DIGITAL IMAGING
REPORTS ON PRINTERS, RIPs, PAPER, and INKS
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PHOTOKINA Trade Show (Cologne, Germany)

Large Format Printers, RIPs, Scanners and related subjects.

Foveon booth at Photokina Trad Show.

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Photokina is the largest photography trade show in the world, held every two years in Cologne, Germany.

During the week of Sept. 20-25th we inspected large format printers from Epson, Hewlett-Packard, Encad, Ilford, Mimaki, Mutoh, Fuji, Xerox, Canon, Nur and other companies.

CANON's large format 1200 dpi prototype, BJ-W9000, looked nice but the stock photos they were using were not as enticing as they had used at Seybold. Canon itself did not even have the printer at their Canon booth; only one at a reseller.

CANON BJ-W9000

Canon is clever enough to skip EFI hardware RIP and instead offer a faster, better, more flexible RIP, namely PosterJet (DCS Software). Disadvantage of the Canon system is that they can't (so far) get a pigmented ink for their bubblejet technology. Canon's printer may be ready by May 2001.

Don't confuse the new BJ-W9000 (a nice printer) with the current BJ-W7000 (average to below average in output with occasional banding print defects). In other words, don't read this review and buy the Canon printer that is available today. You may not want that model. Rather than waiting for the BJ-W9000 it's best to get another printer of stable technology to get practice on now, then check back in with us next year to see how the new Canon printer is progressing. Banding and grainy pattern appear to be the downside of the old Selex technology which Canon inherited. These features are tough to get rid of but that is as much the chore of the RIP as it is of the hardware and printhead.

As we learn more about the capabilities of the newer Canon model we will report the benefits of this system. The prototype shows considerable promise.

EPSON's 7500 and 9500 produced varying quality depending on which booth they were in. When the original images were outstanding the prints looked very nice. When the stock photos were only average, the output was equally average. Nonetheless, prints from the Epson are as good as any Mutoh or Mimaki, as they should be, they all use more or less comparable printheads.

EPSON Stylus PRO 7500

The Epson 7500 and Epson 9500 will not take any other inks: in other words, no bright dye-colored inks. We have heard since Photokina, however, that Staedtler may have after-market inks for these printers (and definitely for the Roland, Epson 7000, Epson 9000 and other printers). Contact information for Staedtler is telephone 818 882-6000, fax 818 882-3767, e-mail is lvoge@staedtler-usa.com. Linda Voge can indicate whether the inks are ready for the Epson 7500 and 9500 yet.

Unresolved, however, are a host of color balance problems with Epson printers. The ads still offer shameless claims yet deep into the small print they admit with noteworthy candor the color management problems of the new inks if you are accostomed to the dye inks (don't forget, once you go for the new inks, you can never again use the nice dye based inks, not at all). The Epson notes state that if you are accostomed to the bright colors of the Epson 9000 when you switch to the 9500 you need color measuring hardware and software and careful color management with considerable trial and error as well. These statements are laudatory; if their ads were as forthcoming it would be easier to discuss the potential of these printers. The question remains whether a first-time user, at home, wants to face the need for professional accessories with a steep learning curve when other printers offer plug-and-play ease with all the ICC profiles built in with no accessory hardware measurement tools required.

I have heard from a multitude of sources about the potential problem with the cyan ink used in the new Epson model 1270 desktop printers. This ink vaporizes even if it is NOT in the sun... the print will typically turn red or orange within hours of being made. I have never seen this myself but many users complain about it and are returning their printers to ask for a refund. Perhaps if the print was laminated immediately after being made it might keep the cyan ink from vaporizing.... all in all this does not sound very promising. (this is the hybrid ink, not the new „archival" ink). I do not yet know if this also happens with the large format systems. Few people have a laminator in their home nor want to bother with such a chore just to make up for faulty inks.

We will continue to check out the Epson printers and look forward to more user-reports (hard to find at present since few people have had the printers long enough to offer feedback). Prints from the Epson 7500 and 9500 look pretty, look bright and colorful, but you need to compare the original with the copy. You also need to see if the kind of paper you prefer to use will function with the new inks. Some paper discolors badly with some inks and some Epson printheads.

The inherent problems of this fledgling technology will surely be surmounted eventually and the results will be impressive when the whole system functions. Its always rough for new technologies; if you don't want to be a guinea pig its safest to buy a printer from a company with a proven track record in customer satisfaction, ease of use, quality output, and true print speed. Such a printer does exist, was very popular at Photokina and Seybold trade shows, and is not an Epson (it is described later in this report).

