

Film Positive Road Test

The premise is simple ... using a **common** art file, send it out **digitally** to a bunch of different shops to see what type and **quality** of film they are producing **every day** on their equipment.

When it comes to film positives and making stencils, the methods to produce them and materials used in screen printing can run the gamut from photocopies on acetate to filmless systems. I'm guessing the percentage of shops still using film positives to make screens worldwide is 99 percent. Yet almost every article I read lately about making stencils has been devoted to the latest greatest computer direct-to-screen systems. They draw the big crowds at the trade shows and produce an amazingly crisp stencil. It's new, so it must be good. If we are to believe the trade magazines and the equipment junkies, everyone will soon toss that old piece of clear plastic with the black image, and sign a lease for a machine that costs as much as a house and promises to deliver the perfect stencil in ... the same time it takes to burn a screen the traditional way.

A prediction: Film is not going anywhere soon in the average, or even above average screen shop. So in the interests of fair play and equal press time, and on behalf of all those sentimental old fools like myself clinging to their emulsion-up right-reading film positives, I would like to present a little Squeegieville-sponsored road test of some of that "old school" film technology that today's commercial screen shops are still

using. The last 10 or 15 years has seen the wholesale conversion of an entire industry's antique process cameras to boat anchors, replaced by a variety of digital output film devices as varied as the materials we all print on. Let's see how they compare....

Handy Andy's Expose-Ur-Self Test

The premise is simple ... using a common art file, send it out digitally to a bunch of different shops to see what type and quality of film they are producing every day on their equipment. We get a range of samples back, we burn some identical screens, we see what works and how well and maybe answer a few questions. I've always wondered how much better some 4000 dpi imagesetter film is compared to the latest medium format inkjet printers. I know my Epson 3000 sucks, but that's last century's technology, plus I don't clean it often enough. So how does an Epson 4000 running inkjet film compare to an OYO? And is vellum from a laser printer really so bad?

I'm hoping this test might allow printers to compare what they are using now with the results from other people's systems, and hopefully make informed decisions about where to go next on the technology ladder. Size is always an issue. Accuracy, too. Laser



or inkjet? Spend \$2,000 or \$200,000? Fifty line screen capability or 150 lpi? Or maybe you only need to print nice type and sharp line art. Your needs – and those of your customers – plus your printing abilities and budget should determine how you produce your positives. You can actually download the file we used for this article from the SGIA Web site and try the test yourself (see instructions under Your Output Device).

Johnny Shell, Vice President, Technical Services at SGIA offered to take some microscopic shots to accompany this article, so screen printers could see results close-up. We purposely chose not to approach film or equipment manufacturers, preferring the production films made every day in shops just like yours.

So this is the nature of our test. Let me warn readers the print results part is going to be totally unscientific, conducted by yours truly in my decidedly low tech backyard studio, without the benefit of densitometers, thickness gauges, microscopes, assistants in lab coats, control systems or expensive computerized equipment. Nothing has been finger- or footprinted, although I did take out the garbage and vacuum. There's freshly stretched and prepped screens and



By Andy MacDougall, Owner, MacDougall Screen Printing Ltd.

emulsion, I cleaned the glass on the vacuum frame, I'm way past deadline, so let's start burning those screens and get printing!

Finished Before We Start?

This test actually started last year, after a long message board discussion on www.gigposters.com regarding the best way for people to make film. After much talk it was agreed that "best" is pretty subjective. Some people had little money, so the best solution for them was the least expensive. Others had issues about size, requiring a wide-format printer system. Others required high resolution to print process color. Typical screen printers! Nobody could agree.

My designer friend Neil Havers at Havers Graphic Design in Courtenay, British Columbia came up with a tricky little test film design that had varying sizes of type, line widths, curves and tonal range ovoids and our friend Shelly in the middle of some concentric halftones feeling a little ... exposed. Then we ran into a glitch in the file, which coincided with changeover time to Adobe CS2: Either Shelly was there, or the type was there, but for some reason we couldn't get the two to flow through the darn Internet and end up on people's computers at the same time, and then print out and make some film. It got to the point it became a joke, but it wasn't that funny.

