

## ***SGIA and PHOTOEAST Trade Show Discussion on Large Format Printers (November 2000)***



Mimaki JV2 printer at SGIA (Sign and Graphics Trade Show)

SGIA (signs and graphics) trade show and PhotoEast (photography trade show) were held simultaneously, one in New Orleans, the other in New York. FLAAR senior editor Nicholas Hellmuth attended both (two days at one; two days at the other). We work hard to gather data for the readers of the FLAAR network.

**MIMAKI** finally had a booth at a trade show. Mimaki is the most elusive of large format printer companies, close to non-existent at DRUPA and Photokina. Non-present at Seybold. At Big Picture show Mimaki was seen only via Stork's rebranded textile printers.

Mimaki demonstrates a plus side of Epson's piezo printheads, you can use all kinds of inks in them, including dye sublimation inks and various inks that work well on textiles. Mimaki is a 7 head Epson piezo system. Mimaki's 7<sup>th</sup> head uses a special black ink to produce the master necessary for screen-printing. The RIP that runs the Mimaki is the Ergo from Switzerland, even less well known than Mimaki itself.

**ROLAND**, is the most skillfully promoted Epson piezo printer around, elevated by well-orchestrated advertisements to a niche as sign printer and fine art giclee printer. Downside is the glacial slowness. If you attempt to decrease the slowness you tend to get serious banding defects horizontally across the print. The image proudly displayed at the Roland booth was covered from top to bottom, edge to edge, by horizontal banding tracks. I mentioned this and the attendant stopped the printing, turned off the machine, and removed the print to the trash. I was told that the heads needed cleaning and the cleaning station as well. Image option was set to 540 dpi which made the printer less slow, and hence more likely to band. I was also told that using Concord Rag art media might cause the nozzles to get dirty. That causes clogging, which also results in banding. Since Concord Rag is a favored fine art giclee media, sounds like a lot of maintenance to keep the system clean. We have also heard of other media that causes head clogging with the Roland.

Since several people had told us their Roland (Epson) piezo heads needed replacements we asked the Roland people how long those heads were rated for. Answer was "one and a half years if you print 40 hours a week." This sort of negates the popular claim that piezo printheads are permanent.

The Roland Hi-Fi brochure is within the range of acceptable advertising with two exceptions. The "self cleaning" aspect of the heads would seem not always to be functioning adequately, since if it worked fully then there would not be as much banding or need to stop the machine, throw away a print, and do a cleaning maneuver. For obvious reasons the slow speed is not mentioned in the all brochures but at least Roland is more honest than Epson, whose brochure is misleading about its speed claims. We have seen one Roland info sheet, which does indicate it takes two hours for a single print if you use the V8 Pro model with all eight colors, and try to accomplish full apparent 1440 x 1440 dpi. If you don't mind waiting one to two hours for a print (or three or more hours for a mural) then the quality is outstanding. Full museum-quality exhibit-quality fine art or photo-realistic images are what Roland printers are known for. Unless, 90 minutes into the print, the banding starts or the colors start to change because the piezo head is a tad bit clogged. It's precisely in such long prints that the dust and debris may build up on the piezo printhead to cause horizontal defects. You then have to throw the print away, and start afresh, which gets rather expensive due to the high cost of the media.

Nonetheless, these defects do not necessarily occur on every printout or even with every printer. We have end-user reports that their Roland printers work just fine and the output is wonderful. We recognize that Roland makes a good printer. When you happen to end up with a machine that is not prone to banding (or you dedicate yourself to scrupulous cleaning of your machine daily) then the output is exceptionally fine as long as you don't mind the



REXAM, media for large format printers

excruciatingly slow output pace. We have reports however, of people who either ordered the printer and then cancelled the order, or actually took delivery but then returned the Roland due to continual banding defects.

Banding is not limited to this one printer. The HP 1055 has consistent banding at its higher speed but that's a CAD printer and architects seem accustomed to that appearance. Other models of HP DesignJet printers may band if you don't use a really good RIP. Banding is especially likely to occur on fuzzy solid-color backgrounds. The ColorSpan will band at its faster speeds. This is typical of all printers, whether thermal or piezo printheads. So it's not really whether banding defects occur, but rather, can you eliminate them. With the ColorSpan cleaning the heads, calibrating the printer, and selecting the top quality print options eliminates banding. The ColorSpan prints I did during evaluation of the Ilford variant in Germany had no banding artifacts that I noticed.