BELLISE (Gretag Imaging) uses Epson piezo heads. The Bellise is a large production machine for commercial print shops. This particular model is for dye inks only, hence not suitable for outdoor signage (you need their subsequent model for pigmented inks). 54" wide is, however, not as wide as the widest Mutoh. Dpi seems low, which has to happen to wring some speed from any Epson piezo head. Resultant image showed banding (typical of Epson piezo head systems) and was fuzzy (typical of low dpi on such a system).

BELLISE PRINTER

KONICA's 8 color printer is still not finished but they showed a prototype. The stock photos they used were poor and the image was uninspiring. The output from the 8 color Roland, 8 ink ColorSpan, and even the output from the six color HP 5000 was better.

SEIKO's IP-4500, pigmented oil-based ink, six months without lamination is a good start. Solvent-ink printers usually advertise several years outdoors with no lamination. As with other oil-based and solvent-based systems with Xaar heads, quality is not good. Images had soft appearance. There must be something about oil-based inks that results in dull lifeless colors. The antiquated Xerox XES Xpress printer uses oil based inks as well. Neither of these printers was impressive but if you need oil-based inks your choices are limited. Both use Xaar piezo heads. This means they can achieve only about 360 dpi. Ads may claim 720 but that's not their true dpi.

Both the Konica and Seiko printer are also discussed in FLAAR's DRUPA trade show report. The Seiko is mentioned again in the joint report on SGIA-PhotoEast trade shows.

AGFA Sherpa 43; essentially same printer as sold by Kodak and everyone else who sells Mutoh, though I get the impression the Agfa offers only 720 dpi. The stock photos Agfa used were not impressive. It's as though selling large format printers is an afterthought. Everyone else is selling them so we better offer one too. Agfa does not have its own inkjet technology so it can only relabel the Epson piezo printheads and the Mutoh sheetmetal.


ROLAND HIFI PRO

ROLAND's 8 color pro printer offers very high quality but the printer is so

slow that few people are willing to use the full 8 color option. To make it less slow you have to get rid of the four nicer colors and instead put two sets of ordinary CMYK and print in parallel. So if you need to produce many copies of your prints, at top quality, any printer with thermal printheads would be considerably faster.
We will, however, continue to check out the Roland Pro, since it does produce enviable photo-realistic quality. We need to get feedback from end users to ascertain whether the inherent problems of banding, so typical of piezo-electric printheads, have been lessened in this new Roland. Banding defects are common with the Roland Hi-Fi when you attempt to make a printer move less slowly.

Europeans tend to be more discrete in their advertising but I could not help notice a Roland advertisement which claimed „Druckgeschwindigkeit atemberaubend gesteigert werden." In my fledging German that translates roughly as „the speed takes your breath away…" yet at the booth this 8 color printer was stock still, not printing at all. The only printer that was printing was another Roland model set at 360 dpi in order to appear to move at all! The quality was about the same as a legacy Encad at 300 dpi.

I was surprised that this otherwise conservative printer company had borrowed the modus operandi of the infamous piezo printhead crowd. The ad headline blissfully neglected to inform the reader that the less-slow mode required eliminating the beautiful 8 colors and even eliminating the 6 color option and reducing the quality to a mere two times simple 4 colors. I will, however, credit the company with honestly listing the complete time charts elsewhere in their brochure. There you find out it takes almost two hours to do a single full sized print at 1440 x 1440 dpi with a phenomenal 32 pass printing. Personally I don't find two hours "speedy" in the dictionary that I grew up with.

The output of this printer is indeed attractive and I would like recommend it for fine art giclee printing, hence there is no need for the potentially misleading speed claims. I do not have an English version of this company's brochure. Perhaps the exaggeration was only in the German edition. The reason we don't get more excited over Roland printers is their propensity for banding defects and printhead disabilities (caused by generic clogging).

I did, however, like the concept of 32 pass printing. Not even Epson itself offers pseudo 1440 dpi, only 720 x 1440. Actually the true dpi of an Epson printhead is only 720 x 720 dpi. Everything else is software, or smoke-and-mirrors. 1440 dpi probably is what oversaturates the ink. This is a polite way of saying too much ink is used which distorts the image to some degree and can even cause head crashes when the printhead hits the waves raised up by the excess moisture (all the ink is predominently water). I hear of this occasional problem more with Epson than with Roland.

We also got information on what may cause color shifts during the course of printing a single print for two hours. If the head gets deprimed that color may stop printing all together, or if an air bubble gets in the head. We have been trying to track down the cause of „dropping colors" which is when one printhead simply stops laying down its color. Of course that ruins the entire print (including the entire hour's previous work). Although this is rare, we do have reports of it being present in the Roland system. Nonetheless, these failures are not endemic. Roland is known for being well constructed so you may never ever experience these defects.

