

# WEARABLES

THE EDUCATIONAL AUTHORITY [www.wearablesmag.com](http://www.wearablesmag.com)

October 2014

## SHAPING THE FUTURE

HOW WEARABLE  
TECHNOLOGY  
WILL CHANGE  
OUR LIVES

Band  
T-Shirts  
That  
Rock

CAST  
YOUR  
VOTE  
FOR  
POLITICAL  
TEES

WHY WOMEN  
LOVE  
FOOTBALL  
APPAREL

GETTING  
SUED?  
LEARN TO  
PROTECT  
YOURSELF

Think  
Pink  
October's  
Color With  
A Cause

SCREEN-PRINTING  
SUCCESS

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- \* KEEP A CLEAN SHOP
- \* PLENTY OF PRODUCTS





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# WEARABLES

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## THE T-SHIRT THAT THINKS







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Wearables ENVIRONMENTAL STATEMENT. By using eco-friendly paper, Wearables magazine has saved the valuable resources below per year.			
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A man and a woman are shown from the chest up, wearing navy blue hoodies. The woman is in the foreground, looking towards the camera with a slight smile. The man is behind her, leaning in and kissing her on the forehead. They are both looking down at each other. The background is a blurred outdoor setting with a brick wall and some foliage.

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## Clothed Circuit

For our cover story package on wearable technology, we made a quantum leap with our futuristic circuit design. We used the Double Dry performance tee (CW22) from Champion Branded Printwear

(asi/59528; circle 141 on Free Info Card), and the decoration was designed and printed by Vapor Apparel (asi/93396; circle 142 on Free Info Card).

### Decorated Veteran

Champion's Double Dry tee is the brand's top-selling performance shirt. It's ideally suited for decoration because of its use of filament yarn (a continuous yarn) and polyester that is heat-set, so it shrinks less in the dryer and maintains its shape after printing. "Decorators love printing on our Champion Double Dry Tees because of the fabric," says Tom LaPonte, senior marketing manager for Champion Branded Printwear. "The filament yarn delivers a very smooth platform for all types of printing, from traditional screen printing to sublimation to laser etching."

### Future Design

To keep with the futuristic angle of our story, Todd Hirshman, creative director at Vapor Apparel, incorporated circuit board imagery. The goal was to demonstrate the idea that with wearable technology, clothing is becoming deeply integrated with electronics. "I started first with a background image, in this case the purple and blue circuitry," says Hirshman, "and then added the white circuit board graphics on top of it while allowing some of the background image to show through. The third layer is the metal strips with high reflection."

### White Noise

A white shirt provided the best background to print the design, but with all-over printing, seams and creases will leave gaps in the design. Hirshman uses lighting effects in areas like the armpits or where the collar meets the shoulder to distract from the creases. "In this case, I used a lens flare at the collar and reflections on the metal around the sleeve seam and armpit," he says. "On other designs, I've used lightning effects, starbursts or even gradients that faded to white in these areas so as to lessen the effect."

### Decoration Tip

Because sublimation can utilize the entire expanse of a garment, accurate measurements and design are crucial. "When designing for a garment, the first thing I do is make a template of the garment to be decorated," Hirshman says. He took a photo of the shirt and measured it, and then created a full-size template in Adobe Illustrator. "This way I know the angle of the sleeves, where the collar lays, and where the armpits are located."





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## ONLINE EXCLUSIVE

### Into the Future

In our cover story, we examine the technology that is set to redefine the field of wearables, including the tshirtOS. How did a whiskey company create a next-generation leap in apparel branding? We tell the surprising backstory in this online exclusive.



## VIDEO

### Follow the Pattern

No longer the boring domain of just solid-colored garments, patterns are making a noted resurgence in the promotional apparel industry. *Wearables* Editor C.J. Mittica features some of the keenest patterned garments in this Trend Alert video.



## NEWSLETTER

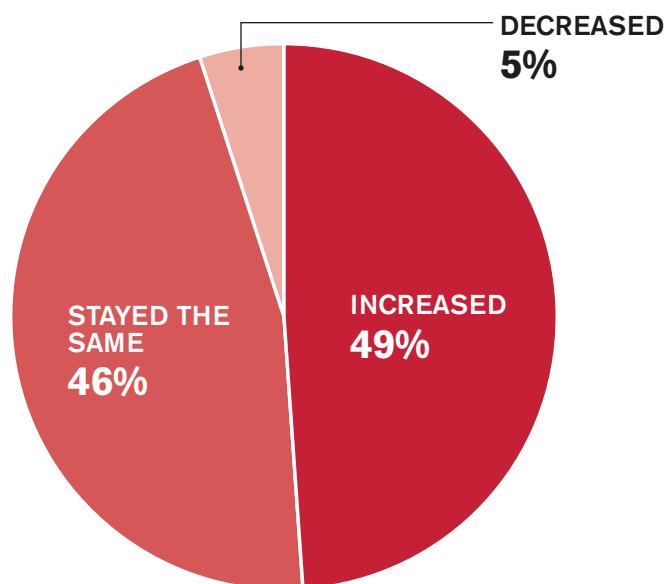
### Vesting Option

Vests offer exceptional warmth without the bulk, proving to be a go-to option in the fall, winter and spring. We look at the rising popularity of these pieces in our *Wearables Style* e-newsletter.

## STATISTIC

### The Magic of Marketing

ASI polled small industry distributors and asked "How has your marketing spending changed in 2014?"



## ASI SHOW

### Apple of His Eye

The ASI Show has announced its 2015 keynote speaker lineup, including an intimate conversation at The ASI Show Orlando with Apple Co-Founder Steve Wozniak about building one of the world's most iconic brands. To register, visit [www.asishow.com](http://www.asishow.com).





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## DRESSING SMART

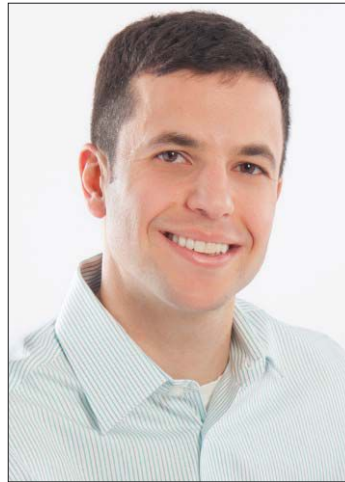
**H**ave you heard of the Internet of Things? It's a term which describes the growing phenomenon of imbuing everyday objects with connectivity. Name an object and it may already be an internet-enabled device. Mattresses. Thermostats. Toothbrushes. Coffee mugs.

Clothing of course is on that list. In fact, it's right at the top. The infatuation with creating "smart clothing" actually dates back to 1961, when a pair of MIT mathematicians wired up apparel to improve their odds at roulette. Subsequent attempts in the decades since have been few and fitful: maybe smart, maybe wearable, but never really both.

That will change very soon. Just in the past year, wearable technology has made a sizable leap into the consumer marketplace. About 13% of the U.S. population planned to purchase a wearable tech device in 2014. Fitness trackers are starting to flood the market, smart watches are on the door step, and eyewear technology like Google Glass is waiting in the wings.

And that's just the beginning. Forward-thinking designers are developing clothing with electronic capabilities woven right into the fibers. The potential from there will be significant. Imagine shirts that can read your vitals and tell you how to better sleep, train and structure your day. Garments that can power your personal electronics. Even dresses that change colors and patterns, all at the wearer's choosing.

In our cover story package, we cover the technologies that are changing the face of apparel. Some tech, like Near Field Communication (NFC) and nanotechnology, is already here. Others, like smart glasses



**“Wearable technology is going to fundamentally alter the notion of promotional branding.”**

and 3D printers, are coming sooner than you think. Turn to page 32 to see what the future looks like.

These developments matter. They aren't just lab creations for academic thought experiments. They are going to change apparel and drive consumer demand.

They are going to fundamentally alter the notion of promotional branding. Take the tshirtOS, which uses LED lighting to present a dynamic branding message that can be changed on a whim. The technology works with any garment that can be embroidered. Will the standard screen print seem quaint next to a shirt that can consistently change its logo?

The wearable tech category hasn't fully arrived yet. Manufacturing processes need to be perfected. Designers are beginning to iron out the wrinkles to make these garments mass producible. Most important, fertile minds need to unleash their creativity. If you remember the pre-iPhone era of smart phones, that's where we are now: the relative calm before the storm. Get ready now.

Thanks for reading,

*Charles J. Mittin*



### WHAT'S IN MY CLOSET?

Each issue, we ask our readers a simple question: What is your favorite branded apparel item in your closet? Send in a photo of you and your favorite garment, and tell us in a paragraph why you love it. We run one submission each issue, and that lucky winner receives a \$25 Visa Gift card.

This issue, our submission comes from Serena Raymond, social media and customer service associate for Special T's (asi/739250): "I made this shirt the first week I started working at Special T's for the Falcons-Packers game last December. I used a classic Gildan tee and premium yellow vinyl. This shirt is what taught

me about our decoration processes. I wanted to learn how to apply the vinyl to the shirt myself, and I made these four graphics. I was so proud of myself for creating this tee from start to finish. We traveled by car to Lambeau Field and spent days in the frigid cold, enjoying every second. We wore these tees over our layers, making sure we exuded Packers (and Falcons) pride! I have great memories of my trip every time I wear this tee, and it's also a great reminder of everything I've learned about the decoration business since I've started working here at Special T's. Since then I've learned a lot, but this shirt was just the beginning!"



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# TRENDS

THE HOTTEST  
APPAREL AND  
ACCESSORIES

By Alissa Tallman

## Show Your Metal

**BRIGHTS AREN'T THE** only thing still front-and-center in fashion – so are metallic designs, especially silver. The latest collection from Paco Rabanne is awash in metallic silver, from mini-dresses to boyfriend pants, and Lanvin's seasonal wardrobe features a silver jumpsuit as well as separates in a variety of metallic colors. You'll also see silver shoes, such as low-heeled boots from Saint Laurent and sneaks in Nike's stunning 2014 "Silver Speed" collection. Target the youth market for sure (kids and teens love the glitzy, upbeat allure of anything metallic), but think broadly – metallic can be used to catch anyone's eye. Accessories in particular are superb because they introduce just a touch of sparkle.

Custom metallic décor tee from **Golden Goods USA** (asi/57695; circle 79 on Free Info Card).  
Simulated leather fashion tote (1486) from **Gemline** (asi/56070; circle 80 on Free Info Card).  
Metallic reversible jacket (K004XS0) from **K-Way** (asi/65924; circle 81 on Free Info Card).

### DECORATION TIP

Black logos that include bright colors are a perfect match for metallic-silver garments or accessories, especially logos sporting red, yellow or green. Stamp a logo onto a silver tote or a hat for an extraordinary effect that will earn your customers' undivided attention. Use foils for brilliant silver designs set against black garments.







French terry hoodie (8902) from **Pima Apparel** (asi/78820; circle 84 on Free Info Card). Screen printed by Apple Imprints Apparel (circle 83 on Free Info Card).



Men's silk tie (ELBS-326-058) from **Wolfmark** (asi/98085; circle 86 on Free Info Card).

## GET TICKLED WITH Pink

**FROM CHANEL'S METALLIC** pink running suit to Dior's cotton-candy-hued fur trenchcoat, pink, of all shades, is a notable frontrunner this fall. This playful and lively pastel is intent on staying in the spotlight post-spring and summer, primarily as a result of 1960s-resurgent clothing and styles.

"While our fall color palette is typically comprised of neutral hues, things changed in a big way this season. Alongside classic shades of gray, camel, black and ivory were electrifying jolts of fuchsia," notes a recent article by Style.com. Pink is an excellent way to get rid of the coming winter blues.

Shakira Parks of Boxercraft (asi/41325) also mentions fuchsia as one of the hottest fall shades. "Fuchsia in particular has become much more of a staple than a trend," she says. "It's one of those colors that energizes, commands attention and gets you noticed. It's a great transitional color you can wear all year-round, plus it can easily be incorporated into any wardrobe."



Unique pink-patterned backpack (CBP-071) from **Ame & Lulu** (asi/35232; circle 85 on Free Info Card).



Youth interlock sweatpants (I329Y) from **Blanks Plus** (asi/40642; circle 82 on Free Info Card). Screen printed by Apple Imprints Apparel (circle 83 on Free Info Card).

Ringspun cotton women's V-neck T-shirt (T211030) from **Boxercraft** (asi/41325; circle 87 on Free Info Card).





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# Quarter-Zip Fleece

BY CHUCK ZAK

**WHEN THE TERM** “normcore” first appeared in 2013, its inventors attempted to describe the appeal of apparel that promised “the freedom that comes with non-exclusivity.” Which is just a fancy way of saying that it’s cool to belong.

The fleece pullover is one of the linchpins of this (non) movement, a “supremely utilitarian” garment that exists outside all the

turmoil of changing tastes. It’s what people wear when they are comfortable with themselves and their environment. And as a branding tool, it’s the perfect item to capture the attention of other people, similar in their ease among friends and coworkers, and in their universal desire for comfort and community.



Long-sleeve microfleece pullover (4140) boasts strong thermal properties for just the right level of warmth. Available from **Bishop, The Garment Co.** (asi/40585; circle 132 on Free Info Card).



This versatile 11.4-oz. polyester women’s heathered fleece sweater (932) features contoured panels for a tailored fit. Available from **Tri-Mountain** (asi/92125; circle 118 on Free Info Card).



Anti-pill 6-oz. polyester jacket (7533-037) has side-seamed pockets and Reebok emblem on left bicep. Available from **Dunbrooke** (asi/50930; circle 130 on Free Info Card).



Ladies’ cotton/polyester pullover sweatshirt (W2396) features contrast twill neck taping. Available from **MV Sport/Weatherproof** (asi/68318; circle 91 on Free Info Card).



Lightweight, stylish women’s anti-pilling microfleece pullover (5870) is perfect for a business-casual look. Available from **Charles River Apparel** (asi/44620; circle 131 on Free Info Card).



Lightweight polyester 1/4-zip pullover (WB-4651) has microfleece interior and Mossy Oak camouflage print. Available from **White Bear** (asi/97049; circle 135 on Free Info Card).

## Three Selling Tips

### 1 Cash in on the quarter-zip.

The warmth and comfort of fleece may be immune to trends, but quarter-zips are experiencing their own moment of favor. "These are a very popular pick right now," agrees Peggy Peugh, account executive with HALO Branded Solutions (asi/356000), who notes the style's "youthful flair" which may sway buyers with a younger audience. Similarly, Tom Flippo, senior vice president at Dunbrooke Apparel (asi/50930), deems full-zips more of an "inexpensive jacket" without the same appeal as a pullover, and possibly without its current momentum. "Right now," says Flippo, "the quarter-zips are hot."

### 2 The king of casual.

Peugh says pullovers can bring any ensemble to an ideal level of casual. "You can dress them up or dress them down," she says. "Adding a collared shirt underneath gives a business-casual look," she says. "And on the days that are purely casual, it works well with a T-shirt and jeans." Showing samples over a variety of layers beneath will help demonstrate the range of casual and how pullovers can both soften the overly formal and elevate the nearly formless.

### 3 Choose colors and textures.

"Bright colors and heathers are hot right now," says Flippo, and for the appropriate clients, the choice of more exotic colors can be a big plus. However, that subtle lavender might not be right for everyone. Construction is a popular market for pullovers right now, Flippo says, and this group might be more amenable to the current craze for camo. Peugh also credits retailers like Macy's and Nordstrom with stoking a desire for colorblocked versions of pullovers, giving distributors another way to combine current trends in color with the timeless advantage of these fleece pullovers.



Innovative fleece pullover (PL-2) with moisture management offers improved dry time. Available from **Stormtech** (asi/89864; circle 134 on Free Info Card).