In fairness we should also mention that many people who have read the FLAAR reviews and FLAAR reports on Roland printers have noted our recognition of the outstanding quality which a Roland printer is capable of producing. These people have therefore bought a Roland based on our recommendations and afterwards have written to say they really like the quality of the printer. They tend to complain mainly about the glacial slowness. People who are a commercial sign shop or commercial giclee printing company write to say they often need to have a ColorSpan or an HP in addition to their Roland in order to get some production. If a client orders 100 copies of a poster or sign, it's not realistic to attempt to print that with a single piezo printer. Thus the well established sign shops either have more than one Roland, or a Roland plus a thermal printhead machine, or they only accept clients who want just one or two prints, or they have a row of HP DesignJet or ColorSpan printers and skip piezo machines all together.

But people who were not aware of the few foibles of a Roland (they read only the ads and brochures) were therefore unprepared for the occasional banding or did not know how to overcome it by eliminating dust and cleaning of the printheads. These unprepared owners are the ones who tend to have bitter experiences and are extremely unsatisfied with their printer. Thus a review, which is forthright, will result in a happier end-user because they know in advance what to expect. And just imagine how content all the Roland buyers are when they realize that most of their output will be beautiful and hence fetch the premium price that a Roland print commands in the marketplace.

**Accuplot** printer, banding everywhere, neat horizontal tracks across the image. Attendant had to clean the heads; that got rid of the banding. In another booth (of a RIP company), an **EPSON**, on glossy paper. More banding. Uuups, stop the printer and recalibrate. Of course glossy media is tough for pigmented inks in general and Epson's new inks in particular.

When I returned to the booth the output from the same Accuplot printer was flawless. It just requires cleaning the printheads and the parking station. Other printer companies such as ColorSpan indicate clearly that you need to clean and calibrate their (thermal, not piezo) printheads. So you know that in advance. Piezo printheads are so hyped that people presume they are super efficient and never suffer any down time. Piezo printheads are used in Epson, Mutoh (Accuplot is the house brand of Mile High Engineering Supply), Mimaki, and many other brands.

Piezo printheads have many advantages, but their propensity to frequent banding and dropping colors for brief periods are generic features that have sort of been unmentioned in the continuous rain of exaggerated claims for their imagined piezo capabilities. So far, however, we have few specific complaints from actual end users of banding with their Mutoh printer. We are working at finding out what makes a Mutoh different than a Roland, or is it merely that Roland owners are more upset because the ads suggest a higher quality that presumes such defects won't pop up. In theory both the Roland and the Mutoh use the same or at least similar Epson printheads. Note the qualifier "in theory." We will continue to check on all these situations at the trade shows during 2001. In the meantime we can say that thousands of users of Accuplot, Kodak, Agfa, and other rebranding of the Mutoh Falcon seem content with their printers (other than perhaps its slowness).

I went to **Epson's** booth: most of the printers were not printing at all. Images were taped to the wall. No glossy media; everything on matte. Looks like glossy does not work well on the Epson? Of course for many people that's fine, glossy gets a bit shiny sometimes. The only glossy I saw turned out to be matte that was laminated in order to make it look glossy. I asked (at PhotoEast) and they said "Epson prints perfectly on several kinds of glossy paper.." But the word out on the street is that the "new inks" on glossy media may result in the "bronzing tint defect," which is the bronze color reflection possibly noticed under certain lighting conditions. This would be for color. If you print some kinds of black-and-white images, they turn greenish under some lighting conditions. Does all this mean to avoid the Epson? Not necessarily. Every printer has its weak points and its strong points. The winning feature of the Epson is its near continuous tone. Look at any light background area; on most printers you see a pattern of ugly ink dots. On older Encads you see a grainy appearance. On an Epson its closer to a real photograph (but definitely not a Cymbolic Sciences LightJet print as originally claimed in Epson ads at DRUPA trade show in May).



EPSON Stylus PRO 7500

Color shifts in Epson prints with the new inks have been reported. This may occur on DuPont proofing paper. We await further confirmation. Readers should realize that every situation might be different. Your B+W images may never glow green, for example. A lot depends on the original colors, on how the image was handled in Photoshop (the color channel mixtures), on the RIP, and your local lighting conditions. For Epson desktop printers such as the 1270, you will get ozone vaporization of the cyan under certain atmospheric conditions, but many people never experience this.