This shows one of the difficulties of being a reviewer. My goal is to find the right printer for the specific needs of every individual reader of the FLAAR network. The handsome output from a Roland Pro at 32 passes is indeed what many fine art printers want, but can they produce enough prints at two-hours-per-print to survive if their competiion just installed a ColorSpan or HP 5000? Most large print shops will actually buy one of each, an HP for production speeds with quality, a Roland for certain customers who prefer 8 color output over six color, and an IT Ixia for people who require an Iris-style giclee. It is not uncommon for a commercial facility to have a complete row of multiple printers. Every printer has its plus points; every printer has its minus points. Same with cars, even people. A buyer should select what they personally feel

satisfied with, not necessarily what I prefer to use myself. I dislike banding, for example, even the potential of banding. That is the reason I prefer printers that have thermal heads such as Encad (Ilford version), HP, or ColorSpan.

If Roland ink is a bit expensive, you can always try an aftermarket ink. You ought to test this ink and be sure it has the properties you need for your specific needs. Contact information for Staedtler (ink company) is telephone 818 882-6000, fax 818 882-3767, e-mail is lvoge@staedtler-usa.com. Staedtler is a well known international company, headquartered in Germany. This is definitely not ‚mail order ink."
Why **Fuji** continues to exhibit their Fuji-Hunt (Brady) printer is something only they can answer. This antiquated manner of printing results in a rough grainy pattern. Its hard to conceive it still being on the market but then again, the equally grainy Xerox Xpress is still offered, so someone somewhere must be buying one or two a month.

FUJIFILM CPP-54 Mark II, took 45 minutes to print 1.3 x 1.3 meters (4x4' perhaps). Worst quality I saw at Photokina (this is the old Brady system, terribly outdated). This thing only prints at 320 x 160 dpi. But everything has its advantages: the images reportedly hold up 3 months outdoors without lamination. We got an e-mail from a sign shop in Australia that had this Fuji printer and he said the output was okay as long as you did not look at it up close.

MIMAKI had only a single booth at Photokina but the output from the printers looked nice. One Mimaki printer does textiles. Mimaki printers can use DicoJet inks but the DicoJet booth, again as at DRUPA, did not show off any photo-quality prints. Although DicoJet inks have potential for fine art giclee printing, the company itself prefers to market the inks for proofing for packaging and other industrial uses.

On the subject of textiles several textile printers were exhibited at Photokina, including an entire booth of 3P. 3P specializes in inkjet fabric, that is, textiles which you can use in almost all different kinds of wide format inkjet printer.

MUTOH printers were shown by OEM partners Kodak and Agfa. The ones at Kodak looked better though in theory they are more or less the same as those from Agfa other than the RIP software. Almost all the people at the booths that showed any kind of Mutoh printer said „720 dpi was more than enough; no one bothers to use 1440 dpi" Then why pay extra for that theoritical capability if it is too slow? Why not buy a Canon or HP and get 1200 dpi at full speed? (of course the Canon is not ready until May and, as we mentioned, won't have archival pigmented inks).

Mutoh is the company that manufactures the Epson printer. That means that Mutoh and Epson use more or less comparable components. Many users, however, favor the Mutoh, possibly because it comes in wider widths. The Mutoh is capable of doing fine art quality prints, indeed IT (Improved Technologies, which makes the Ixia replacement for the Iris giclee printer) finds that the Mutoh is easily on par with the Roland for print quality. If you would like information on the Mutoh for photo quality, contact iris@itnh.com

The reason why it is important to buy your Mutoh from a dealership that is experienced with fine art giclee printing is to avoid banding. Epson piezo printheads have a generic banding problem when you try to make them print less slow. Since they are very slow at 1440 dpi; so if you set them to „fast" the dpi drops to 360, and there is where the problems are. Output is poor and banding may occur. The Mutoh (and Epson and Roland) are okay, it's just that you need to get the proper RIP (which will also help eliminate the banding defects on the print). To get the RIP to function from day one, that is why you need a good dealer, which is why we are now adding recommendations for where to buy. Besides, most people who write want to know which dealers know the fine points of high quality printing.

NUR makes printers for billboard sized images. I am more familiar with Vutek since Vutek is also sold by Ilford (in the USA) or of course directly by Vutek.
Grand format printers are described in the *FLAAR reports on solvent ink printers.*

I interviewed people throughout the trade show, especially people who know the scene well, asking them what large format printer did they prefer. For example, at Foveon (a high-end $30,000 CMOS digital camera system), they were using HP 5000 prints to show off the quality of their prints alongside prints from a $200,000 Lambda or LightJet. In other words, the professional photographers of Foveon felt that HP prints were an ideal way to show off the quality of the Foveon camera systems.
At the booth of a RIP company, that made RIPs for Roland, HP, and many other leading printers, I asked what was their favorite new printer. The RIP specialist answered that the HP 5000 was tops. HP clearly made the most impact throughout Photokina.