The Gildan Heavy Blend vintage cotton/polyester sweatshirt (18800) has air-jet yarn for a softer feel with no pilling. Available from **WearMagic** (asi/95765; circle 133 on Free Info Card).



Extra-soft, lightweight fleece pullover (FA700) feels comfortable and warm over a T-shirt. Available from **SanMar** (asi/84863; circle 99 on Free Info Card).



Men's cotton/polyester 8.6 oz. quarter-zip pullover features two side seam pockets and a metal zipper. Available from **Tri-Mountain** (asi/92125; circle 118 on Free Info Card).





Men's V-neck cardigan (05506) from **S&S Activewear** (asi/84358; circle 92 on Free Info Card). Screen printed by T Productions (circle 93 on Free Info Card).



Sporty cropped cardigan (W1431) available from **MV Sport/Weatherproof** (asi/68318; circle 91 on Free Info Card).



Zipper-front cardigan (372) available from **Edwards Garment** (asi/51752; circle 89 on Free Info Card).

## COVER UP WITH Cardigans

### CARDIGANS GAVE FALL/WINTER 2014-2015

Fashion Week an extra cozy and majestic feel. Gorgeous getups from the likes of Saint Laurent, Michael Kors and Calvin Klein dared to reach the floor and made for a rather glamorous match with heels, knee-length boots and fur coats.

"Long-length cardigans for ladies made from soft and delicate fine-gauge cotton blends are a significant trend," says Taraynn Lloyd, marketing director for Edwards Garment (asi/51752). "The women's styles have a flattering silhouette and complement curves. They are also lightweight, have a smooth drape and are easy to care for." Women can choose between a traditional V-neck button-up or open neck, while Lloyd says men's traditional V-neck button vests and sweater cardigans are back in force. "These styles have been freshened up by providing a more youthful fit and eliminating pockets," she says.

"Cardigans and coverups are comfortable and attractive corporate-wear items," adds Shurli Allinott, president of Brandwear (asi/41545). "This season, styles are primarily long and draping ... and oversized for that boyfriend look, great for the office or on the move."



Unisex baby rib cardigan (RSA4400) available from **American Apparel** (asi/35297; circle 94 on Free Info Card). Screen printed by Visual Impressions (circle 95 on Free Info Card).



Unique shawl coverup (259) available from **Brandwear** (asi/41545; circle 90 on Free Info Card).





## Classically Modern

This sporty ensemble guarantees comfort at the same time it transmits an uber-style-conscious vibe.



Track jacket (JST93) from **SanMar** (asi/84863; circle 99 on Free Info Card).

## Washed Out

Bleached denim looks for men are on the fashion A-list this season; this outfit follows suit to create a rugged and outdoorsy allure.



Fleece hoodie (TM18118) from **Trimark Powered by Leed's** (asi/66888; circle 102 on Free Info Card).



Cargo pants (C54108) from **Dungarees LLC** (asi/50947; circle 100 on Free Info Card).



Loose-fit jeans (B325-LGB) and waterproof work boots (CMP1100) from **Broberry Mfg. Inc.** (asi/42057; circle 103 on Free Info Card).

# Stripe Shirt

**RETRO STYLING HAS** been in vogue for several seasons, but rather than petering out as time goes by, this style has only revved up. Fashions for fall and winter 2014-2015 are saturated with designs from yesteryear, whether it's 1950s dress silhouettes or 1980s neons. This dynamite crewneck tee featuring a grain-sack stripe print (01935EA) from Alternative Apparel (asi/34850; circle 98 on Free Info Card) takes on this trend with gusto and infuses it with innovative upgrades. The shirt is form-fitting and flattering with a sturdy, street-smart look to it that's only enhanced when paired with jeans. Lightweight and garment washed, the shirt's unique grain-sack stripe gives it an edgy look and tons of nostalgic appeal.

### Market Watch

This shirt would make a perfect match with outdoor-related promotional events or opportunities, especially those catering to kids, teens and young adults. Consider high schools and universities as well as media companies, which cater to this market. Also keep locally-owned small businesses in mind, which are often seeking to update their image.



Faux leather and polyester sneakers (WCVS-7203) from **Assertive Creativity** (asi/37166; circle 101 on Free Info Card).





## THE CHALLENGE

# “What Do I Do If I’m Being Sued?”

It’s no secret that employees don’t always part with an employer on the best of terms. When things don’t end well, though, there’s often more at stake than hurt feelings. If a former worker sues, the resulting litigation can cost a company dearly.

Disgruntled employees sue for many reasons, attorneys say. Common claims include wrongful termination, sexual harassment, discrimination and workplace safety violations. Oftentimes, however, the underlying impetus for the suits was a toxic work environment. Lawyer Nate Hill has some succinct advice for employers: “Don’t be a jerk.” Often, fired workers seek legal representation due to an undefined sense of unfairness or mistreatment by an unpleasant supervisor, and it’s only after speaking to a lawyer that specific illegal business practices are revealed, says Hill, an employment law attorney with Arizona law firm Jackson White. “Believe it or not, employees who are treated kindly by

their former employer – regardless of why the employment ended – are often very reluctant to sue their employer, even if there is a strong legal basis to do so,” he adds.

But making the cut of an annual “best places to work” list won’t necessarily insulate a firm from all legal action, so what steps should a company take if litigation is imminent?

**Check your insurance coverage.** Your insurance plan may cover the former worker’s claims, but the insurer often opts to use its own legal counsel in such cases, says Gordon Berger, an attorney with national labor and employment law firm Ford Harrison. “Not reporting the claim through insurance is a mistake, as the carrier negotiates favorable rates with law firms,” Berger advises.

**Contact your lawyer (or hire one).** If your insurance doesn’t cover the claim, or allows you to choose your own counsel, this should be the immediate next step. Your lawyer will guide you through the process,



helping you avoid costly missteps.

**Document everything.** It’s a good idea, in general, to have a carefully worded, attorney-vetted employee manual that spells out your policies, plus regular performance reviews, incident reports and other paperwork. “I’m a big believer in having a lot of stuff in writing,” says Marshall Atkinson, chief operating officer of Wisconsin-based apparel decorator Visual Impressions. “It’s one of those things where we’re trying to cover our bases in case there is an issue.” After being sued, having that clear documentation on hand is essential. However, don’t create new documents, such as summaries of the events leading up to the employee’s termination, without your lawyer’s OK, says Lauren Bloom, a Virginia attorney who specializes in business ethics.

**Avoid the temptation to delete.** Direct your employees to preserve all documents relating to the lawsuit, even if they may be embarrassing, Bloom adds. This goes for electronic communication, like emails, Facebook posts, texts and tweets, as well as paper documents. “Tempting as it may be to have problematic documents disappear, management has to establish and enforce an absolute prohibition on document destruction,” she says.

**Consider settling.** Litigation is expensive. Sometimes, especially if the former employee is not asking for a lot of money, it makes sense to negotiate a settlement, even in cases where the employer sees no wrongdoing, Berger says. — *Theresa Hegel*

## Be Prepared

Often, a company can keep workplace tensions from escalating into full-blown lawsuits by setting up clear expectations for employees from the get-go and promoting an open, positive corporate culture. “The main way to prepare for a lawsuit is to prevent it from happening in the first place,” Marshall Atkinson of Visual Impressions says. Here are three strategies to ensure your business is prepared for potential legal snarls.

**Educate Yourself:** Consult with your attorney to keep abreast of legal trends and the latest compliance issues. Gordon Berger says his firm Ford Harrison holds webinars and sends regular alerts to clients on the latest laws. He recommends seeking out seminars and other programming from organizations like the Society for Human Resource Management to stay current. If you can’t afford

to keep an attorney on retainer, consider joining a professional organization, like the Specialty Graphic Imaging Association, which has a lot of online educational resources for members, Atkinson says.

**Train Your Employees:** Provide regular training, not just on new equipment and software, but also to reinforce workplace safety and prevent harassment, discrimination and cultural misunderstandings.

**Promote a Team Attitude:** In larger decorated apparel shops, there’s often a divide between front office employees and back shop workers, which can breed resentment, Atkinson says. “You have to break down that barrier,” he adds. Atkinson recommends company-wide picnics, pizza parties and volunteer efforts to promote camaraderie among all employees. — *TH*



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## MARKET SPOTLIGHT

# A Vote For Branded Apparel

Logoed T-shirts and more are a must for the campaign trail.

Back when she was a campaign staffer for retired U.S. Congresswoman Gabrielle Giffords, Amethyst Polk remembers seeing a woman wearing a button that read: “Little old ladies for Obama.” It made her laugh, but it also stuck with her as an example of the kind of targeted swag most effective for political campaigns. “People like people who are like-minded,” says Polk, who now works for the American Red Cross and other nonprofits. “Wearing a shirt that reads ‘Teachers for Mr. A’ or ‘Gun owners for Mrs. Z’ helps voters to serve as brand ambassadors to their own personal network of family, colleagues and friends.”

Polk says campaign insiders often referred to the T-shirts, bumper stickers and other freebies they give out as “chum,” because they’re a “quick and easy way to attract hungry voters, volunteers and donors.” As Election Day draws near, expect the campaign waters to fill with even more of the patriotic shark bait. For candidates in smaller races, the biggest promotional purchase tends to be yard signs, says Luke Shenk, graphic designer and sales manager at Capitol Promotions (asi/157125) in Glenside, PA. But T-shirts printed with the same logo as the signage are also popular, he adds.

Elaine Kittrell, general manager of Sampan Screen Print (asi/317757) in Jeffersonville, IN, has seen an uptick in T-shirt sales, as races in the region have gotten more competitive. In addition to having volunteers wear campaign shirts for door-to-door canvassing, candidates are handing out free

tees and balloons at fairs and other events, she says.

Campaign apparel logos tend to be on the conservative side, generally the candidate’s name in bold print, with perhaps a hint of stars and stripes incorporated into the design. “It’s politics,” Shenk says. “We work in red and white and blue. Fortunately, and unfortunately, that’s 90% of what we do.” Some candidates, particularly those with big names and deep pockets, spend more time and money creating iconic logos and developing thoughtful promotions. Mark Graham, CEO of Toronto-based distributor Rightsleeve (asi/308922), points to Barack Obama’s presidential campaign as “swag brilliantly put together,” with a distinctive logo and cool branded products that created an emotional connection with voters.

When catering to candidates’ needs, there are a few special considerations. Many have strict “made in America” requirements. In her campaigning days, Polk remembers having to give up her rental car to former Ohio Gov. Ted Strickland because she was the only staffer who’d received an American brand. Finding promotional items manufactured in the U.S. also proved challenging at times, she says. Another big issue for certain candidates, according to Shenk, is that products be made by unionized shops. Other candidates don’t have the same priorities. “You’re working with two different sets of vendors at that point,” he says.

Besides T-shirts, popular items for political candidates include buttons and reusable grocery bags. Polk says voters particularly appreciate items — like buttons and magnetic bumper stickers — that allow them to remain noncommittal. If you have a job that frowns on overt political statements, for example, a pin can easily be stowed in a glove box or purse before clocking in. Cloth grocery bags are nice because voters use them all over the place, not just at the supermarket. “Those are basically portable signs,” Shenk says.

Though it often seems like political parties are in nonstop campaign mode, companies like Capitol Promotions tend to see a two-month lull in business after Election Day, with orders picking back up in January, as a new crop of candidates prepares for the polls. “You have to pack the business in during the windows of opportunity before primaries and the general election,” Shenk says. — TH

## Product Picks

Distributors and decorators can work both sides of the aisle with smart apparel choices.



Zach Payne, a candidate for county recorder in Clark County, IN, is promoting his campaign with red logoed apparel decorated by Sampan Screen Print (asi/317757; circle 76 on Free Info Card) in Jeffersonville, IN. The T-shirt (8000) he’s wearing from **Gildan Activewear** (asi/56842; circle 77 on Free Info Card) is made of a 50/50 cotton/polyester jersey knit and features wicking properties. Callie Jahn (right) shows off a ladies baby rib tank (1080) from **Bella+Canvas** (asi/39590; circle 78 on Free Info Card). The supersoft tank, made of 100% combed and ring-spun cotton, features wide straps for optimal coverage.

## BY THE NUMBERS

# \$1.16 BILLION

The amount of money U.S. congressional candidates raised for the 2014 mid-term election as of August.

Source: [www.opensecrets.org/overview](http://www.opensecrets.org/overview)

## Q&A

# I Believe...

The who, what and wear of industry experts

BY YOUSUF RAZZAK, AS TOLD TO THERESA HEGEL

**... If someone else can do it, why can't we?** We try to be all things to our clients. I think we are the most diverse contract shop in the country, offering screen printing, embroidery, digital transfers, direct-to-garment, garment dying, compressed T-shirts, rhinestones, all-over belt printing, cut-and-sew and more. The other day, one of our competitors, who is also a friend, was at our shop and asked, "What don't you do?"

**... Family businesses are complicated.** The benefit is that you always have someone you can trust to get things done and cover for you. On the flipside, it's tough to separate family and business, and when you get upset, you have to tread lightly. My father brought us up well, and we can get into heated battles that last an hour, but when it comes time to eat, we break the tension, asking "What's for lunch?" We never hold a grudge.

**... No job is too big.** Our tightest job came about two years ago, when an ad specialty client called us on a Friday morning to order 63,000 rally towels for the New England Patriots. The catch? The towels needed to be delivered to the stadium by Sunday morning. We worked all night and loaded our trucks on Saturday, about an hour before an epic

“There are about 40,000 screen printers in the country, and we probably fall into the top 50 in volume and sales.”

snowstorm hit the region. The towels were delivered on time, but, whew, was that close.

**... Low prices are hurting the industry.** If clients have the time, they can go overseas and get products way below anything we could provide here. If you can find an embroidered hat for a couple of bucks online, why would you get it made here for \$5 or \$6? In the end, though, if the client wants control and trust, they come to us, so they can oversee their project from start to finish.

**... Nobody likes automated phone systems.** Even though we are a large contract shop, we do our best having a live operator answer calls. I can hear my dad's voice all day, ringing in my ears: "Pick up the phone." I've had a lot of clients tell us that competitors are hard to get a hold of, but in our industry, people need answers on the spot.

**... I get more business from "I know a guy" than Google.** We are trying to focus more and more on online presence with our website, Facebook, Twitter and email blasts, but I still find a lot of our business comes from word of mouth, whether online or face to face. The Internet is a sea of information, and if you pay a few dollars, you can get yourself on the top of the list, but a search engine can't tell people why you are there. There are about 40,000 screen printers in the country, and we probably fall into the top 50 in volume and sales, but how can someone weed out the rest and find us? Referrals are everything.

**... Our growth is too fast for traditional lending.** A small-business line of credit with your bank works for some, but we use an invoice factoring firm to handle accounts receivable. They give us 80% of our invoices up front, and the balance minus their cut when we get paid. This has been invaluable over the years, and we find our clients tend



## Yousuf Razzak

- Owner of Chicago Printing and Embroidery (asi/44823), a family-owned shop in existence for 20-plus years.
- Has grown business into a high-volume, multi-decoration contract shop.

to pay them faster. A good example of how invoice factoring helps happened a couple of years ago, when a good client called and said he needed 20,000 shirts decorated by 8 p.m. This was in the middle of our move to a new building; we had four machines running in our new building and three in our old location. I called our vendor to make sure the stock was there and called our shop to make sure everyone was on board, then called the client back to tell him he could count on us. My next call was to the invoice factoring firm asking them to wire funds to my vendor, then to the vendor to tell him my driver was on the way to pick up the shirts and that payment would be in his account that afternoon. About an hour and a half later, we were printing at both locations, on our way to meeting the client's deadline.

**... Jennifer Aniston is gorgeous, but our shirts are the real stars.** I like movies like *The Hobbit* and the Harry Potter series, but my all-time favorite probably is *The Breakup* with Vince Vaughn and Jennifer Aniston. Almost every shirt in every scene in that movie I made!