Back to the Accuplot printer, it can achieve a full 1440 x 1440 (Epson does only 720 x 1440). The pigmented ink is identical to that for the Roland (namely the pigmented ink that comes with the Epson piezo printheads). Advantage of piezo heads is that they accept dye sublimation inks though these inks are tough on the heads and reduce head life. Mile High Engineering Supply Company has specialists on their staff that handles CAD-GIS (as you would expect from the background and experience of the company). In recent years Mile High has moved into dye sublimation printing (especially on textiles) and into fine art, since the Mutoh is capable of handling diverse assignments. Just change the ink. People who have dealt with Mile High report to us they are satisfied with their experiences and in particular that they felt the people they spoke with were knowledgeable.

At Roland's own booth at PhotoEast, no banding (improvement over problems of their other printer at SGIA). The Roland prints on Concord rag natural white at 720 x 720 dpi looked very nice from the new Hi-Fi Pro (eight colors). But in the adjacent booth, a Roland re-seller, severe banding, visible across the solid black background. This is the problem, your printer may be banding but you don't notice it if the image is busy. The designs break up the banding so you don't notice.



Roland printer

I pointed out the banding to the Roland sales rep. He immediately turned off the machine since the image was ruined. He did a head clean test that got rid of the white portion of the banding, but the tracking-banding remained. This is sort of the digital footprint, the residue of inkjet printing. This tracking residue is precisely what photographers can't stand. Banding makes the print look artificial. A photographer wants his print to look as though it came from a darkroom, not like it was printed from an inkjet system. Xaar printheads have even more severe problems with banding. One printer engineer indicated there was a "light side and a dark side" to the print path of some Xaar printheads. This generic trait naturally accentuates the horizontal tracking pattern. Xaar heads are also piezo, but a slightly different version than the Epson. Epson heads consistently achieve the highest quality; Xaar printheads are made for speed and with solvent-based inks on vinyl, so the quality is about 360 dpi, or worse.



I did notice at the booth of the Roland dealer, however, that the quality of the image resulting from the 8-ink system loaded with dual CMYK was great. That gives you twice the speed, or more properly put, half the slowness. This setting would be okay for signs, for example. For fine art you would want six colors or eight colors. Nonetheless, for sign printing, viewed at a distance, the ink system of two simultaneous sets of CMYK working together produced an impressive image (other than the banding, which you would not notice if viewing at a distance).

Just because we notice banding on Roland printers at the trade shows does not mean should you avoid a Roland. You may end up with a printer that never bands and always prints flawless colors. Or you may buy another brand of printer and face other glitches there.

**I-Jet** is the version of Mutoh sold by *Improved Technologies*. This can run dye inks, pigmented inks, and reactive dye ink for printing on textiles. Mutoh is the manufacturing company whose factory produces the Epson printers. The difference between the Mutoh and the Epson is in the design of the printer. Mutoh is easier to sheet feed. Mutoh is easier to check on the progress of the print. With an Epson you don't see the final print until it's too late to stop it. Some users find the Mutoh designed for user efficiency.

The technicians at Improved Technologies consist of the top service technicians for Iris giclee printers. They left Scitex to form their own company. They then redesigned the old Iris to create the new and better Ixia giclee printer. Next they searched for a good mid-range fine art printer. They felt the Mutoh combined with the Wasatch RIP offered a better solution than the Roland with its Scanvec-Amiable RIP. So if you wish a fine art printer, at reasonable price, complete with color management system, consider the I-Jet (Mutoh) system from IT. Information available from [iris@itnh.com](mailto:iris@itnh.com) We look forward to getting to know these printers better at upcoming trade shows in 2001.

**Hewlett-Packard** was represented at SGIA by one of the larger national dealers, Color DNA. FLAAR ran a suite of our test prints through their HP 5000ps. Results were flawless. No banding. Vibrant colors, photo-realistic output, speed good enough for a production shop. Contact: [colorguru@colordna.com](mailto:colorguru@colordna.com) This HP dealer delivers nationwide, installs your printer personally in your home or office, and provides basic start-up instructions on how to run the printer.