Large format printers with thermal printheads (ColorSpan, HP, Encad)

All three models of **COLORSPAN** printer offer museum exhibit quality for photographs and fine art prints. The giclee printer, the XII, and the new moderately priced Esprit all show that ColorSpan means beautiful output. Glitch is you have to clean and calibrate them every single morning and keep them clean and calibrated. As one person phrased it politely, they are „operator intensive." For a commercial print shop this is no problem, but these may not be ideal for home use or for a one or two-person studio unless you have patience. We intend to watch the new ColorSpan Esprit and get feedback from users as well as inspect it further at the next two trade shows. Prints from ColorSpan are easily as good as those from Roland Pro or the new HP 5000. If you wish additional information
on the ColorSpan, contact productinfo@colorspan.com

ColorSpan DisplayMaker XII

The new **HEWLETT-PACKARD** 5000ps has its own on-board RIP which we have found in our first hand experience as potentially a bit faster than an earlier model on-board HP RIP (such as the 2500 or 3500). The new HP ps RIP in its model 5000ps is comparable in speed (or slowness, depending how you define it) with the corresponding early model EFI Fiery hardware RIP. But the ps from HP offers more options than the earlier Fiery RIP and costs less. No EFI Fiery RIP for the HP 5000 was even shown at Photokina, though surely they are working at producing one. The „ps" aspect of these HP DesignJet printers is described in the *FLAAR Report on RIPs* (Raster Image Processor software for wide format printers).

HP 5000 ps

The print speed of the 5000 itself (after the image is RIPed) is noticeably faster than earlier models of HP and faster than any four-color Encad. We have not yet set the HP 5000 side by side with the Encad 850 or a ColorSpan to see who actually wins the speed race. In six-head mode, the HP has a faster rating. In the quality race, ColorSpan is tops since it offers 8 to 12 colors. HP is outstanding for a six color printer. Encad still suffers from being stuck with Lexmark printheds.

At the booth of Heidelberg, the giant German prepress and printing press company, they were using an HP 5000ps to print the results of their $20,000+ digital camera system. I asked the Heidelberg operator what he thought of the HP 5000, and all he could say was, „its Super; the quality is Super." If you wish to obtain more information about HP printers to accomplish photo-realistic exhibit quality prints, we recommend Jonathan Knecht at Color DNA He knows the new HP 5000 as well as all the other models. He also handles Heidelberg scanners which are our favorites (have two of them). A further advantage of working with Color DNA company is that they know

how to set up the HP to do museum quality photo prints as well as fine art giclee prints. You can use a variety of RIPs.

The general consensus of graphic imaging professionals, even at the booths of HP's competition, was that HP had really accomplished a major breakthrough in technology. Rather than simply „another nice printer" HP now has one of the top quality printers available. Furthermore, its fast, and has the ease-of-use features that HP is famous for in all its popular office products.

The HP prints on every kind of photo paper, banner media, rainproof media, silk, and more than there is here space to list.

The new HP 500 and HP 800 got sort of overshadowed since all the attention was clearly directed towards their model 5000 and 5000ps. I was, though, impressed to learn that the model 800ps has a „computer chip on board" to speed printing and RIPing. The 500 and 800 are each four colors; dye based ink printers intended for CAD, GIS, and computer generated images. The 500 and 800, however, improve vastly over the earlier 4xx, 6xx, and 7xx models because the 500 and 800 can now handle photographs better. FLAAR likes the 800ps because we are next door to the architecture department at the univeristy where we are situated. Presently we are using the HP 1055 for all the AutoCAD drawings. The 800 gets rid of the banding which plagues the 1050 and 1055 series.

Symbolic Scienes,
LightJet digital photo print

If you need photo-realistic at museum quality with six colors and all that in UV pigmented inks for longevity, then you need the HP 5000 or 5000ps. The UV inks have already been exhibited and will be available during February; the printers themselves are available now with dye inks. You can switch at any time to the pigmented inks for more longevity; there is a $200 kit and it takes 25 minutes

(*Note*: from mid January 2001, we just tested the HP pigmented inks; the color gamut is outstanding and switching from dye inks to pigmented, and back, is a breeze). We like the 5000ps because on the same university campus are two art museums and they need the UV inks.