BEGINNER – 100

## With a Female Touch

**It's fair to say** that women primarily drive demand for fashion. Therefore most people might not consider football a significant force in apparel trends. They're wrong. Refinery29, an independent fashion and style website ([www.refinery29.com](http://www.refinery29.com)), blogged about the misconception earlier this year, pointing out that women make up 44% of college football fans and when it comes to female viewership, "among women ages 18 to 24, *Sunday Night Football* has won out over *Dancing With The Stars*, *Glee* and *Grey's Anatomy*." Add to that the NFL is actively courting female fans. There is an audience ready to wear football-inspired clothing, particularly if it showcases a man or woman's favorite team logo.

**“Women make up 44% of college football fans.”**

The promotional apparel industry has taken note. A quick search on ESP and you've found over 500 options designed for the female audience alone. From jerseys and shorts to accessories such as bags and sunglasses, there are choices that tap into the game-minded audience – and that doesn't count unisex styles.

For example, new this year is the unisex poly mesh football jersey (H418) from American Apparel ([asi/35297](http://asi/35297)). "We added the football jersey to the collection since sportswear is in such high demand right now," says Yvette Corona, spokesperson for American Apparel. The Sport-Tek brand from San-Mar ([asi/84863](http://asi/84863)) also brings female-focused options. Its new PosiCh-

arge (a colorfast performance feature) replica jerseys (ST307 and LST307) deliver football-inspired companion styles for men and women. "The Sport-Tek brand is about the power of teams," says Lee Strom, senior marketing manager at SanMar. "It's a brand built specifically for this industry, so it targets the needs of schools, communities and groups of all kinds who support their athletes and the fans who cheer them on."



Male or female, young or old, the unisex poly mesh football jersey (H418) from **American Apparel** ([asi/35297](http://asi/35297); circle 94 on Free Info Card) draws fans.

Photos courtesy of American Apparel ([asi/35297](http://asi/35297))



Look for companion styles to outfit a female vs. a male body type, such as this ladies PosiCharge jersey (LST307) and a men's jersey (ST307) from **SanMar** ([asi/84863](http://asi/84863); circle 99 on Free Info Card).

Photo courtesy of SanMar ([asi/84863](http://asi/84863))

### Youth Players On The Rise

According to the annual High School Athletics Participation Survey conducted by the National Federation of State High School Associations, for the 2013/2014 school year, football participation among high school students increased for the first time in five years:

- 6,607 more boys participated in football last season than they had the year before, pushing the total to 1,093,234.
- 1,715 girls participated in 11-player football, an increase of 184 from the previous year.

# Add Sales With Aprons

**Did you know** that there are over 5,000 aprons from ESP-listed suppliers? They come in a variety of styles, sizes and fabrications. Here are six to get selling:



**1. Norwood** (asi/74400; circle 110 on Free Info Card) introduces an all-around, 100% cotton bib apron (45887) with pocket and an adjustable neck clasp.

Photo courtesy of Norwood (asi/74400)



**2.** For messy work environments, consider the nonwoven apron (1492) from **Evans Manufacturing** (asi/52840; circle 111 on Free Info Card). Made of water-resistant polypropylene, this durable apron can be spot-cleaned and air-dried to keep stains away.

Photo courtesy of Evans Manufacturing (asi/52840)

**Bistro Aprons** get their name from small Parisian cafes, worn by chefs and waiters. They come in a variety of lengths from waist only (covering stomach to top of thighs) to full, which hang below the knee.



**3.** Durable denim is a classic choice for hardworking aprons. This denim style (A96000) from **Vitronic Promotional Group** (asi/93990; circle 112 on Free Info Card) has three generous pockets plus adjustable neck and waist ties.

Photo courtesy of Vitronic Promotional Group (asi/93990)

**4.** You'll get a workhorse of an apron with the Value Leader waist apron (A96010) from **Vitronic Promotional Group** (asi/93990; circle 112 on Free Info Card). Made of a sturdy, medium-weight canvas, this apron has three-needle construction for extra durability on the job or in the wash.

Photo courtesy of Vitronic Promotional Group (asi/93990)



**5.** How to mess-proof workers while keeping a logo front and center: Use this waist-style bistro apron (APR55) from **alphabroder** (asi/34063; circle 113 on Free Info Card) to provide protection against spills and splashes.

Photo courtesy of alphabroder (asi/34063)



**6.** The traditional cobbler's apron slips over the head and ties at the side, providing both front and back coverage. This crisp, clean option from **Eva Sportswear** (asi/52834; circle 114 on Free Info Card) is made of a 9-oz. 65/35 cotton/poly twill to feel comfortable while looking sharp.

Photo courtesy of Eva Sportswear (asi/52834)

## A Baker's Dozen Opportunities

- Restaurants
- Bars
- Cooking classes
- Culinary schools
- Salons/spas
- Professional housecleaners
- Gardening stores/clubs
- Woodworkers
- Teachers
- Festivals
- Corporate picnics/BBQs
- Pottery/Art classes
- Bakeries



ADVANCED – 300

# Look on the Bright Side with Neons

**Forget somber colors** for fall and winter. This year's cool season will be full of hot color, and nothing says "hot" like neon. But take care: These shades must be applied carefully.

A reliable way to sell the trend is to suggest brightly colored accessories. A belt, tie or scarf works well when paired with a lower-key color on the base garment. Khaki is an effective companion to anchor the neon pop. White also works, though it's livelier. Take care with black; the contrast of a neon against a dark color like black can be jarring.

A neon infinity scarf from Assertive Creativity (asi/37166) works well for female audiences. The fashionable accessory

definitely grabs attention but does so in a more sophisticated way. At trade shows, pair scarves for female salespeople with ties for male salespeople to become a beacon for an exhibitor's booth.

Another tip is to choose a neon garment that is small, such as a tank top or pair of running shorts. You want something that covers less of the body so that the neon doesn't overwhelm a person. S&S Activewear (asi/84358) hits the right note with a Boxercraft Novelty Velocity running short. Its neon lime and neon orange choices are blocked off with either white or striped side panels with black trim. The look is fresh and fun.

You can also punch-up a garment with

a neon embellishment. Transfer Express (asi/91804) offers custom neon transfers ready to customize and apply with a heat press. Madeira USA recently added five bright fluorescent and neon colors to its inventory of 100% polyester Polyneon brand of embroidery threads. "For those nervous about the volume at which these colors 'speak,'" says Alice Wolf, marketing communications director with Madeira USA, "fashion bloggers recommend jumping into neon with small items, taking up small spaces or using a print that incorporates a fluorescent color or two with other, more subdued colors."



Use accessories like scarves to accent an outfit in neon. This neon orange infinity scarf (SU-YSW-B2-1) is available from **Assertive Creativity** (asi/37166; circle 101 on Free Info Card).

Photo courtesy of Assertive Creativity (asi/37166)



**Transfer Express** (asi/91804; circle 115 on Free Info Card) offers a number of neon colors for creating custom Easy Prints transfers, including neon yellow, pink, lime, blue and orange.

Photo courtesy of Transfer Express (asi/91804)



Just a touch of neon of the new fluorescent polyester colors from **Madiera USA** (circle 116 on Free Info Card) adds life to a black yoga ensemble.

Photo courtesy of Madeira USA



The Boxercraft Velocity short (P62), available from **S&S Activewear** (asi/84358; circle 92 on Free Info Card) brings a burst of neon to performance wear.

Photo courtesy of S&S Activewear (asi/84358)

EXPERT - 400

# Jacket Jargon

**Jackets today aren't** just about a particular fiber (such as nylon vs. poly). What really sets them apart is performance. Two terms you'll come across when comparing jackets are "heavyweight" and "thermal." How do you distinguish one from the other?

Jessica Strain, marketing manager at Dri Duck Traders Inc. (asi/50835) uses an example of a jacket that combines both properties to explain. "The lining is considered thermal because of the type of weave used to make the fabric," she says. "A thermal weave allows for small pockets of warm air to be trapped between the yarns and keeps the warm body heat close to the body. By combining thermal lining, which traps body heat, with our heavyweight 11-oz. PowerFleece, the warm trapped air cannot quickly escape through the outer

layer of the jacket, keeping the wearer warm and comfortable."

A client may, however, find a style that's either heavyweight or thermal to be sufficient. Tri-Mountain (asi/92125), offers a lightweight jacket called the Trailway (J6150), which features thermal-knit panels to complement two layers of bonded knit polyester and a breathable membrane. While not heavyweight, the jacket works to provide windproof/waterproof resistance and thermoregulation.

In contrast, the Avalanche jacket (9800) from Tri-Mountain is made of a heavyweight textured ripstop nylon with a 4-oz. polyfill lining. The weight of the jacket's fabrication along with the windproof/waterproof properties of nylon keep the wearer warm and comfortable in chilly climates.



The Wildfire jacket (9570) from **Dri Duck Traders Inc.** (asi/50835; circle 117 on Free Info Card), combines the benefits of a heavyweight and thermal properties of a garment.

Photos courtesy of Dri Duck Traders Inc. (asi/50835)

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# THE FUTURE OF WEARABLES

# The next revolution in apparel? Digital clothing that will forever alter branding and reinvigorate the way we live our lives.

By C.J. Mittica

In the film *Blade Runner*, neo-noir Los Angeles holds pockets of dangerous bioengineered entities called “replicants,” who are virtually indistinguishable from their flesh and blood counterparts.

The inability to tell them apart resonates as one of the dominant themes in the movie; in fact, the true nature of Harrison Ford’s hard-boiled bounty hunter dogs the movie right to the end.

The future of apparel exists in a very similar state. Clothing has always been inanimate. It didn’t do things like collect data. It didn’t think. But technology is transforming the notion of what wearables can do. Apparel and accessories are becoming infused with electronics—woven with conductive thread, decorated with changing displays. Just like the replicants, many of these items

won’t outwardly bear these digital hallmarks. In enough time, two T-shirts will be laid side-by-side, and no one will be able to tell which is just fabric, and which houses an electronic skeleton coursing through its fiber walls.

This construct will change apparel forever. Smart wearables will radicalize the branding capabilities of apparel. They’ll position information at our instant beckoning. They will literally tell us how we should live. With enough time, the tech will burrow so deeply inside the garments that the category of wearable technology won’t exist anymore. There will only be clothing.

## The Next Big Thing

Considering how much people use their cell phones, one can argue that wearable technology is already here. But

the next step—electronic devices worn on the body—is perhaps the most buzzed-about category in consumer electronics. About 90 million wearable tech devices will ship this year, according to ABI Research. The Consumer Electronics Association reported last year that 13% of U.S. consumers intended to buy a wearable fitness device in the next 12 months, compared to 3% the year before. Earlier this year at CES, the largest technology trade show, wearable tech items simply dominated the conversation and media reports.

Wearable technology is certainly having a moment, but it also remains fraught with problems. Foremost among that is the startling rate at which these products are abandoned. According to research by Endeavour Partners, one-third of U.S. consumers who own a wearable



product stop using it within six months. The problem is particularly exacerbated with fitness trackers such as Fitbit and Jawbone, which have burned bright but also threaten to burn out; many use them for initial lifestyle changes but not long-term.

Other issues? Smartwatches, such as Samsung's Galaxy Gear and the just-announced Apple watch, have been regarded as watered-down versions of smart phones. And potentially revolutionary devices like Google Glass remain at least a few years away from penetrating the consumer market. Many experts have likened the current state of wearable technology to the pre-iPhone era of smart phones, before Apple refined the category with one swift blow.

There is an additional concern: every item mentioned in that previous paragraph is an accessory. "I don't wear a bracelet or a watch [normally]," says Jesse Slade Shantz, who has extensively tried the fitness tracker bands. "It was bit outside what would be my normal fashion choices. But I always wear a shirt and clothes, so it's very natural to integrate sensors into clothes. There's not that friction to putting it on or remembering it."

Shantz is the chief medical officer for OMSignal, one of the first bridging the gap from accessory to apparel. The Toronto company has created a T-shirt with fibers built into the chest that read heart rate, breathing, motion and much more. A sensor plate relays that information to a cell phone, which uses OMSignal's app to crunch the data into meaningful health information for the user. Have you been inactive for too long during the day? Your shirt tells you to get moving. Of course it gives you calories burned, but the company is testing advanced concepts like its Fuel meter, which gauges energy and lets the user know how quickly it's draining and what can be done to slow it down.

OMSignal has been careful to keep the product aimed at fitness enthusiasts, but the garment has tremendous potential benefits for others, such as people recovering from heart attacks, for example. Regardless of the type of person, "we're recognizing that people don't want this ream of data shot at them," says Shantz. "They want to have that data given to them in a way that allows [them] to make decisions in their lives to reach their goals."

Shantz hints at the quandary the average



The next evolution of wearable technology: (Clockwise from top) To create marketing attention (EroGear); to read someone's biometrics (OMSignal); to enable digital functionality through embroidery (Georgia Tech's Wearable Computing Center); and to harness personal and brand creativity with LED displays (tshirtOS).

person faces in the digital revolution. We have unfettered access to data and information. How do we access it? What do we use it for? How often do we need it? And what happens to our daily lives as a result? According to an article in *WIRED*, on average we unlock our mobile gadgets more than 100 times a day. This always-on capability creeps into our time

at the computer, in conversation with others, and of course our driving.

The issue, says Thad Starner, wearable computing pioneer and Google Glass technical lead, is that in all of our technology devices (desktops, laptops and mobile), their use controls our attention. We have to look at a screen. It's why driving a car and texting

is dangerous or holding a conversation with someone while writing an e-mail is rude. Wearable computing, he argues, exists in a supporting role to living our lives. "It may seem like a paradox," he wrote in an opinion piece for *WIRED*, "but I argue that bringing technology and computing closer to the body can actually improve communication and attention — allowing technology to get further out of the way."

That is the idea behind Google's impending smart eyewear device — to execute tasks like recording video or summoning information during the normal actions of life, instead of attention being diverted away. A similar premise exists behind the embroidered interfaces being created in Starner's Contextual Computing Group at the Georgia Institute of Technology. Conductive thread can be embroidered into a garment through a decoration or feature such as a button. It can then be interfaced with any device through Bluetooth. By simply manipulating the embroidery, a cell phone can be silenced during a meeting, for example, or the lights in a room can be turned on and off. "If we can reduce the time between intention and action," says Clint Zeagler, a research scientist at Georgia Tech who is working on the project, "people will use these things a lot more."

Likewise, the company Wearable Experiments has made forays into wearable tech, including a jacket with built-in feedback pads that work with a cell phone GPS. When it's time to turn right, the jacket vibrates on that side. Company President Billie Whitehouse designed the jacket after noting how many people in cities are staring at their phones and almost falling off sidewalks or getting hit by cars. "This was a way to get people away from looking at their screens to look at a map, put the phone back in their pocket and actually walk around and be in the city," she says. "See what's around you, connect with the other people around you."

"And on a bicycle it's super useful."

## Brand New

In as little as a few years, it's very possible that wearable tech items will be an integral part of our daily lives. However, widespread consumer use of these devices (outside of current fitness trackers) remains far away. Any interactions with those items right now will be a com-

pletely new experience. And because of that, the effectiveness of wearable technology as a marketing vehicle can be obscenely high.

Wearable Experiments developed items that were used successfully in two marketing campaigns. The Alert shirt features force feedback that simulates the hits that occur on the field for Australian rules football. Fox delivered 4,500 shirts over three months to sports fans as part of a sign-up package for its TV coverage. Wearable Experiments also developed, to promote Durex, his-and-her underwear sets called Fundawear that allowed couples to stimulate each other from long distance. Twenty prototypes were developed that were used by celebrities and on radio and TV spots. As marketing tools, "we found them to be extremely effective," says Whitehouse, who then rattles off a series of numbers from the original Fundawear campaign: eight million views on YouTube, 55,000 requests for the item and 1,600 articles written about it, all in under two weeks.

