amazingly competitive price. Lightweight honeycomb pallets with soft top rubber pads avoid excess overheating after flashing, which is one of the key features for printers using water-based and discharge inks."

Nazdar SourceOne M&R Global Copperhead Pro Mini Textile Screen Press

M&R's Copperhead Pro MINI is an extremely versatile, all-electric automatic screen printing press. The Pro MINI is designed to use minimal power to operate, doesn't need an external compressor, and is a simple, low-maintenance machine. It is a simple matter to quickly produce 10-10,000 prints on items such as T-shirt neck tags, masks, HD logos and labels, pockets, sleeves, socks, bandanas, gloves, jean pockets, vests, underwear, innerwear, caps, transfers, and much more.

ROQ Fit

It Fits next to your bigger auto at index speeds of up to 1,100 pieces per hour, it prints so fast that it keeps up with the sleeves, tags, and simple prints you don't want your main press to do. It Fits your budget, and while it's designed for smaller spaces, there's nothing modest about the speed and efficiency this beast packs under the hood. Whether you're a manual printer looking to step into automation or a larger shop that needs additional capacity, the FIT is the perfect fit.

ROQ Next

With a dual-chain drive system, the ROQ Next enables go-to pallet features for simple setup, print-from-screen functionality for quick strike offs, and faster indexing for cycles up to 1,200 pieces per hour. With reinforced Honeycomb Aluminum Platens, laser guides for dependable precision, Duro and Winged Flood Bars, the ROQ Next unifies the best of the ROQ ECO and ROQ YOU automatic presses and is backed by the best warranty of the industry — three years parts, labor, and travel — squeegee-to-squeegee.

ROQ US Lotus Holland

With a Lotus Holland EVO Compact Auto Screen Reclaim System, your screens are automatically and completely cleaned for reuse again and again. Ink removal, stripping, degreasing, rinsing, and drying are all performed and contained within the machine to prevent your shop and employees from being exposed to chemicals and water. Within a few minutes, the screens are ready to be coated again.

Nazdar 2800 Series LED-UV Screen Ink

The 2800 Series LED-UV Decal Screen Ink is intended for decals used in the Durable Graphic Market. 2800 Series exhibits excellent chemical resistance and exterior durability, and will thermal diecut and accept pre-mask. The use of LED curing systems rather than traditional mercury vapor curing units reduces energy costs, reduces heat within the curing process, and provides significantly longer lamp life.

roq.us
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2020 Product of the Year

The ROQ Fold, Pack, & Label Solution Suite

Winner of the:Automation Equipment Packaging (post-print) Category

The Lotus Holland EVO Compact Auto Screen Reclaim

Winner of the Screen Printing - Post-Press (clean and reclaim) Category

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