Encad's 8 color printer used the identical stock photos at Photokina that they had shown at Seybold. The color cast was too reddish on the skin tones; dark hair lost all detail because it turned featureless black. Probably more a lack of good ICC profiles, a RIP that was not tuned to the 8 inks, and a selection of inks that perhaps don't work well with each other colorwise.

For its OEM version of the identical Encad printer **Ilford** cleverly uses a variant of its four-color black inkset to jazz up the new 8 color Encad system. **Oce** uses a different approach. Since Ilford uses Onyx PosterShop RIP they are able to fine tune their version of the Encad to achieve good quality. Oce has developed a distinctive RIP so also surpasses the quality achieved by Encad by itself from its own printer. The lesson to be learned here is that the same printer, with different inks and different RIPs do not give the same output. The RIP is the key factor. A good RIP can make the print quality improve dramatically. This means that as soon as Encad gets its own RIPs and ICC color profiles organized and figures out what colors mix best with each other, that the new printer will be okay.

The new 8 color Encad does, however, finally get rid of the grainy dot pattern which characterises all other Encad printers including all other current models besides the 850.

TEXTILES

Due to the number of people who ask about what printer to use to print on textiles we inspected all the textile printers at Photokina. With the resulting information we have prepared a separate report on textile printing with wide format inkjets. Just send your request

to FLAAR; as always, explain what you intend to print, in this case, what kind of textiles, so we know which report (s) to send you.

SCANNERS at Photokina trade show

We cover scanners in our report *Scanners: what flatbed scanners and large format digital cameras are best for digitizing your paintings or artwork so you can print them yourself*. Comparison between drum scanners vs flatbed scanners.

If your budget covers only a megapixel point-and-shoot camera, this report is not appropriate. If you want a cheap scanner for home use; sorry this report is not intended for those uses. Instead this FLAAR report explains why you need a really good scanner if you intend to enlarge your digital images to large format size (24" and wider; we show what equipment you need to prepare images for up to 72" wide on a ColorSpan).

FLAAR covers scanners on www.flatbed-scanner-review.org

If you also need a scanner, Polaroid and Fuji both showed off high quality scanners at Photokina. We recommend these as potentially superior to any of the mid-range Agfa scanners and definitely better than the entry-level Microtek scanners. Umax makes good equipment and we have two Heidelberg scanners as well, but the new Polaroid and new Fuji scanners are definitely models we intend to look more closely at in the coming months.

The two Fuji scanners that we like are the Fuji Lanovia C-550 and the Fuji 2750. For further information contact Mike McGill, mike.mcgill@ffei.co.uk He will put you in touch with the appropriate Fuji office nearest you (such as in the USA).

CAMERAS and PHOTOGRAPHY EQUIPMENT

FLAAR wrote up the cameras and photography equipment for The Big Picture Magazine; their last issue for 2000. We also cover camera equipment on www.digital-photography.org. As more funding becomes available we will gradually include the snapshots of all the great new camera equipment that we saw at Photokina.

OTHER REPORTS FROM FLAAR

Our complete family of reports includes more than 24 titles. Thus to know what portions of which report are pertinent to your needs, it helps if you let us know what you intend to print (size, what purposes), for indoor or outdoor, and most importantly, what printers have you checked out, or heard about; what advertising claims do you wish an assessment as to whether the claims are real or just hype. There is a lot of bait-and-switch advertising, unrealistic claims, and some outright misleading assertions in the frenzy to lure you into parting with your hard earned money.

Over the last four years we have checked out which companies are reliable. Since we get so many e-mails requesting help we have reached the point where we ourselves need backup for getting the information out to you. In order to streamline the process we are asking the people whom we have checked up on to contact you so that you can ask your follow-up questions by telephone. Our offices are in Germany and Guatemala, so its tough for us to provide follow-up by phone. So if you receive an e-mail or phone call in response to your e-mail, that is from a source that we know personally. When we get an overload of e-mails we have to send them out to the companies themselves to follow up or else our staff drowns in the flood of requests for help.

We not only keep our eyes open but also our ears. You would be surprised at all the inside tips and

unpublished information that comes to you when you are the largest network of Internet web sites covering wide format printers. 14,000 readers a month have catapulted the FLAAR network into its current position as a popular leader in factual information on large format printing. A full list of all reports is now on the contact page of www-wide-format-printers.org

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.

ColorSpan DisplayMaker XII and ColorSpan Esprit, new FLAAR report 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.

We hope this report touched upon at least some of your needs in a large format printer. If you can tell other people about our sites, especially via news groups or user groups, this is a nice way for you to return the favor of all the information in these reports.

FLAAR Digital Imaging Technology Center

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