But what if a garment could feature a digital display — something that essentially takes the branding power of apparel decoration and makes it malleable, updatable, dynamic. That is the premise of tshirtOS. The idea was conceived by, of all things, a spirits company (Ballantine's) as an extension of its branding motto, "Leave an Impression." The shirt features 876 LED lights on the front that display messages of the wearer's choosing — static or scrolling text and 20 pre-set animations, and is connected to a server where a large number of images and animated gifs can be accessed. People who encounter the shirt are fascinated by it, says Alison Lewis, CEO and creative director of Switch Embassy, which researched and designed the shirt. "I think," she says, "there's an innate human want to communicate and connect. ... It's about being together, and [this shirt] creates such a wonderful communicative platform, that people get excited about it."

Switch Embassy has produced 25 of the shirts that are being used by Ballantine's brand ambassadors all over the world. As the shirts are used, Switch Embassy collects data. Users prefer text over the animations, for example. The Russian marketers can be found using the shirt most often in bars (natch). And the technology is really just beginning, Lewis says. The LEDs can be placed on any apparel garment that can be embroidered. "I just want people

## FAR INTO THE FUTURE

We've showcased some wearable technology that's right on our doorstep, but what about the radical ideas in the (perhaps not-so-far) future? Here a few:

- An electrical engineer at the University of San Diego is creating temporary tattoos that could actually enable telekinesis — controlling objects with the mind. The tattoos are less than 100 microns thick and contain flexible circuitry. They read electric signals from the brain and then broadcast those signals to a device. Other tattoos can be placed on the throat and read vocal cord movements that occur even when people think but don't speak. Translation: telepathy.
- Georgia Tech is developing passive haptic gloves with vibration motors that can impart sensation into fingers in a set pattern. Participants who wear the glove while doing other tasks can learn a new song on the piano, and then later sit down and play it. They can help tetraplegics regain sensation in their hands, and the technology has future uses to perhaps learn any motor skill while doing something else entirely.
- A professor at Concordia University in Montreal has developed electronic fabrics that can change their color and visual properties based solely on energy and power from the human body. The fabrics cannot be manufactured into clothing yet — that will most likely be a couple decades away.
- iAT Glasses enable users to control, manipulate and browse virtually while still interacting with the world around them. Developed by a Taiwanese institute, the technology uses glasses and an internal camera to project a virtual keyboard or interface, which can then be controlled with a person's hands. Think "Minority Report" or "Iron Man."



to imagine an entire room or a concert full of people all wearing products that are working in rhythm with each other, singing to each other, responding to each other," says Lewis.

The promise of wearable technology is certainly vast, with potential applications ranging from advertising to fashion to industrial uses. Research labs and design companies are creating these technologies, but licensed partners and investors may determine where it will be used. Where will this technology find traction? It's the very dilemma that faces EroGear, which also has developed LED displays that can fit on garments. "We think [advertising is] the sustainable value for us in the market," says Jim Baka, who heads business development for the company. "We don't want to be a one and done trendy apparel item that goes one or two seasons and then it's over." The company is looking to sell the integrated apparel and programming access to franchisees who can then work with local brands. Baka says that EroGear's flexible display technology, called Fos, can be deployed at large public events like sports game and concerts. "It costs like \$5,000 to \$15,000 for a jumbotron ad," he says. "We picture ourselves as being the minitron in that stadium environment."

### Designs on the Future

Wearable technology has a design problem. "Most technologists, about 80% of them, are completely missing the mark on the importance of human identity," says Lewis. It starts with the label, she says. Switch Embassy is a fashion technology company, not a wearable technology company. The Silicon Valley execs that Lewis meets with "are completely frightened of fashion," she says. "When I use that term to even discuss my business, they turn off, or tell me to use the word platform or wearable instead."

The issue shouldn't be a surprise. The rush of initial wearable tech products has spawned from the minds of tech gurus. Utilizing the rapidly decreasing cost and size of electronic components, they have created products with robust functionality – and gadget geek aesthetics. Fashion designers are no better in bridging the divide. The fashion students that Zeagler teaches, for example, are excited by the notion of apparel technology but start

retreating when they see wires involved.

The issue is simple but hard to remedy. Technology experts don't know the process for designing apparel; fashion designers don't know how to integrate electronics into clothing. "The vocabulary between a fashion designer and a computer scientist is so different," says Zeagler. "When you say design, they think of completely different things."

The big names are starting to get the picture and are plucking top talent from the fashion world, as Apple did last year by hiring the CEO of Burberry. Meanwhile, on the ground level, designers with enough proficiency to work both sides are starting to break down the barriers. Zeagler, for example, graduated from fashion school but was inspired by a professor who had pioneered multiple wearable tech devices. "I was interested in the research, but I was also interested in aesthetics and making it look good," he says. At Starner's lab, he has furthered the collaborative approach. In one example, he and others created a functional swatch book to demonstrate the electronic embroidery, and invited both fashion and tech people to workshops to examine it together. The department has created a Wearable Computing Center to any answer question someone might have on the subject.

Lewis too has merged her love of fashion design with her interest in technology. She put her fashion expertise to use with the tShirtOS, spending three-and-a-half months researching the project and evaluating over 1,000 materi-

als. "From a fashion perspective, we've made it really wearable," she says. "Most people say, 'Oh yeah, I've seen these things.' Then they walk over, touch it, and – excuse my French – say 'Holy s\*\*\*.' It really feels amazing."

The idea, says Lewis, is it "meets the basic qualifications of what a T-shirt should do" – soft, drapeable, great to the touch. Switch Embassy has had trouble keeping the shirts clean, Lewis says, because so many people want to feel it.

Fashion's ultimate purpose will be to bring these devices to the masses in a way that makes them fit in rather than stand out. The appearance has to be polished and engaging to betray the technology that lies underneath. "People don't want to look and feel like a computer," says Whitehouse. "The more technology it has on the outside, the less people will want to wear it." The technology has to be invisible and seamless, she says, and the item has to be comfortable no matter what.

Top brands have also begun to legitimize the technology. OMsignal partnered with Ralph Lauren to demonstrate the technology at the recent tennis U.S. Open, while Diane Von Furstenberg is crafting glasses to work with Google Glass.

Other developments must occur as well. The quality of materials, particularly fabrics, needs to improve to better synthesize with electronic components. Wearable tech developers also need to avoid biting off more than they can chew. Eddie Hold, an expert on the subject for the NPD Group, argues that innovators should avoid trying to create an all-purpose item that works as "a Swiss army knife" like smart phones. "The true power of the 'wearable' future," he wrote in a blog post, "is a transition from a unitary world – carrying one smartphone that attempts to be a source of all data – to a distributed device future, where these wearables work together to provide a complete picture."

The good news is that these issues are surmountable; in the smart phone era, wearable tech companies have already been able to quickly accelerate their timetables. Inventive minds simply have to tackle the challenge. "I used to talk about all these barriers that were keeping it from happening five years ago," Zeagler says, "but now I'm really excited. It's starting. We're on the cusp."

“The more technology it has on the outside, the less people will want to wear it.”

Billie Whitehouse,  
Wearable Experiments

## 3D PRINTING

# THE EXTRA DIMENSION

New wave 3D printers are redefining how apparel is made.

By Rachel Abraham

For the Annual Senior Fashion Show at Drexel University, Neelam Chandwani created accessories inspired by the traditional henna motifs. Except her method of creating the bracelets, earrings and rings was anything but traditional. She used a 3D printer. “3D printing has opened up new vistas in fashion design and is still an unexplored territory,” says Chandwani, who is now working as a designer specializing in knitwear. “With the ease of prototyping, designers are able to explore and create three-dimensional designs.”

3D printers were first invented three decades ago, but only in the last couple years they have begun to cross over into mainstream use and recognition. The process, first known as stereolithography, deposits materials in successive layers as little as 0.0011 inches, building a physical object from what once was just a digital file. The uses have ranged from industrial to medical to lifestyle, and the materials include plastics and photopolymers but also real-world items like metals and even food. And what can you print? Design prototypes, movie props, artificial blood vessels, pizza, houses – you name it.

(If there was any doubt of the validity of 3D printing, it's been erased by the fact that mega seller Amazon had added a 3D printing department to buy everything from printers to your own custom bobbleheads.)

Now, designers are looking at 3D printing as a way to put a new spin on a practice that dates back millions of years: fashion. More pieces and accessories are becoming available for purchase by big-name purveyors like Nike and Victoria's Secret. At Drexel University's fashion program, students have made mostly accessory items such as earrings, bracelets, pendants and rings, as well as garment parts incorporated into sportswear.

In addition, the practice is making its way into haute couture. The most notable example occurred in March of 2013 when architect Francis Bitonti collaborated with costume designer Michael Schmidt and 3D printing market Shapeways to create a dress for famed burlesque dancer Dita Von Teese. The dress (pictured below) featured 2,500 intersecting joint pieces which were then coated in black lacquer and then encrusted with 12,000 Swarovski crystals.

“This is the new generation,” says Leah Delfiner, fashion line designer for kids wear label Pretty Pretty Rebel who has learned 3D printing. “It is perfect for jewelry design as well as great embellishments on garments. If you wanted some awesome flower on a garment, 3D printing would make it perfect and very

cool and make it stand out.”

The textures and detailed surfaces with 3D printing are not possible by hand, lending a new look to practically any item in the apparel spectrum: purses, bracelets, dresses, neck wraps and much more.

But 3D printers also offer several manufacturing advantages. “In the industry in the past, for items such as belt buckles, and all other findings, you would have to have a die made and then a sample, which took forever,” says Lisa Hayes, Drexel University fashion design program director and associate professor. “Now with 3D printing, the time is greatly reduced and just one piece can be made. This is a huge savings of money and time, and it also allows for maximum flexibility.”

It also reduces wasteful production and enables extra design capabilities through robust digital simulation programs. “Simulating a garment or a piece of jewelry on a computer screen even before prototyping,” says Chandwani, “lets you visualize and make necessary changes and minimizes waste.”

While most 3D printers cost thousands of dollars, affordable home models ranging in the mere hundreds are now readily available. A DIY community of at-home enthusiasts is starting to form just as established designers also begin to tinker with the possibilities. But not just 3D printed items are becoming readily available. Bitonti, for example, debuted the Cloud Collection in April, which allowed printers for \$1 to download the code to print their own housewares.

As Chandwani notes, there seems to be a never-ending set of combinations of what can emerge from inside the box that is the 3D printer. “With 3D printing,” she says, “the possibilities are endless.”

— Rachel Abraham is an editorial intern for Wearables.





## SMART GLASSES

THROUGH THE  
LOOKING GLASS

Google Glass and other eyewear tech can revolutionize the workplace.

By Theresa Hegel

Imagine a firefighter being able to see a floor plan diagram of a burning building — while he's inside battling the flames. Or a doctor live-streaming a video of the surgery she's performing, for the benefit of medical residents a thousand miles away. How about a flight attendant who can greet international travelers by name and in their native tongue, without ever breaking eye contact? These are just a few of the scenarios where Google Glass and other smart eyeglasses are being tested out right now.

"There's a whole category of workers who typically can be more productive if they have both hands free," says Dan Ledger, a principal at Endeavour Partners, a Cambridge, MA-based consulting firm that has done extensive research into mobile and wearable devices. Wearable technology allows these so-called "deskless workers" to get the benefits of a smartphone or tablet, without having to step away from the job. Wearers of smart glasses use voice or simple touch commands to take photos and video or to navigate displays projected onto their field of vision.

Google in particular has pitched its Glass technology as an essential accessory for everyday living and recreation. But Ledger and other experts believe the market for smart glasses will be highly specialized — more focused on business and enterprise solutions than casual consumer use. "Smart eyewear is inflexible," says Heather Corker, vice president of the New York office of Future Foundation, a market research firm. "It's always on your face whether you need it or not, so you'd only wear it for a critical task, something in which the device performs an order of magnitude better than



Det Ansinn, president of BrickSimple, a mobile and wearables developer in Doylestown, PA, tests out his Google Glass. His firm has worked on several apps for smart eyeglasses, including DriversGlass, the first automotive integration providing drivers with a heads-up display of live engine and performance data.

something else, and you'd take it off when that task is complete."

Right now, the technology is still too bulky and visible for general appeal. Plus, most smart glasses are in the beta phase, only available for developers to purchase. Even if that weren't the case, however, the cost, both monetary and social, is still too high for "augmented reality" to catch on. "Wearing smart glasses in a social setting doesn't entirely make sense," says Todd Reily,

principal design engineer with APX Labs, a company headquartered in Washington, DC that has created a software platform for smart glasses. "There's no information that I need persistently in my field of view [when I'm having coffee with a friend]. Having my phone in my pocket is acceptable, but it would be sort of rude to have ... an intermediary in the way between two people interacting."

Reily believes that stigma will dissipate as

the technology grows more sophisticated, streamlined and accessible. In the meantime, however, APX Labs has been working with a number of industries, tailoring the technology to their specific needs. "Those social issues aren't as important if smart glasses provide real business value," he says. "We're providing users with a tool for making better decisions."

Among other things, APX Labs' Sky-light software helps improve field work at windmills, oil refineries or hydro plants, "anywhere there is a distributed workforce where people want to continue strong communication," Reily says. Workers are able to access data, troubleshoot issues and

“There’s a whole category of workers who typically can be more productive if they have both hands free.”

Dan Ledger, Endeavour Partners

receive detailed feedback, hands-free. Other industries that smart glass developers have targeted include logistics, with warehouse workers scanning packages using smart glasses, rather than a hand scanner.

There are also companies developing hardware to help the visually impaired and blind. OrCam, for instance, is a mini-camera and sensor that clips onto a pair of regular glasses and features a small speaker that presses against the temple to transmit sound. The device can read text aloud for the wearer, as well as recognize people, memorize places and give directions.

Earlier this year, Virgin Atlantic tested out Google Glass for a six-week program, to

help with the check-in process and give staff the ability to update passengers on the latest flight information, weather and local events at their destination. They also could quickly translate foreign languages. The Copenhagen Airport ran a similar test. Both the airline and the airport reported great success with the technology, saying smart glasses allowed for better engagement with passengers.

Another area where smart glasses are gaining traction is marketing, according to Det Ansinn, president of Doylestown, PA-based mobile developer BrickSimple. "The iPad is no longer something that's a wow factor," he says. Creating an immersive and unique experience to be viewed on smart glasses gives a company some "extra glitz and glam," he says. BrickSimple, for example, created an app simulating a walk on the surface of the moon for a trade show.

Critics of smart glasses have raised privacy concerns over the devices' spy-like cameras. "Is the camera always on or can a worker enable it?" Ledger asks. "Do you want a manager always to have a point-of-view camera on you, even on your lunch break?" The technology, he says, requires some tradeoffs, adding that companies adopting smart glasses will need to strike a balance between productivity and privacy. "The people who use [smart glasses] view them as a tool that can help with their jobs, and less of a tool for management to peer into their lives."

It's still early days for smart eyewear, and developers like Reily of APX Labs feel like they're on the forefront of a game-changing movement. "We're trying to create the future," he says. When Reily took his job at APX Labs two years ago, he remembers a huge difference in the state of the hardware then — at the time, the fairly unwieldy devices had to be strapped onto a user's head, more like goggles than glasses. "It's come a long, long way in two to three years," he says. "One of the things we're excited about is where these things are going to be in two years."

— Theresa Hegel is a senior staff writer for Wearables. Contact her at [thegel@asicentral.com](mailto:thegel@asicentral.com) and follow her on Twitter at @TheresaHegel.