HP 5000 ps

Color DNA also handles Heidelberg flatbed scanners (Linoscans), color management hardware and software, and overall can get you started in the sign business, digital photo printing (museum quality), fine art printing, printing on textiles, CAD, GIS, and whatever else you might wish your HP DesignJet to accomplish.

The nice thing about buying from Color DNA is that if you ever need technical help in the future, you just telephone and they answer your questions on the spot. This is because the people at Color DNA are trained in all this. They know the media, the settings and options of the RIP, so they can tell you precisely how to accomplish what you need to print, whether at home, in your studio, or office.

HP's new pigmented inks for the DesignJet 5000 were exhibited at the Hahnemuehle watercolor media booth. These pigmented inks will be available during Spring 2001. An evaluation of the color gamut of a beta set of these pigmented inks is now available from FLAAR.

**COLORSPAN:** What more is there to say, a richly saturated image, 1800 perceived dpi, fast, and better service and attention to customers by the new owners of ColorSpan (MacDermid). The new Esprit costs 50% less than the 12-color XII model. So you get an 8 color Esprit for potentially the



ColorSpan DisplayMaker XII

same or less cost than a Roland, "Potentially" is due to cost of RIP, which I believe is included with the Roland, is additional with the ColorSpan. An aftermarket RIP has many advantages though the brand's favored RIP obviously works well in tandem with the printer since the printer company gives them 100% access to the printer secrets. Backlit, vinyl all the way up to fine art exhibit quality photo prints.

ColorSpan can produce signs, posters, banners, trade show graphics. If you already have experience, or if you shop has in-house technicians, then the ColorSpan is a large format commercial printer whose job it is to earn a profit for your business. Contact: [productinfo@colorspan.com](mailto:productinfo@colorspan.com)

The ColorSpan does best with photographs. If you want your photos to be ready for museum exhibit or to hang in a gallery, then the ColorSpan will make you look like a pro. We at FLAAR come from a background in professional photography, and hence are interested in printers that produce an image close to the quality achieved in a traditional darkroom. This is why we like the output of the ColorSpan, of the HP, of the Mutoh, and of the Roland.

For printing directly onto pre-treated textiles, the ColorSpan DisplayMaker FabriJet XII offers special inks for cotton and silk. No dye sublimation capability that I know of.



Seiko Wide Format Printer

**ENCAD's** new 8-color printer looked improved, partially because they are using a better stock photo to show the output. Océ also sells this printer under a different model designation. Ilford also sells the new 8-color Encad under its Ilford house brand label. It is worth noting that neither are bundling the EFI Fiery RIP with the Encad printers any more. The word has gotten around that software RIPs are better in most respects than the expensive hardware RIPs.

**CANON** had a booth at PhotoEast but mainly for cameras. No one at the booth knew anything about wide format printers. Elsewhere there was one Canon wide format printer but the attendant had not arrived and no one else knew anything about it.

**SEIKO** exhibited its IP-4500 and 4010 models. This new wide format printer uses oil-based pigmented inks to create a weather resistant print. The brochure promises "super high image quality." That is not true; Xaar heads are reliable workhorses but produce only so-so images. Up close the image was fuzzy, held no detail whatsoever, indeed there was a total loss of the image features. Sort of a big blur. At six feet away, however, the image looked okay. But with a ColorSpan you get ten times better quality and I suspect a ColorSpan is as fast if not faster. Thus the sole selling point of this printer is the oil based paint, namely it's more weather resistant than dye based or normal pigmented inks on a traditional inkjet.

### Photo Laser Imaging

The two large format printers, which are the pinnacle of quality, are the LightJet from Cymbolic Sciences (Gretag) and the Lambda from Durst. These \$200,000 machines produce continuous tone photographic enlargements from digital files. Although Epson initially claimed its printers matched the quality of the LightJet, they partially withdrew this claim. FLAAR did a blind test of a LightJet print compared with an HP, Roland and Epson print. All judges easily and immediately figured out which was the \$200,000 printer. The HP and Roland tied for closest (with the Roland having an edge due to its superior glossy photo media). Epson came in third. Unfortunately we did not have a ColorSpan sample to compare. I suspect the ColorSpan image would have beaten the other inkjet prints. But the results are clear, if you want a photograph to look like a darkroom print, then you need a LightJet. Don't be deluded by misleading advertising.