The First Lesson of Digital Film

Here we learned the first lesson about any computer driven printer that is going to make your film positives from a digital file. They need to talk to each other. Unfortunately the language they speak changes every few years. It was enough to make me wish for the good old days of paste-up and camera shots. That simple and time tested technology worked for nearly a century, as the printing trades made massive leaps forward in terms of automation.

Now don't get me wrong here. Technological advances, and more importantly using technology to best advantage, should be of interest to any screen printer. We all must progress and embrace change, even old squeegee draggers living out in the boonies like myself. The problem ... no, the reality of implementing new technology as it relates to film production and stencil making in our industry, is we have so many choices. So here are six options, ranging from low end to high end. Where some in the industry may turn up their noses at the quality of the images, remember, our needs vary greatly from shop to shop. Not everyone has to

print 85 line process color to make a buck. In fact, I would venture a guess that if we looked at all screen printing volume worldwide, single or flat color graphics would still make up the majority of work. So don't judge a film device solely by its halftone.

Let's Meet Our Machines and Films

Canon Photocopier

The favorite of art students and rookies everywhere, this "Staples" brand clear film is clearly the underdog of the film test. The closest we have to old fashioned analog camera film, it requires a printout of the art on paper to start, and then a trip to the closest photocopier to get the film made. There were serious moiré and loss of detail issues on our test piece, and the opacity of certain sections of the positive caused the stencil to be poorly formed. In defense, it is cheap and copiers are everywhere, and if a person didn't have a computer hooked up to an output device but needed to make a film positive, this still beats drawing it with India ink and a tech pen.

HP Laser Printer

In the transition from paste-up and camera shots to computer generated film, the laser printer transparency was (and still is) one of the cheaper and easier in-house solutions for screen printers, especially T-shirt printers and those working in smaller formats. Although limited by size, density, distortion and transparency of the medium, this "Kimoto" brand laser film, run through an HP laser printer at Havers Design, makes a decent stencil, if you don't mind halftones that look like they were made with Letraset. If a printer understands and can work with the limitations of laser film, they have a film system that is convenient and cheaper than my Scottish grandfather. As far as using it for multicolor work, because of its heat induced distortion, I have two words of advice: Big Traps.

OYO Thermal Printer

Our first real sample comes from one of the original purpose-built film output devices that filled the gap left by stat cameras. This OYO film provided by C2media of Richmond, British Columbia is used for jobs with halftones up to 50 lpi and solid color work. In our print tests on my less than perfect system, the film produced a well formed stencil and print sample on 250 mesh, with good edge definition. Mark Bitz, the manager of digital imaging operations at C2media explains "we use the OYO for less critical



Figure 1:



Figure 2:



Figure 3:



Figure 4:

work, because of its economy compared to the costs of our imagesetter films. It does a good job on process color work with lower line counts."

Epson Inkjet Printer

With the widespread use of wide-format inkjets for short-run, full-color work in many screen shops, plus a rapid advance over the past few years in output quality/resolution and ink receptive clear film media, inkjet printers like this Epson 4000 running Autotype film are becoming more popular than beer at Oktoberfest. As films and printers get wider and better, expect to see more shops running more film this way. Our 65 line screen that Ian McInnis of Willox Graphics in Vancouver, British Columbia pumped out is not as crisp as our 85 lpi imagesetter test films, but it didn't cost \$50,000 dollars to set up either.

Agfa Imagesetter

We have two heavyweight contenders in the film test. The 85 lpi Agfa Selectset 7000 sample from C2media exhibits all the classic characteristics of a premium film positive for screen printing: razor sharp edges, non-pixelated corners and dots, plus a solid black density suitable for viewing solar eclipses through. My pathetic attempts to hand print an 85 line screen aside, this is how it's done in the industry now: C2media is one of Western Canada's top full color shops, shipping product all over North America and a big part of their success starts with their film. With the price of these film devices dropping due to changeover to full digital work flows in the offset market, used imagesetters are becoming affordable for the in-house production needs of screen printing shops that require this level of film quality.