## STATE OF THE ART

Google Glass is probably the most well-known smart eyewear out there. Det Ansinn, president of mobile developer BrickSimple, lauds Google for successfully packaging and marketing technology that a number of companies have been exploring. "Google's contribution to the wearable computing community is to really bring the public eye to it," he says. Other manufacturers are putting their own spin on the hardware.

**Epson Moverio:** These smart glasses, in their second generation, feature a binocular display, rather than monocular, giving wearers a full view, rather than just an image in the right-hand corner of their field of view, as Google Glass does. The Moverio allows the wearer to augment reality with text or pictures, or be immersed in a virtual reality setting. The glasses are attached, via a cord, to a smartphone-like control pad.

**Recon Jet:** Vancouver-based Recon Instruments has equipped a pair of polarized sunglasses with a microcomputer and camera, designed for performance athletes. The Jet delivers unobtrusive information, like heart rate and distance traveled, in a heads-up display for cyclists and runners. Users can connect their smartphone via Bluetooth to see caller ID and text messages on the go. Recon has a similar product in goggle form, called the Snow2, for athletes of winter sports.

**Vuzix:** This company has been making video eyewear for nearly 20 years. Its smart glasses, targeted toward factory workers, have an industrial feel, resembling safety glasses with a camera and display directly in front of the eye. The glasses can easily scan bar codes, then provide wearers with visual data on a heads-up display. The glasses can also be connected to software to monitor traffic flow in a building.



## FITNESS TRACKERS

## BOODING WELL

Activity trackers have become an essential tool of corporate wellness programs.

By Theresa Hegel

With premiums nearing \$3 million a year, Long Term Care Partners wanted to do something to curb the ever-increasing cost of health care. So, last year, the New Hampshire-based firm, which administers federal insurance programs, decided to step up its employee wellness program, starting by hosing an onsite biometrics day to get a baseline of workers' health. Enticed by the promise of a free Fitbit wristband, more than half the firm's 260 employees participated, getting their BMI, cholesterol and other stats measured. After receiving the fitness trackers, employees who walked an average of 10,000 steps a day each month were eligible for periodic gift card drawings.

"We saw an immediate impact on our workforce," says Melissa McLaughlin, director of human resources. "We started seeing people speed walk down our corridors on their break and form lunchtime walking groups."

"Tracking steps, among the other functions the Fitbit offers, is something that most people can identify with and participate in."

LTC Partners' wellness strategy also includes an onsite gym, lunchtime Weight Watchers meetings, smoking cessation classes and several workstations outfitted with treadmills that employees can reserve for half-hour intervals. But by giving out free Fitbits, LTC Partners joins a growing trend in corporate health programs. By 2018, more than 13 million wearable devices with embedded wireless connectivity will be integrated into wellness plans offered by employers, according to a 2013 study from ABI Research, a New York market research firm.

Fitness trackers, which sell at retail starting around \$99, are generally worn around the wrist and sometimes include a digital display, like a typical watch. Most track steps taken, use algorithms to calculate calories burned,



Fitbit wristbands available from **Power Sales and Advertising** (asi/79083; circle 136 on Free Info Card) have proven popular for us in programs and wellness initiatives.

and measure sleep quantity and quality. The bands sync up wirelessly, sharing collected data with smartphone apps and websites so wearers can keep track of their progress. Fitbit is one of the most well-known in this growing category of products, but other popular offerings include the Jawbone Up and the Nike FuelBand. GPS companies such as Garmin and Magellan have also broken into the sector

with their own versions of the technology.

The accessories are generally credited with launching the surge of interest in wearable technology, and they are already taking hold in the general public. As of last September, one in 10 adult consumers owned a wearable activity tracker, according to a whitepaper released early this year by Endeavour Partners, a tech consulting firm based in Cambridge, MA.

Now, this first wave of popular wearable tech is starting to get a foothold in the promotional world. Nathaniel Quance, director of imprint sales at Power Sales and Advertising (asi/79083), says Fitbits have been "incredibly popular" since the Lenexa, KS, supplier started offering the product line last spring. "We had started to get a lot of requests from program partners for things like that," he says. "The category is growing, and sales have steadily been really, really good the entire time we've had the category." Geiger (asi/202900) promotional consultant Jacqui Snyder recently sourced an order of Fitbits to stock a trade show booth for one of her clients, Soft-Pro, a provider of real estate closing and title insurance software.

In addition to trade show giveaways and company wellness incentives, activity trackers are great prizes for fitness-based events and a useful tool for hospitals and outpatient centers, Quance says. His company has supplied Fitbits for heart surgery patients, who need to keep track of their daily activity levels during their recovery period.

As their popularity grows, however, fitness trackers have raised concerns, with some worried about what employers might do with data collected from company-issued devices. Will people who refuse to participate in tracking programs be penalized with higher health-care rates? What if an employee fails to meet his activity goals; will it reflect poorly

“The category is growing, and sales have steadily been really, really good the entire time.”

Nathaniel Quance, Power Sales and Advertising (asi/79083)

on an annual review? LTC Partners does not collect its employees' Fitbit data, though it started a private online community with “high score” leaderboards, and workers can opt in to compete with their co-workers on how many steps they've taken, McLaughlin says. She adds that the company preferred a system of rewards to encourage involvement and healthy behaviors, rather than punishment.

Another concern among tech experts is the lack of long-term engagement with the product, once the novelty of a new gadget wears off. “The thing about activity trackers today is they're so primitive,” says Dan Ledger of Endeavour Partners. “All they can measure is movement. ... The data isn't terribly sensitive.” He adds that trackers work best as a “habit-change device” to encourage the sedentary into more active lifestyles. Users who are already athletic aren't likely to get as much out of them. “It's like you're selling aspirin, and a lot of people who are buying it don't have a headache,” he says. “People are having their first experience with wearables [through fitness trackers] and think they're useless.”

According to Endeavour Partners, the “dirty little secret” of the wireless fitness tracker is that a third of the people who own one stop using the device within six months of receiving it. Ledger sees more potential in more versatile smart watches with a host of functions besides fitness monitoring, and next-generation tracking devices that will offer “a deeper glimpse into people's physiology, crunch that data



(Top) The Jawbone UP24 (JL01) has added a touch of design sophistication to the fitness tracker category. Available from **Links Unlimited** (asi/67617; circle 139 on Free Info Card).



(Left) GPS companies like Garmin are getting into fitness trackers as well. The company's vivosmart also offers notifications of phone calls and text messages.

and turn it back into information and advice accessible to a lay person.” He expects the next iteration of trackers to include more sophisticated sensors to measure things like heart rate, perspiration and stress level, in addition to pedometer functions.

LTC Partners and other companies that have incorporated the fitness trackers currently on the market say they've been pleased with how employees have responded. Larry Garfield, president of Garfield Group, a Newtown, PA-based marketing firm, gave out Fitbits as the company's holiday gift in December to supplement the company's existing wellness program. Because his employees use data to shape and measure the success of clients' programs, Garfield says, he “loved the idea of having everyone live more of a ‘data aware’ life.” Participation in the program continues to be strong, and more employees

have taken advantage of company-subsidized gym memberships since receiving a Fitbit. “I was surprised by how much folks embraced the whole notion of measuring and monitoring their health,” Garfield adds.

LTC Partners recently held its second annual biometrics event and planned a different incentive to encourage participation, but employees were adamant that they wanted Fitbits, with new hires eager to join in the friendly competition and long-time employees excited to get a second tracker to give to their spouses, McLaughlin says. The company also received its annual renewal notice for health insurance premiums and was pleased to note the lowest increase to rates in several years. “I can't say with 100% certainty that our wellness efforts are responsible,” she says, “but they certainly haven't hurt.”



## NEAR FIELD COMMUNICATION

## GETTING CLOSER

NFC is turning tees and polos into virtual marketing devices.

By Sara Lavenduski

Imagine a very near future in which a credit card transaction takes mere seconds from beginning to end. All account data is stored in your device of choice, and by simply bringing it close to a specified data pad, the purchase is complete in moments, without the need for rifling through a disorganized wallet or pulling out a card and risking losing it.

How about a ring that can communicate with cell phones, transfer information and even unlock doors.

Or picture a company with a tradeshow or festival booth which allows attendees to buy its merchandise instantly with an interactive banner. Images of available items are printed on the banner, and a data tag next to each communicates with electronic devices to complete the transaction and shipment process.

In fact, the technology is already here. Near Field Communication (NFC) is a form of short-range data transmission based on radio-frequency identification (RFID) that allows compatible devices to interact. An NFC-enabled cell phone, for example, can interact with a specific tag, which may be embedded in another device or a number of items and materials, including cards, stickers, wood, plastics and more.

"The tags look like microchips," says Tom Rector, CEO & founder of Rector Communications (asi/305623), whose Simply Touch division is devoted to developing NFC technology in promotional products, and has already turned those interactive banners into reality.

"When the device comes close to the NFC tag, you're taken directly to a website, or it takes action on your phone, such as turning an alarm off or performing a transaction. You can download and launch apps, geo locate, make calls and communicate with other NFC devices that contain tags. It's a much faster process than scanning QR codes."

First developed as a way to conduct finan-



**T-Shirt Tycoon** (asi/87000; circle 137 on Free Info Card) developed a tee with embedded NFC tags for the 2013 Wisconsin State Fair. Attendees who bought the tees were eligible to win various prizes based on the data inside each garment.

cial transactions without contact (such as swiping a credit cards or handing one to a clerk), NFC is now coming to the promotional space, particularly in wearables, as a way to make brand impressions more interactive. "It's a great marketing and advertising tool," says Adam Walterscheid, president & CEO and head of business development at T-Shirt Tycoon (asi/87000). "It's secure and can be

updated in real time."

T-Shirt Tycoon, in conjunction with client TSMGI, recently deployed NFC technology in T-shirts for the 2013 Wisconsin State Fair, whose event planners wanted a way to drive traffic to the official FairWear gift shop. The shirts included NFC tags embedded in the fair logo on the front, and attendees who bought them used staff-supplied Google Nexus Tab-

lets to communicate with the tag. One Grand Prize winner received a Nexus Tablet, others received a package of famous State Fair Cream Puffs, and the remaining tees thanked them for participating and directed them to the gift shop. "It's all about having control and giving people something that can help you measure analytics, like attendance numbers," says Walterscheid.

As NFC develops, it's becoming a way to interact with a brand, beyond impressions garnered from a static embellishment. "It adds an additional dimension to the traditional logoed garment," says Rector. "Using your device, you can watch a commercial, obtain directions, contact customer service and more. One day it's a video and the next day the same tag gives you a coupon. We can integrate the live score of a game into a jersey, with replays. You can even network using tagged lanyards at a tradeshow. At the end of the day, you have everyone's contact information in your hand, along with all of their connections."

A few of Rector Communications' most noteworthy campaigns incorporating NFC include concert tees with free music downloads and subsequent navigation to the group's fan club page; a little league team's uniform with a tag in the sleeve containing the season's game schedule; and shirts promoting an unfinished collegiate apartment complex that gave prospective tenants a virtual tour. "We find polos are a good choice for NFC," says Walterscheid. "They absorb the technology price point better than a T-shirt. A polo in a uniform program can have NFC embedded in it, eliminating the need for swiping an identification card."

Although it's been in the works for several years now and has been a feature in the latest generation of smart phones, NFC is still a largely unknown technology among the wider public. One reason is a learning curve similar to that of QR codes. Over time, target audiences learned that those cryptic black and white marks could be scanned for additional information. Now, the public will have to learn where NFC tags are located and how to take advantage of the experience. "Education is a big hurdle," says Rector, "but once people see NFC in action, their minds race to possibilities."

Rector also cites the somewhat complex



**Rector Communications LLC** (asi/305623; circle 138 on Free Info Card) designed all campaign marketing materials for Mike Pence's successful run for governor of Indiana. This T-shirt includes an NFC tag adhered to the inside of the shirt that takes potential voters to a promotional campaign video.

customization process of NFC tags compared to QR codes, making it challenging for highly personalized applications and small budgets. While QR code customization is readily available on a number of websites, NFC tags must be physically coded with data. "QR codes are also instantly useable," says Rector. "An NFC tag is a different. You'll soon be able to go online and customize a tag, but it still has to be mailed to you. And there is a cost to produce it, because there's some labor involved."

Another reality slowing NFC's entry into the larger market is Apple's near monopoly on the electronic device sector in the U.S., says Rector, and its decision not to include it in any models as of yet. Now, Apple has unveiled a mobile payment platform that utilizes NFC, called Apple Pay and also added it in the just-released iPhone 6. "By mid-2015, most people will have NFC compatibility," Rector says.

Despite these obstacles, the buzz surrounding NFC has intensified in recent years, and Rector and Walterscheid say more clients are coming to them expressing interest in it. But

it's not an instant solution. "Clients can't start with NFC," explains Walterscheid, adding that it can't be used like QR codes as a broader solution with a one-time result. "[NFC is] a slow, methodical and experience-conscious approach," he says. "If NFC is done correctly, it will drive its own demand. If it's done incorrectly, without control and a specific problem to solve, it will die on the vine. We're looking for preferred partners, and we follow the law of the few to prove the concept."

Rector is optimistic that there will soon be a larger acceptance and understanding of NFC in the promotional market, though the primary facilitator for it remains to be seen. "Consumers will find out more about it and figure out how they can use it," he says. "There will be a catalyst, such as a compatible iPhone, or a celebrity endorsement. But soon, someone will find that it meets a need with a huge impact."

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## NANOTECHNOLOGY

## THE TINIEST OF REVOLUTIONS

Nano science can change the world, but its apparel rep needs mending.

By C.J. Mittica

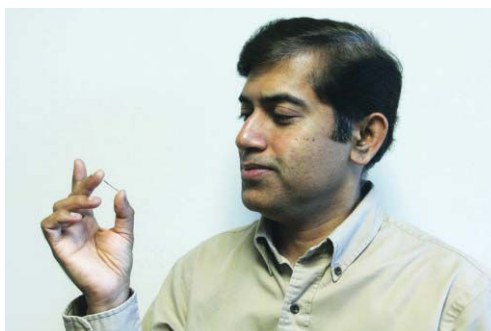
**T**he public eyes nanotechnology as science's next great advance, but its knowledge of the field basically boils down to the notion that scientists are working with really small things. While that view seems simplistic, the point really does hold true. Nanotechnology is simply working with particles that are one-billionth of a meter in size. The potential impact of nanotechnology, however, appears infinitely expansive.

"The range of opportunity is really amazing," says David Balkin, managing director for the Notre Dame Center for Nano Science and Technology. "And it's primarily because nano science is redefining what you can do in all the natural sciences."

The overall premise of nanotechnology is easy to grasp. When scientists explore a material at the nano level, its properties change and its reactivity greatly increases. For example, take a 1 cm cube, with a surface area of 6 cm squared. When that cube is converted to nano particles, its surface area covers more than one football field. As a result, "the reactivity of that material can be enhanced many, many, many fold," says Dr. Jayan Thomas, a professor at University of Central Florida's NanoScience Technology Center. "That is the beauty of this technique."

Interest is accruing rapidly — market researcher Global Information Inc. predicted that the worldwide market for products with nanotechnology would reach \$3.3 trillion by 2018. And because it is a boundary-crossing field, it has the potential to alter every facet of society. Researchers at Notre Dame, for example, are exploring everything from carriers for targeted chemotherapy to house paint that can generate solar power.

For years the technology has made its way



Dr. Jayan Thomas, a professor of the University of Central Florida, created copper wires that use nanotechnology to transmit and store energy. The wires can potentially be incorporated in apparel or bags to charge personal devices.

into apparel, enhancing properties from water repellency without sacrificing breathability to eliminating the growth of bacteria — in essence, self-cleaning shirts.