## INKJET MEDIA

**Rexam, IJ Technologies, Sihl,** and other companies who make or sell inkjet media exhibited at these trade shows. We had our first opportunity to speak with people of Fredrix (Tara) and other companies as well. Additional information is in the separate FLAAR reports and directory of inkjet media.



## DIGITAL SCAN BACK SYSTEMS

Anagramm is a German scan back, distributed by Colex in the USA. I get the impression that only a few have been sold in America. We do not recommend any scan back unless it has full in-house technical and service capability in the USA.

**BetterLight** is American made and this means you get full service anywhere in the USA via Calumet Digital Solutions. BetterLight is a popular scan back and hence you can get spare parts and everything easily. Contact: [larry@betterlight.com](mailto:larry@betterlight.com).

PhaseOne and JOBO scan backs were also exhibited at PhotoEast. Since I have two of Michael Collette's BetterLight scan backs I tend to know them better.

tti (Tarsia Technical Industries) seems to be the favored industrial strength repro stand system for overhead scanning. tti has been selected by PhaseOne, BetterLight and other companies as their preferred copy stand system. E-mail [info@ttind.com](mailto:info@ttind.com) I had the opportunity to discuss the system with Mr. Tarsia at PhotoEast. The tti+BetterLight combo is offered by Improved Technologies, a company dedicated to fine art giclee printing hardware, software, inks, and media. E-mail [sales@itnh.com](mailto:sales@itnh.com)

The featured product of tti is their Repro-Graphic Workstation 3040. What I most like about the tti system is the ability to peek through the viewing system without having to remove the scan back.

Whereas some repro stands simply add normal lighting to each side, the tti stand has specially engineered lighting made for the overall system. Normally I use fluorescent lighting for my digital studio work. Mr. Tarsia pointed out, however, that his lighting would engender better detail when photographing textiles, for example. My interest in a repro stand is to scan indigenous Mayan weavings in the museums of Guatemala. Insects, rot, tropical sunlight and other harsh environmental conditions cause deterioration of this aspect of Guatemala's national patrimony. The world's largest private museum of Mayan weaving is on the same university where FLAAR has its main evaluation center, so we are working out how best to help the museum record their textiles.

## MISCELLANEOUS



The Remin **Kart-a-Bag** display featured the best carts to carry all your photographic equipment on location. We noticed that the front cover the their catalog showed FLAAR co-director Andrea David on location in Honduras using the BetterLight digital panorama system in a QTVR photograph by Nicholas Hellmuth. FLAAR uses the KartMaster HD 500 system on location in Central America. For carrying all our equipment through airports we use the Tri-Kart 800.

SGIA trade show displayed all kinds of printers and consumables for dye sublimation heat transfer printing. All the information on these processes is in our special report on "dye sublimation heat transfer with large format printers" report. You can ask for this separately. Be sure to fill out the

“provisional inquiry form” each time, because even if you have already written us, the person who answers your next e-mail may not see your earlier information.

SGIA naturally presented all kinds of printers for the sign industry: Vutek, Gerber Orion, resurgence of electrostatic printers, etc. This information has been added to our special FLAAR report on “large format printers and cutters for signs.” There are two versions, indoor signs (dye and pigmented inks) and outdoor signs (pigmented and solvent based inks). So the SGIA report on Graphtec/SignJet Pro and comparable sign printers is in those other reports.

MEDIA exhibited at the two trade shows is in our separate FLAAR report on “*Inks and Media for large format printing*”

Due to popular requests we have an updated separate report on the HP 5000ps, including an upcoming new report on the UV pigmented inks for the HP 5000ps. Includes reports from people who have recently purchased the HP 5000ps as well as results from our own tests of these DesignJet printers with our own FLAAR images at several trade shows.

A new report is now available on the ColorSpan DisplayMaker XII and ColorSpan Esprit, based on three days of training at ColorSpan outside Minneapolis plus inspections of printers at more than seven trade shows in Germany and the USA. These reports also include feedback from actual ColorSpan owners and operators in sign shops and fine art giclee studios whom we have interviewed.

If you have tidbits of information you would like to share with us, please tell us of your experiences with large format printers. In some cases we will use extracts in our reports or in our future publications.

FLAAR Digital Imaging Technology Center

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