Linotronic Imagesetter

Sam Mueller, head of pre-press at Simpson Screenprint and Lithography of Bloomingdale, Ontario, sent us two films and two sample prints that set a benchmark for our test, and demonstrated that there is intelligent life outside the known screen printing universe – at least the 85 lpi one that most shops inhabit. Their 150 lpi screen print produced from their Linotronic 530 running Konica film is a technical *tour de force* and testimony to control of the process; not only is the film good, but the printing is exceptional. The fact that they also run a full offset operation as well as a screen shop probably contributes to their attention to detail and ability to screen print halftone screens more commonly found in magazines. Simpson

still goes to outside film producers for any large format work.

Your Output Device

So how does your film output compare to the six types we profiled above? You can easily test it by downloading the same PDF file everyone else used, just download it at SGIA.org. I found this file, when produced at different line screens and then exposed on the same meshes, makes an easy comparative test when trying to determine optimum output parameters for your particular shop conditions. Use it to determine mesh count, smallest type size, halftone line count, screen angles, dot gain and lots more. Go ahead - expose-ur-self.

The Final Word on Film

In the mid 1980s litho or PMT produced film from cameras was industry standard for probably 90 percent or more of all screen printing shops. Those of you who have been in the industry since this time have seen the radical change from an essentially analog technology to what we have now, a hybrid digital workflow broken by the act of burning a screen. Traditional process camera film has all but disappeared in North American commercial screen shops, replaced by a range of digitally driven options, including the elimination of film altogether.

We definitely have seen advancements in quality and consistency, production speed, and even in environmental impact as the toxic sludge of processors becomes a thing of the past. We have advancements in material cost and equipment affordability. One problem....there is no one film or stencil production system that can deliver all these advancements to every printer. No magic bullet. Everybody uses something that meets most if not all of their film needs, and I'll bet everyone still wonders, "Is there something better, should we dump this system now and get something new?"

Unfortunately the thought that follows "something new" in most screen printers' minds is a memory of that last great product that was going to make the shop a ton of money. You know the one sitting derelict under a tarp, brought home from a trade show a few years back.... the \$30,000 storage shelf.

My personal view is that inkjet manufacturing technology will continue to evolve, providing less expensive wide-format printers capable of printing film positives with crisp enough resolution to satisfy technical requirements. The cost of the special ink receptive films used for inkjet positives will drop lower and lower

Film Positive Road Test Results

	Dot	.5pt Line	4pt Type
AGFA Film			4 pt
AGFA Print 250 Mesh			4 pt
AGFA Print 380 Mesh			4 pt
Canon Laser Film			4 pt
Canon Laser Print 250 Mesh			4 pt
Copier Film			4 pt
Copier Print 250 Mesh			4 pt
Epson Film			4 pt
Epson Print 250 Mesh			4 pt
Epson Print 380 Mesh			4 pt
Linotronic 85ipi Film			
Linotronic 85ipi Print 250 Mesh			4 pt
Linotronic 85ipi Print 380 Mesh UV			4 pt
Linotronic 85ipi Print 380 Mesh WB			4 pt
Linotronic 150ipi Film			
Linotronic 150 Ipi Print			
OYO Film			4 pt
OYO Print 250 Mesh			4 pt
OYO Print 380 Mesh			4 pt

at the same time the quality improves. The bonus of having a short-run color printer that will also make film allows the smaller screen printer a newfound flexibility to compete for different types of jobs using the same machine.

Although today's high end imagesetters produce the best films, the fact that they are only prolific and affordable due to their use in the much larger offset printing field will be tested by their rapid replacement by CTP (computer to plate) systems and digital presses. Watch for the prices on these to continue to drop for the next few years as more used ones come on the market, making them affordable to purchase. At the same time, compatibility issues will come to the forefront as the computer operating systems and graphic programs of the near future fail to mesh with the output devices of today. This instant obsolescence, occurring in ever shortening cycles in the graphic trades, will be the major hurdle screen printers will face as they try to produce films on the array of digital devices from which they can choose.

Probably the most important thing to remember when looking to the future of film is the one lesson that was driven home to me when I attempted to print these samples. Quite simply, if your stencil making and printing aren't under control, the finest films won't print much better than the worst ones.

Thanks to these Canadian companies for providing film and information for this article:

C2media/Pacific Screenprint - Richmond, British Columbia

Havers Graphic Design Corp. - Courtenay, British Columbia

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