And yet, nanotechnology in apparel stands at a crossroad. Companies are striving to enhance the durability of these nano functions so they aren't inhibited by fabric softeners or dissipate after only a few washes. The vast majority of nanotechnology garments are coated or finished, but integrating applications into the primary spinning process would enhance their sturdiness.

The potential side effects of this technology are also beginning to be questioned. Balkin explains that while research and innovations in nanotechnology as a whole push forward at a breakneck pace, regulatory vetting for consumer and environmental safety has yet to catch up, and no one knows what the effects might be. "It's great technology, but it's a little bit like the Wild West," he says.

A few years ago, such questions began to dog the use of silver nanoparticles as an antimicrobial treatment, perhaps the most prominent use of nanotechnology in fabrics. When

nanosilver products were washed, did they leech into the environment and cause damage? The Hohenstein Institute, a research and testing organization in the Germany and U.S., commissioned a study in Germany that imagined a very high rate of nanosilver use and washing. Its findings? Bacteria in wastewater didn't react with nanosilver; no harm to the environment was being inflicted. Nonetheless, negative perceptions of silver nanoparticles remain, says Dr. Jan Beringer, head of research and development in Hohenstein's Function and Care Department.

"For Germany, before 2009, there was a very large interest in developing garments with nanotechnology," says Beringer. "Along with our findings, in the last one-two years we recognize here in Germany that interest in industry is starting to come back, but I think this will take more time to trust again in this technology."

Any negative perceptions may quickly change as nanotechnology ushers in innovations. Dr. Thomas in his Central Florida lab used "nanowhiskers" to create very thin copper wires that can both transmit and store electricity with the potential to be integrated into clothing and accessories. The technology can be paired with items like solar bags to charge personal devices. "If you have a cell phone sitting inside your carry bag," says Thomas, "you can just charge it by plugging it into this energy storage device. That's the ultimate aim." Thomas, who has been in communication with companies to integrate the technology, is optimistic tweaking the materials can enhance the length of time the wires would be able to deliver power and expand the capabilities.

Given the widespread interest in the field, more innovations will arrive. It's much more than a small chance.

## DECORATION

# PRINT PREVIEW

Decoration methods are poised to take a next-level leap.

By Theresa Hegel

**A**s the future of clothing takes a turn to the sci-fi, apparel decoration continues to evolve and grow. Here are some of the greatest advancements on the horizon.

**3-D Sublimation:** Dye sublimation on polyester and polyester-coated materials is already a popular technique, but expect decorators and manufacturers to continue to push the envelope on the kinds of items they're embellishing. "I think that sublimation will have a second-level explosion very shortly," says Christopher Bernat, co-founder of Vapor Apparel (asi/93396). Of particular interest, he says, are European companies perfecting vacuum-based print and transfer presses for three-dimensional objects. Lots of decorators have sublimated smartphone cases. "It's really easy to do that," Bernat says. What blew him away, however, were some of the sublimated items he saw at this year's FESPA conference in Munich. Exhibitors had sublimated sunglass frames, the heels of women's shoes, buttons and plastic buckles on apparel. Bernat expects the advances in 3-D technology to catch on in higher-margin markets and trickle down as more clients crave that wow factor. "I can see how the promotional products industry would have a field day with that technology," he adds.

**Digital/Screen-Printing Hybrids:** Another advancement on the horizon, according to Rick Roth, owner of Mirror Image, is equipment that combines traditional screen printing with digital printing. "It's not entirely ready for prime time, but it's certainly getting close," he said of the technology, noting that he saw a machine at FESPA that integrated both processes. The equipment would be especially valuable for creative designers, because it would allow for both full color and textures, Roth says. Without texture, "digital is pretty flat," he adds. The new machines would likely

also improve a shop's efficiency and speed.

**Special-Effect Inks:** Inks that change color in the sun or reflect the light are already on the market, though they cost a pretty penny. But for the right market, they can bring in an even prettier profit. Color-changing shirts and bags are particularly popular souvenirs at tourist gift shops, for example. "It's always the cool factor," says Marshall Atkinson of Visual Impressions. "People are always looking for that." Even the world of high-fashion is not immune. Earlier this year, designer Alexander Wang sent apparel made of "thermo-reactive" fabric down the runway. His \$8,000 coats start off greenish-brown, then morph to vibrant yellow, lime, blue or purple when exposed to heat, according to *British Vogue*.

The next wave of specialty inks is likely to merge with electronics to create decorated apparel that lights up or charges your smartphone or performs some other necessary function. Manufacturers are already using silver metallic ink to print flexible membrane

“I can see how the promotional products industry would have a field day with this technology.”

Christopher Bernat, Vapor Apparel (asi/93396)



**Sublitemc** (circle 140 on Free Info Card) has sublimated high heels like the ones pictured as well as belt buckles, door handles and much more.

circuit boards. "That's just fancy silk-screening," Atkinson says. It's not a big stretch to imagine that technology being put to use on clothing. Jack Silver, a professor at Brunel University in London, has been leading a team that uses 3-D printers and specially formulated inks made with metal nanoparticles to make very thin, inexpensive electroluminescent displays. The displays, which have an electric current running through them and can be powered by an inexpensive battery, are slim enough to be incorporated into apparel.

**Increased Specialization:** As new fabrics are released, growing ever thinner and softer, the industry will continue to develop new inks and techniques to optimize how they are decorated, Roth says. "It used to be the industry was pretty standard. You could get a 50/50 ink, and it would be OK on cotton and polyester. Those days are gone," he says.

Ink and machine manufacturers are working on methods to ensure prints look correct — and stay looking correct — on all manner of materials, particularly performance fabrics. "People are working on it," Roth says. "That trend will absolutely continue."

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# SCREEN-PRINTING SUCCESS

TOP DECORATOR / SHOP SENSE / HOW TO / INK KITCHEN / EQUIPMENT CORNER

**WE'RE  
WITH  
THE**

**BAND**

Music acts have long turned to screen printers to create the iconic band T-shirt. Here's how you can make sweet music with your next sale.

BY SARA LAVENDUSKI

**T**wo years ago, indie rock band We Were Astronauts recorded its first album down in Nashville – and wanted screen-printed tees as an economical way to self-promote. Enter John Hansson, owner of Danielson, CT-based Up Top Screen Printing (asi/700799), who met the band through mutual friends and produced an initial run of a one-color reduced plastisol design on Gildan Activewear SRL (asi/56842) T-shirts

“Up Top gives us the best product,” says Antonio Casasanta, lead vocalist and guitarist. “It’s easy to order online, but you can’t be sure about the quality.” The band travels to Up Top for collaboration sessions because “we like to be really hands-on,” he says.

Recently, after the group finished producing an album in Los Angeles, they wanted T-shirts for the release party. Hansson designed a full-front print in both CCI D-white and pink discharge inks on a Next Level Apparel (asi/73867) tee. “People are paying attention now,” he says, “so we have to shoot for the stars.”

As groups like We Were Astronauts build an increasingly loyal fan base and subsequently carry a greater variety of promotional items, one piece hasn’t budged from the offerings: the screen-printed tee. They’re still one of the most prominently displayed products at merchandise booths and e-commerce stores, and continue to play a significant role in marketing efforts.

Although not every band can offer a vast lineup of branded gear, a few screen-printed apparel items can do wonders for both marketing and musicians’ wallets. Screen printers’ designs have appeared at concerts and local gigs alike for decades, and for good reason: They’re a cost-effective medium for advertising, building a following and ultimately increasing music and ticket sales.

## Life in the Fast Lane

Screen-printed tees are a staple at merchandise booths, and many screen printers count bands among some of their steadiest business. “We do mostly band merchandise and their independent clothing lines,” says Garrett Kaule, owner of Kaules Screen Works in Pittsburgh. Likewise, Bill Farnan, owner of Colors Incorporated Screen Printing in Santa Ana, CA, says band tees make up about 80% of his business; he keeps them coming by offering standout treatments like foil, glitter, high-density ink and discharge ink.

While some sell direct, others work through brokers to make sure musicians have enough merchandise. “We work with merchandisers that specifically handle music tours and acts,” says Andy Anderson, co-owner of Anderson Studio Inc. (asi/121990), in Nashville, a shop he has operated with his wife for almost 40 years. His long history of screen printing just a few miles from the center of Music City includes orders fulfilled for superstars like Neil Young, Garth Brooks, Lady Antebellum, Taylor Swift and Scotty McCreery.

Screen printing is undeniably the preferred method of embellishing band merchandise and it shows no signs of relinquishing its top dog status. One primary benefit is the inherently fast production time. When an order comes in, oftentimes there’s very little notice and a lot riding on its fulfillment.

“We once printed an order for our broker on a Monday,” Farnan recalls, “and on Thursday we printed the same number again for a same-night show, or the band was out of \$100,000. It’s that quick,

## BAND MERCHANDISE IN ACTION

She’s one of the most popular singer-songwriters of our age, successfully garnering legions of fiercely loyal followers, winning tons of awards and appearing in front of sold-out crowds all over the world.

And she’s only 24. Taylor Swift and her throng of marketing pros know the importance of charisma, personality and showmanship, combined with personal stories put to infectiously catchy tunes, in selling her image and, in turn, her music. But they also recognize that it’s a new era, one in which music and ticket sales are no longer enough to guarantee musicians’ futures. According to *Rolling Stone* magazine, a primary force in the shift comes from the advent of highly accessible music files: Because fans are now no longer compelled to shell out for a complete album, the revenue from music sales has fallen precipitously. As a result, it’s no longer enough to simply release music and go on tour to promote it; musicians must now turn to a variety of mediums to market themselves constantly.

According to The Black Key Group, a marketing management company for up-and-coming musicians, one of the most popular methods of promotion is branded merchandise, and the Taylor Swift enterprise is no exception: It offers endless options from posters, songbooks and guitars, to outerwear, sleepwear and jewelry, available at the official e-commerce store and tour stops. While the items that artists offer may vary, screen-printed tees are still at the top of the list. Merchandise booths and e-commerce stores sell thousands of styles and designs each year, promoting countless performers in the process.

“Bands can sell screen-printed T-shirts for \$25 to \$40 each, sometimes even more,” says Bruce Jolesch, president/owner of Pony Xpress Printing (asi/78964) in Garland, TX. “The cost of screen printing is much less than other methods, so the bands do really well on the mark-ups, and they’re easy to travel with and ship.”

Screen-printed T-shirts are an economical way to advertise and market, making them the reigning king of promotional apparel for music groups. And if superstar Taylor Swift is getting in on the act, there’s room for everyone.

This 100% cotton tee from **TSC Apparel** (asi/90518; circle 105 on Free Info Card) features a simulated-process print for Taylor Swift’s Red Tour, decorated by Anderson Studio Inc. (asi/121990; circle 116 on Free Info Card) in Nashville.





and there's that much on the line. You have to get it done. Otherwise, someone else will do it faster and for less."

In this environment of super-quick turnarounds, the ability to print swiftly is of the utmost importance. "Screen printing is very versatile that way," Anderson says. "You can produce a bunch of shirts very quickly, so I don't see it being replaced by any other method in the music niche."

Bands can also take advantage of screen printing's affordability, and the plethora of options it offers in terms of designs, apparel and ink. "Producing merch can get costly," says Michelle Zarella, sales and marketing director at Asbury Park, NJ-based Bands On A Budget, which specializes in gearing up bands for less. "We keep groups within their budgets while giving them retail-quality merchandise."

Finally, because screen-printed tees offer a retail style, they give clients the opportunity to ask for a good price. "They're cheap to buy and easy to sell at a markup," Kaule says. "Some bands with larger followings develop clothing lines, and during the tour they'll gradually introduce them."

## Help From My Friends

Establishing a reputation as a quality, reliable screen printer means striking a balance between meeting clients' demands and operating within the boundaries of viability. Designs depend on budget, culture, demographic and what groups want to express, says Jeff Lapi-erre, partner/owner of ClassSick Custom (asi/162832) in Pawtucket, RI. "Sometimes one color makes the most sense," he says. "It's straightforward and inexpensive. For a higher price point, we offer

simulated-process prints. They're colorful and detailed, and you can give the ink a lightweight feel."

To keep fans coming back for more, bands often look to printing that parallels retail trends. "One popular look is vintage, usually a faded center-front," says Bruce Jolesch, president/owner of Pony Xpress Printing (asi/78964) in Garland, TX. "Bands also go for lightweight discharge prints, and oversized prints over the collar and sleeves, or wrapped from front to back."

Kaule says the popularity of oversized printing stems in part from the eye-catching displays they create at merchandise booths. However, when done poorly, it risks disappointing fans. "With large prints, we stay away from plastisol," he says. "It makes shirts almost bulletproof and uncomfortable. Lightweight prints increase the perceived value tremendously."

To complement the soft prints, bands flock to lightweight styles from Gildan (asi/56842), Next Level Apparel (asi/73867) and Bella-Alo (asi/39590), according to Kaule. Some bands still go with boxy-cut tees, says Farnan, in order to cater to a range of sizes and tastes.

"We've been getting a lot of requests for soft-hand fabrics from suppliers like Next Level and Alternative Apparel (asi/34850)," Zarella says. "They're comfortable and fashionable, and they don't swallow up the budget. Bands are also sticking with simple ink colors while getting creative with shirt colors."

## Rockin' Art

When it comes to developing art, some shops are full graphic artists from start to finish; others use production-ready graphics supplied

## GALLERY OF BAND TEES



This T-shirt from **Gildan Activewear SRL** (asi/56842; circle 77 on Free Info Card) was printed by Pittsburgh-based Kaules Screen Works (circle 106 on Free Info Card) for a local metal band. It features two colors on the front and one color on the sleeves, all in water-based discharge ink from Magna Colours.



This privately labeled soft cotton jersey T-shirt features a lightweight distressed print for the Lubbock, TX-based Josh Abbott Band. It was decorated by **Pony Xpress Printing** (asi/78964; circle 107 on Free Info Card) in Garland, TX.



**Next Level Apparel** (asi/73867; circle 108 on Free Info Card) carries this cotton T-shirt that Up Top Screen Printing (asi/700799; circle 143 on Free Info Card) printed with CCI D-white discharge and pink discharge inks.

by the band; and others do a little of both. “Sometimes, we come up with ideas to present,” Zarella says, “and we prepare pre-made artwork for printing.” Zarella’s team will also simplify a multi-color design for more cost-effective production.

As a contract screen printer, Anderson often works with brokers to come up with the perfect design. “We’ll think of some concepts, and designers may send in ideas,” he says. But a word of caution: Prepare suggestions for clients unfamiliar with screen printing. “They may ask for a size or design that’s too cost-prohibitive to produce,” he says.

Kaule and his team are always ready to offer advice to make the process run more smoothly. “Bands know what they want most of the time, but we also offer our opinion,” he says. “They want an oversized plastisol print, and we say, ‘That’ll make this shirt uncomfortable. We suggest discharge or water-based.’ Once they see what we mean, they’ll usually go with our advice.”

### Every Picture Tells a Story

A local group has some sizable shows lined up, and they want screen-printed tees to optimize marketing and cash flow. Screen printers can look like rockstars themselves first by researching popular styles and being open to designing for a slew of genres, like R&B, hip hop, rap, jazz, reggae, electronic/dance and more. Merch tees aren’t just for rock groups or supersized, international acts. Pittsburgh, for example, has an extensive hip hop and rap community, and Kaule takes full advantage of its close proximity.

“They want to go all out with bling, gold foil, and silver and gold

ink,” he says. “This differs from a standard rock shirt, with its dark, Gothic look.” For some, oversized neon rules the day; for others, distressed tone-on-tone prints and smaller graphics are the name of the game. Being versatile across genres lets screen-printers look like experts when a client wants to bring a design to fruition.

To keep the reorders coming, establish quality, reliability and affordability from the get-go. Once screen printers have forged strong relationships, satisfied customers will spread the word. “Most new clients come to us after fellow groups recommend us,” Lapi-erre says. “They produce similar music and concerts.” And this, the “scene” of a given music community, is an integral part of the relationship between screen printers and clients. “You have to be familiar with their scene, including their music, shows and attendees, to establish rapport,” he says. “Larger groups usually focus on merch solely as a source of revenue, but smaller groups with more intimate followings have a certain art and expression to put forth. We have to understand what they represent. That’s really big.”

Producing quality screen prints for music groups is hard work and a lot of fun, and no one knows that better than the screen printers themselves. “We work with passionate and creative people, and it doesn’t get much better than that,” says Zarella. “This is a very important aspect of their lives, and by helping them create the T-shirt of their dreams, we get to live out our own rockstar dreams vicariously.”

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**Gildan Activewear SRL** (asi/56842; circle 77 on Free Info Card) supplied this SoftStyle T-shirt for country music trio Lady Antebellum. It’s embellished with a full-color simulated-process print by Anderson Studio Inc.



This lightweight cotton T-shirt from **Alternative Apparel** (asi/34850; circle 98 on Free Info Card) was printed by Pony Xpress Printing (asi/78964; circle 107 on Free Info Card) for The Yellow Bird Project ([www.yellowbirdproject.com](http://www.yellowbirdproject.com)), which sells T-shirts by indie musicians.



This 100% cotton T-shirt from **Gildan Activewear SRL** (asi/56842; circle 77 on Free Info Card) was printed by Anderson Studio Inc. (circle 104 on Free Info Card) with a simulated-process screen print for *American Idol* winner Scotty McCreery’s Weekend Roadtrip Tour.





Branded apparel hits the campaign trail, where every vote counts. What shirt has the highest approval rating?

BY C.J. MITTICA

## CHALLENGE #4: ELECTION SEASON

It's an election year, and fiercely-contested political battles are hitting their stride. Can branded apparel make the difference in who wins and who loses? We tasked our competitors to create a "cool" shirt to be sold or given out by a politician on the campaign trail. It had to feature a jumbo or oversized print. The name of the politician and imagery was up to their discretion. (The politician can be real or hypothetical in this scenario.)

The shirts were judged on these criteria:

**Creative Design:** Is the design creative yet still appropriate for a political venue? Does it grab your attention? Does it spread a positive message about the politician?

**T-Shirt Printing:** Is the print precise and technically sound? Does it showcase a good grasp of printing jumbo or oversized prints?

Sponsored by  
**Hanes Branded  
Printwear**  
(asi/59528)



### CONTEST RULES

*Wearables* Top Decorator was open to distributors, decorators and suppliers with screen-printing equipment. Participants must prominently use screen-printing in their design. They are allowed to incorporate it into mixed media with other decoration methods.

The winner is determined by three expert judges and a popular vote by *Wearables* readers. Entries were judged based on the creativity of the logo and how well it was printed on a shirt. The reader vote breaks all ties. One vote was allowed per reader per challenge round. The winning company received a \$200 Visa gift card from Hanes Branded Printwear (asi/59528). It will be eligible for a Best in Show \$500 grand prize at the end of the year.

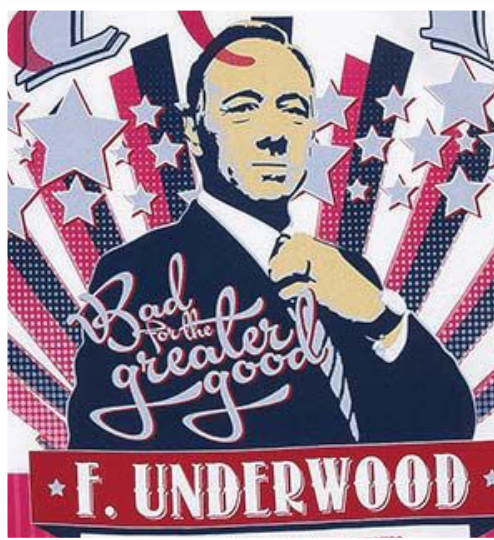
## WINNER VISUAL IMPRESSIONS

Circle 95 on Free Info Card

This shirt champions the political run of popular TV antihero Frank Underwood from the hit TV series *House of Cards*. It features a full-front print with oversized script on top that was printed without a press.



T-SHIRT FRONT



FRONT OF SHIRT DETAIL

- + Great concept with its "over the top" design elements which falls right along with the fictional Frank Underwood. The shirt would be a hit with fans of the show.
- + Very good technically, especially printing halftone dots for shading and color variation.
- + Soft hand given the amount of ink coverage on the shirt.
- Not enough squeegee pressure left print voids on the collar and sleeve seams.
- For a political candidate, white shirts don't sell well and don't create good crowd visuals. An effective political shirt creates a mass of identifiable color in support of a candidate.



**Q&A** *Wearables* spoke with Marshall Atkinson, COO of Visual Impressions in Milwaukee, on the design process for this month's winning shirt, challenges his team faced in production and advice on shops looking to create political campaign apparel.

**Q:** What was the mindset going into the style of the design and the incorporation of the various elements?

**Marshall Atkinson:** Our team met and decided that we didn't want to go the standard political Republican/Democrat route. That seemed too easy, and too polarizing. Pop culture came to mind and we brainstormed about movies or TV shows that had a political theme to them. It didn't take long to hit on *House of Cards* and Frank Underwood as the driver for the creative for this contest.

**Q:** How did you print the oversize script without a press? What prompted you to take that tack?

**MA:** For every *Wearables* contest, we've tried to do something different to make it fun and push the envelope. For this design, our team decided to use a thinned down red to overprint the top portion of the design so the inks underneath would show through. We burned this on a normal 23" x 31" screen, but instead of printing it with a press normally we hand-placed the screen on a loaded press platen and screen-printed it the old school way. We didn't know if we could do it or not, but taking the risk was half the fun.

**Q:** Were there any challenges you faced when designing and then printing these shirts?

**MA:** Yes, we wanted to do an oversized look, but we tried to engineer the print so it was easy to accomplish. This was printed in two locations. The first was the main image, printed normally on a manual press. The over-sized script was printed as a second location. This decision was talked about and debated for a bit before we pulled the trigger and decided we could do it.

## RUNNER-UP

### A&P MASTER IMAGES

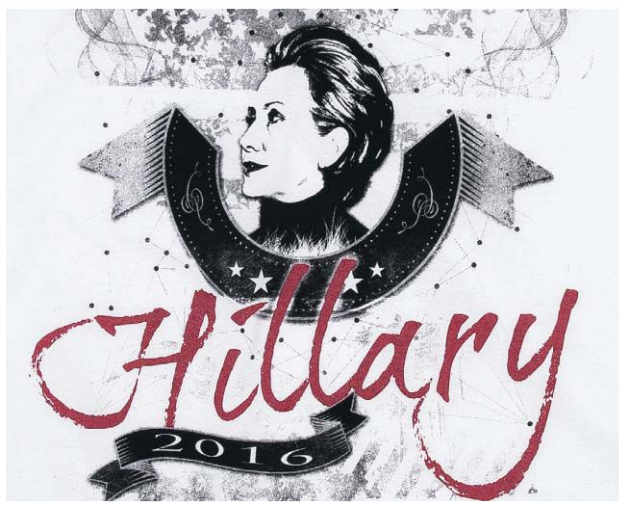
(asi/702505)

Circle 109 on Free Info Card

This jumbo print envisions a 2016 run by the former senator and First Lady. Halftones were printed on a manual press in black and red ink mixed with silver luster.



T-SHIRT FRONT



FRONT OF SHIRT DETAIL

- + Graphic was bold and easy to understand.
- + Good execution in creating a jumbo print; overall printing is technically sound
- Glitter in the red ink was a nice touch, though too dull and could have been bolder.
- Picture of Hillary Clinton could have been more flattering; judges deemed it too archaic and stylized.

# FINALIST

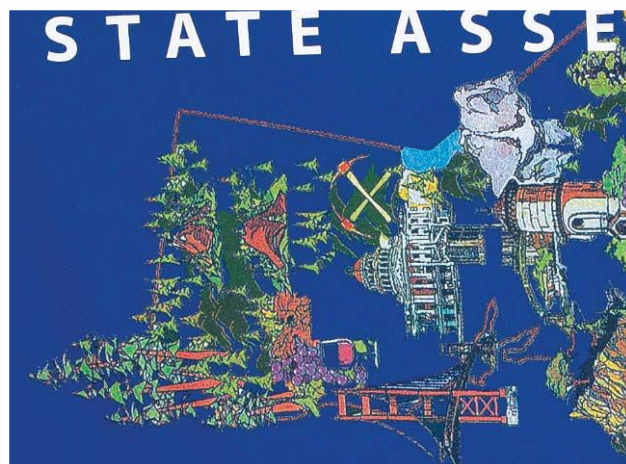
## THE ART DEPARTMENT

Circle 144 on Free Info Card

This oversized print is a creative concept for David Hadley, who successfully ran for election to the State Assembly in California.



T-SHIRT FRONT



FRONT OF SHIRT DETAIL

- + Candidate's name is large and easy to see, and positive imagery is perfectly suited for political venue.
- + Blue shirts would make a cluster of them stand out in a crowd.
- To get the bright white of the name, too much ink was applied to the shirt, creating a heavy hand.
- Graphic is too busy for a dark shirt, particularly with all the nature-inspired trees and natural landscapes.

## Q&A CONTINUED

**Q:** What are some general tips you can give on printing all-over or jumbo prints?

**MA:** All-over or jumbo prints take a lot more time than a regular print run, because usually the platen is larger, the shirts are harder to load and also harder to take off the belt without a foldover. You are going to work more slowly, so make sure you plan for that time.

**Q:** While this was an exercise in creativity, what advice do you give shops that are designing shirts for political campaigns?

**MA:** Do something different if you can. Most political shirts are fairly conservative in creativity, so try to interject some fun or creative thought into the process.

## PRODUCT SPOTLIGHT

### Hanes Beefy-T

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- + Shoulder-to-shoulder tape
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## SHOP SENSE

# Keep It Clean

A well-organized shop can save you time and money.

BY THERESA HEGEL

It seems like a no-brainer: Keeping your shop clean boosts morale, impresses customers and increases productivity, among other benefits. That's why Howard Potter, CEO of A&P Master Images (asi/702505) was initially surprised by how often clients would praise his spotless showroom and polished production area as an anomaly in the industry. "I was shocked," Potter says. "I didn't understand that we weren't the norm. It's one of those things that you don't believe until you see it."

Industry veteran and trainer Joyce Jagger, known as The Embroidery Coach, has seen it countless times in the decorating shops she helps. "I go into so many businesses where everything is so jumbled up," she says. "They have no idea where anything is. It's just a mess." Jagger acknowledges the difficulty of sticking to a system amid the chaos that often descends onto a busy shop, but she maintains that organization is key to a successful business: "Your place needs to be neat and clean at all times. Sometimes that's hard when you have a [decoration] business, but it's totally necessary."

Potter actually hired a part-time employee, who works 25 hours a week, to keep his shop clean. When A&P was a smaller operation, he would designate

a couple of hours for employees to clean up their individual work spaces, and used a professional cleaning company three times a week to do the rest of the cleaning; but as the shop grew, a different solution was needed. "Our staff tries to keep things neat and in order, but they don't have the extra time to scrub things down and dust," he adds. Their productivity enabled him to create the new part-time position.

Some decorators will claim that they're too busy for cleaning, and that it's too expensive to pay someone else to do it. However, Potter counters that it's time and money you'd be spending one way or another. "It's an investment into your business," he says. "They're not looking at the full picture."

A dirty shop could lead

**"I go into so many businesses where everything is so jumbled up. They have no idea where anything is."**

Joyce Jagger, The Embroidery Coach



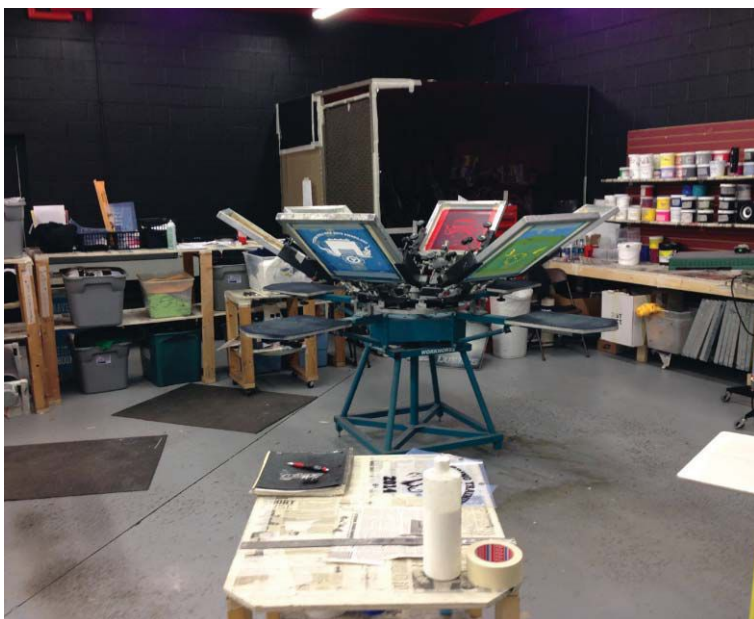
Howard Potter, CEO of A&P Master Images (asi/702505), insists on keeping a clean shop because it boosts productivity and impresses customers.

to spoiled merchandise, and neglecting your equipment and building upkeep is a recipe for costly repairs down the line. Potter says he prefers to spend money up front to keep the shop clean, rather than "get blindsided" by a ruined shirt order or broken part. With embroidery machines, presses and other decoration equipment such a big investment, why wouldn't you be willing to spend some time and money maintaining

them? "That's like buying a nice car and not getting the oil changed on time," Potter says.

Ellen Delap, a Texas-based professional organizer, says being messy comes at a cost for businesses. "Clutter is time-consuming," she says. She argues that when an employee's task is disrupted searching for a particular tool, it's as if the company had to buy it all over again in terms of lost productivity.

Another issue to consider is safety. Boxes and other clutter are tripping hazards. Sharp tools not stowed properly are another potential danger. "How many people throw scissors or knives on tables, then throw apparel on top, when it would have been just as easy to put them back in their cup?" asks Potter, who used to work in an industrial setting pouring metal and doesn't take OSHA regulations lightly. "People think that there's not a lot of safety to worry about [in the decoration business] ... but there's a multitude of ways people can get hurt."



Of course, one of the biggest reasons to keep a neat and organized shop has to do with presenting a professional and competent image to your clientele. Potter remembers being praised by a customer once because the apparel he'd ordered didn't reek of cigarette smoke, a problem the client had with his previous decorator. Being clean "speaks volumes about who you are as a business," Potter says. "It's

appealing to customers. They know that the apparel they receive will be clean and folded neatly. If they want to take it out and wear it right away, they're not scared they're going to catch something from it."

*Theresa Hegel is a senior staff writer for Wearables. Contact her at [thegel@asicentral.com](mailto:thegel@asicentral.com) and follow her on Twitter at @TheresaHegel.*

## NEAT TRICKS

It's easy to make a resolution to organize your shop, but much harder to get started, especially if you have the kind of production area that looks like a tornado just hit. Here are a few tips from the professionals on how to begin.

**Establish a system.** Embroidery Coach Joyce Jagger recommends using a system of spreadsheets and clipboards, with work order forms being posted on clipboards in each area of the shop, as a job moves from being received to final shipment. "This is a simple method," she says, "but it works and can be done very simply and inexpensively for a startup or even a struggling shop that has no money to purchase tracking software."

**Designate a time for cleanup.** "Make cleaning up part of the day, not something you'll do when you get time to do it," recommends Jan Yager, a consultant and author of several books on time management, including *Work Less, Do More*. She adds that it's important to have brooms and other cleaning supplies in easily accessible spots and that management should promote the idea that being clean and organized is a principle the entire shop will be judged by.

**Focus on one area at a time.** If you have years of accumulated junk to tackle, start small, choosing one part of the shop to organize at a time, says Denise Caron-Quinn, a productivity specialist based in greater New York, who founded the organizational consultancy, In Order to Succeed. Taking on the whole mess at once can be overwhelming, stressful and ultimately ineffective, she adds.

**Give everything a home.** Make sure scissors, knives and other equipment have a specific spot, preferably one close to the area where they'll be used most often. "It's helpful to label these places, if only until returning everything to its own spot becomes instinctive," Caron-Quinn says.

**If you're not using it, trash it.** When you're sorting through the clutter, take a moment to ask yourself whether you really need an item. If you hesitate or don't know, Caron-Quinn says, there's a good chance you don't.



## HOW TO

# Standardize Your Screen Registration

BY MARSHALL ATKINSON

One of the biggest and least understood challenges that many shops struggle with every day is how they approach the importance of screen registration. This is crucial, and can affect your overall print quality, downtime between jobs and daily throughput for your press. It's important to remember the best way improve your registration is to establish standards, knowing that the entire lifecycle of the production process matters in the final result.

## START WITH ART

Screen registration is the alignment of the screen image with the original art, or ensuring each color in the separations line up correctly in relation to each other. Great screen registration starts in your art department. The relationship and communication between your art department and your screen room is crucial for ironing out the details for standardization of screens. The goal is to image and expose your screens so that each separate color for the job is placed on the screen perfectly, and will match the other colors for the job on press easily.

Start with using a standard template in your art design-ing software. Set up and use a different template for each location that you might print in your shop. For our example, we're using one for the full-front

placement. If this is a left-chest location, there will be a different template used. Whether your shop uses film or a computer-to-screen digital system, remember to set up the separations so they are designed the same way every time. Your screen room and art department should consult and determine the exact placement for each location for the art to be placed on the template, based on the standards for placing the image on your standard screen. Everything should be centered, but how many inches from the top could vary from each location, and that needs to be worked out based on your screen frame size and type. Make sure there is agreement among your production staff, screen room and art department on each print location's landmark points, and set these up on your art template as registration guide layers. You can use these when placing artwork and separating your files so every order is ripped the same way.

On another layer on the template you should have registration marks, screen color name and job number so these can be exposed with the artwork for each color (Step 1). Many shops have different theories on using registration marks — some don't use them at all as they don't want to tape them off, while others have one in each corner. It's really a shop preference. At a minimum, centering a set of



marks with one placed above and below the image works well. Using a slightly oversized target type registration mark helps your press crew locate it quickly and find it while on press.

## IMPORTANCE OF SCREENS

Your screen room is the next crucial step with the registration process. This department should follow exact standards when handling screens, and be focused and thoughtful in each step. Many shops tend to staff their screen room with a collection of misfits — as it is a very dirty, somewhat monotonous and unrewarding job — and then wonder why they have so many problems with their production and constant on-press issues. If you are in that camp,

you may want to reconsider your hiring practices.

The screen room is where the mixture of craftsmanship, manufacturing and science are blended together in your shop. It is important to use tight, evenly stretched screens free of defects in the mesh. Each screen has to be thoroughly cleaned, dried and perfectly coated with emulsion. Whether you use film, vellum or a computer-to-screen imaging system, placing the image on the screen should be consistent and standardized. If you are still using film or vellum, using a jig such as a pin registration system or light table with a location chart can help line up all of the different plates so the screens will align quickly on-press. Take your time when taping the plates to

the screens, and try to be careful that you place the image as straight and perpendicular to the sides of the frame as possible. Computer-to-screen systems have an advantage in that they lock in the screens and start the imaging process by locating a “home” point before starting the print process. Every screen image will line up perfectly, and never be skewed slightly like films or vellum can, as the machine print head always travels on an even axis when working.

Separations that are not placed on the screens correctly before exposure can cause registration challenges later on-press, as they will be harder to line up. Having your screen room staff emphasize craftsmanship and focus on consistent standards when imaging the screens, can go a long way in reducing your challenges with registering the screens later. Your screen room staff should also be extremely picky when choosing screens to use, as improperly stretched, warped, torn or loose mesh can cause a lot of headaches with the print crew if kept in the screen rotation. During the screen-cleaning process, your screens should be routinely checked for problems and any defective screens culled out of the daily lineup.

## REGISTRATION ON PRESS

Regardless of whether you are using a manual or automatic press, you should be able to set up a job and be ready to print in about five minutes per screen. Many veteran press operators can set up well under that time, but five minutes per screen is a good average to base your production around. There are probably as many set-up routines for registra-

tion as there are press operators. Here's one that works really well:

### **Start with establishing a “home” platen on press.**

This will be the platen you use to register all of the screens when printing. Use a pen and a T-square and draw a center line on platen. Next, draw a few perpendicular lines at the top of the platen (nearest you) in 1” increments. These guidelines will establish the landmarks for registering the screens (Step 2).

**Next, place one screen in place and use the target registration marks to line the screen up with the ruled lines you drew on the platen.** When you are satisfied that it lines up exactly with these marks, lock it in place. Be careful to not have the screen move when you do, or you will need to adjust.

**Do the same with all other screens.** Add ink, squeegees and flood bars.

**Print one strike off and review.** Flash cure each color as needed. Use your press micros to adjust slightly if there is any screen that needs correcting. Keep adjusting until your printed image looks perfect (Step 3). If you have multiple screens that need correction, only adjust one at a time.

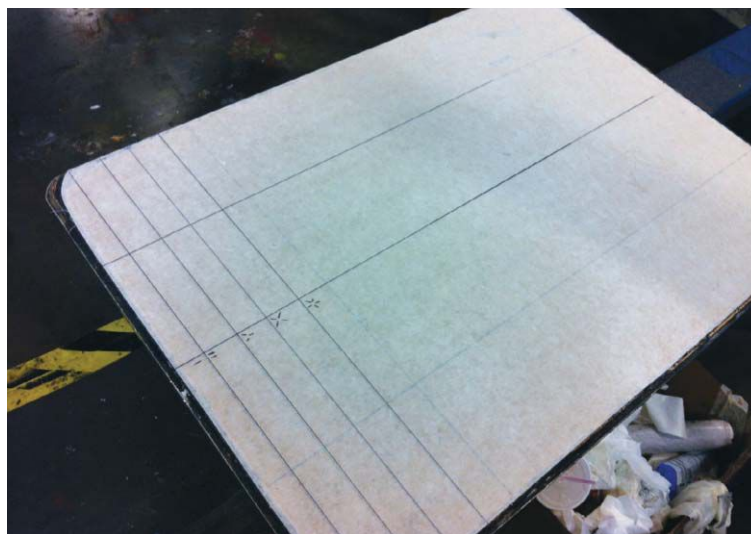
## TROUBLESHOOTING

Sometimes the job just won't register, despite doing everything correctly on-press. Time is money, and there's a tremendous pressure to quickly diagnose the problem, correct it and get that job up and running. Here are some ideas you can use to troubleshoot challenges in your shop:

**1. Print one screen on a junk shirt and flash cure the image.** Review the registration



Step 1



Step 2



Step 3



marks and other landmark points of the problem image through the screen. What parts don't line up? This is where you look for inconsistencies in the artwork, or to see if maybe the screen mesh is too loose or stretched unevenly.

**2. Review your platens on press** and make sure they are centered and level with the screen. Also, look at your off contact. One unlevel platen can cause a lot of grief on press.

**3. The problem could be the artwork** – especially if the challenge is something with the underbase plate. Sometimes the underbase white peaks out from the other colors and may look like a registration issue. Choking back on the white slightly can help remedy this; have your artist correct it and get a new screen made.

**4. Don't keep it a secret.**

Many press operators want to keep banging away at the registration issue and will spend an eternity trying to solve the challenge. Instead, if something just isn't working, bring in some help and have a discussion with your senior staff.

**5. Are your screens stretched properly?** Do you routinely measure tension on your screens? Improperly stretched screens and loose mesh can cause registration challenges on press, even if the image is perfectly aligned on screen. Make sure your screen room has a quality control program that looks for problems.

**6. What type of training program do you have in your shop regarding registration?** Does each department get the same information, vocabulary

and understanding? Are you building a good foundation for success?

**7. There are a good number of aftermarket registration systems** or devices that can help your shop minimize the downtime in setting up jobs. Check with your vendors or attend a trade show to learn what might be best suited for you.

When thinking about mitigating all the possible challenges associated with registering screens on-press, it's important to think beyond what's happening at the press. Look at the entire lifecycle of the screen and the workflow of getting the image created, exposed, registered and printed. Is each step standardized so it's handled the same way every time? Think about how each staff member along the way

contributes to the overall picture for registration: Does someone have an individual method of completing a task that causes problems downstream? What's the biggest problem or concern in your shop with registration? Is your team working together and communicating ways to solve it? If not, grab a cup of coffee, sit down and start ironing out your shop's best practices and standards for making registration an easier step in production.

*Marshall Atkinson is the chief operating officer of Visual Impressions, Inc. ([www.visualimp.com](http://www.visualimp.com)) and Ink to the People ([www.ink-tothepeople.com](http://www.ink-tothepeople.com)). Follow him on Twitter at [@atkinsontshirt.com](https://twitter.com/atkinsontshirt), read his blog at <http://atkinsontshirt.com/> and contact him at [matkinson4804@gmail.com](mailto:matkinson4804@gmail.com).*

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THE INK KITCHEN

# Illusion vs. Reality

Advice and secrets from the screen printing know-it-alls.

BY TOM DAVENPORT

**THE ORIGINAL DESIGN** of these Oktoberfest Lederhosen shirts was to go from the top seam of the shirt down to the bottom of the shirt, bleeding off the top and bottom – and if possible, going up over the shoulders of the shirt. There are ways to get that done, but at a considerable cost and with a whole lot of (unnecessary) effort.

You have to stop and think about it. Is anyone really going to see the shirt and think the person actually has lederhosen

on? No, most definitely not.

So at a much lower cost and with just as much good humor (after all, “fun” is definitely what the purpose is here) we printed it with a fade toward the top. Mission accomplished, with no crazy expensive printing involved. The customer was happy with the result and the price. Designers with an open mind are so much more fun to work with, and the collaborative results are so much better.



## A Good Trick

For blocking out screens for printing water-based discharge inks, regular old generic clear nail polish works very well. It holds up, and that aggressive discharge ink doesn't get through. Plus, it reclaims fine and it isn't expensive either. What more do you need?



## WARNING: Knives are Sharp!

Some years ago we did some work for a major sporty retail brand. At one point they added to their huge book of rules that we had to put a piece of cardboard inside every box, so that they could slice open the boxes (recklessly) and not cut a shirt. I asked if instead we could do a sticker that said, “Be Careful A\*\*\*\*\*!” Instead we dutifully added the wasteful cardboard, slaves to retail that we were.

# EQUIPMENT CORNER

The latest in machines and decoration products

## PRINTERS AND PRESSES



### ▲ Heat Press Caddie – Hotronix

Hotronix (circle 119 on Free Info Card) carries the Heat Press Caddie, which speeds up the decorating process, making it easier for decorators to quickly load a garment and decorate all areas of the fabric. It never has to be removed from the press and can increase productivity when using a heat press by 40%.



### ▲ Eco-Solvent 24-Inch Printer – Graphics One

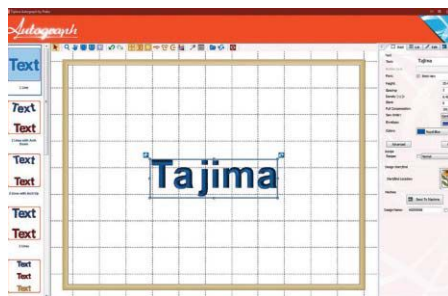
The new GO X-24P is a 24-inch eco-solvent printer from Graphics One (asi/14975; circle 120 on Free Info Card). It is unique in that users can upgrade from a printer-only model to a complete print-and-cut device. This four-color printer offers imaging up to 144 dpi with DX5 printhead technology. The printer produces durable images for both indoor and outdoor applications and is geared for the targeted applications. It includes a heavy-duty stand and ink.



### ◀ Small-Format Tag Printer – Workhorse Products

Workhorse Products (circle 123 on Free Info Card) carries the new Cutlass, a small-format tag printer. It can imprint on various products and apparel items and features six stations. It includes a standard mount and leveling system and a full-color, touch-screen control panel.

## SOFTWARE



### ◀ Embroidery Personalization Software – Hirsch International

The Autograph 2 from Hirsch International (asi/14982; circle 126 on Free Info Card) is the latest upgrade to Pulse's standalone software. It features a larger design

area and a new fit-to-hoop option that automatically sizes lettering to fit within a specified space. Some of the updated functions include the templates, enhanced special effects and garment preview function.

## TRANSFERS



### ◀ Printable Heat-Applied Graphics Material – Imprintables Warehouse

Imprintables Warehouse (asi/58475; circle 128 on Free Info Card) offers a Cad-Color Solutions Opaque. This material is versatile and is designed for white and dark garments and will go on any type of fabric. It can be used in output devices and the material can be used to produce full-color, detailed designs

that can be applied to a wide range of apparel and accessories.



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## A Caped Crusade

**Warner Bros. Entertainment** soared above other brands at last year's San Diego Comic-Con show – not because of its TV programs or movies, but thanks to a clever promotional item. The unique giveaway – a branded backpack with a detachable cape – was so popular among enthusiasts that it hit collectibles websites within hours of its release. “We know it’s a hit when our stuff ends up on eBay,” says Lisa Gregorian, the chief marketing officer for Warner Bros. Television Group.

Of course, most of the 130,000 attendees kept the bag and cape combos – which were produced by I.D. Me Promotions (asi/385312) – as Comic-Con mementos, even sporting them throughout the event. “Con is a huge showcase for us,” Gregorian says. “It’s the one time where Warner Bros. is front and center with the fans and with our brands.”

Comic-Con is undoubtedly a key event for media companies. It’s the world’s largest gathering of pop culture lovers under one roof – a four-day show that draws passionate fans of a wide variety of entertainment mediums. It’s common for attendees to demonstrate their excitement for the event by wearing costumes honoring their favorite characters of comic books, movies and TV series. Warner Bros. has been making the official Comic-Con bag since 2008, a giveaway that fans always look forward to. “There is always complete insanity at our booth,” says Gregorian.

Year after year, the anticipation drives Warner Bros. to offer something different that will appeal to gear-crazed fans. In 2012, the company changed its bag style to a backpack, to make it easier to carry. Gregorian’s cape idea was a new and fun touch – one that was as practical as it was playful. Because the capes can be detached, kids will be able to use them as part of costumes in the future – rewarding the next generation of loyalists. “We give away the bags as a thank-you to our fans,” says Gregorian.

Each of the latest bags featured double-sided artwork: One side carried the official Comic-Con design, and the other highlighted titles from the Warner Bros.’ entertainment stable. The media company usually offers about 10 designs per convention, and incorporates all of its divisions, including DC Comics, WB Gaming, Theatrical and Television, says Gregorian. The planning process for the artwork and the bag starts at least six months ahead of Comic-Con, held annually each summer.

Gregorian estimates some 40% of convention goers of all ages were wearing the capes in San Diego. Some Warner Bros. TV show stars even tweeted links to the bags, generating so much buzz that the company’s press site went down for 30 minutes. While the logoed backpacks were the big Comic-Con hit, Warner Bros. also gave out branded T-shirts, hats, books, masks, figurines, iPhone covers and medallions, as well as nearly 40,000 branded hotel key cards. “At Comic-Con, we all stand together and the entire company is represented,” Gregorian says. “It’s the power of the shield.”

– Jean Erickson





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