Experience with the ColorSpan DisplayMaker XII and Comments on the ColorSpan Esprit

ColorSpan DisplayMaker XII at FLAAR office, BGSU, Ohio.

Contents

FLAAR

Digital Imaging Resource Center

Abstract

This report is based on information received from people who use ColorSpan printers for signs, trade show displays, and fine art giclee printing. Additional information was gathered during detailed inspection of the ColorSpan DisplayMaker XII over the course of a two day training course. The training course itself is described in a separate report. We also have familiarity with ColorSpan printers from the last two years of visiting trade shows in Germany and USA, as well as frequent discussions with ColorSpan users FLAAR has initiated a program of visiting sign shops, photographers, and fine art giclee printers. Naturally some of these studios have ColorSpan printers at work.

Last year FLAAR acquired a ColorSpan DisplayMaker XII, something we had wanted since our first demo of ColorSpan's capabilities in Germany about three years ago. The ColorSpan XII is installed in our facility at Bowling Green State University. All the photographers and art professors on campus are already making appointments to bring their work to our part of the campus.

During the time period that we gained experience with the XII, the Mach 12 model was finally redesigned so that MacdermidColorSpan felt confident that this model would pass our tests. We have now had the Mach 12 in our testing facilities for about eight months. It keeps turnout out eye-catching large format prints. To our knowledge the FLAAR lab is the only university affiliated institute which has experience evaluating both ColorSpan models as well as simultaneous experience with Hewlett-Packard, Mimaki, Iris giclee, Epson, and Encad wide forat printers.

This report covers ColorSpan printers only. If you wish a comparative report on ColorSpan vs Roland or Epson, ColorSpan vs Hewlett-Packard, or information on the Iris, Ixia, Encad or other printers, then just fill out the Inquiry Form and indicate your needs: signs, trade show graphics, photo-realistic prints, fine art giclee, or other.

ColorSpan DisplayMaker XII

ColorSpan DisplayMaker XII

Three kinds of inks work with the ColorSpan thermal printheads.

EnduraChrome are the dye based inks. You get a normal life expectancy for dye based inks, namely potentially several months indoors, depending on the lighting and how much sunlight enters the room. If exposed to direct sunlight naturally the images don't last as long. That said, for trade show displays, signs, and 80% of other traditional inkjet printing, dye based inks are more than good enough. Our prints from ColorSpan are now over 3 years old and as far as I can remember they were done with dye based inks (the Ilford variant). In any event, ColorSpan dye inks will last considerably longer than any Epson print. We have dye based ink prints from our Encad that are on exhibit now for their 4th year. The reason for using dye based inks is because the colors are brighter.

PermaChrome inks provide two years outdoor life when laminated. Don't be mislead by Epson's hype on "200 year archival inks." Few people take that seriously. First, you have to use UV glass; second, you have to seal the print from environmental contaminants; third, there is no guarantee that the media will last as long as the ink. The best proof of the unlikelyhood that the Epson ink lasts is that Epson itself very clearly states that it makes so warranty whatsoever. They won't even warranty their own ink for two years.

The ColorSpan two-year-outdoors rating translates to indoor longevity of many years. Outdoors means in full sun, which would roast Epson ink and media rather quickly. As with all pigmented inks the ColorSpan PermaChrome works best on certain classes of media.

TextraChrome inks are for paper-backed textiles, primarily in the ColorSpan textile printer, the FabriJet.

ColorSpan printers used to be also sold by Agfa and Ilford. Today, only in Latin America are ColorSpan printers sold under a different label (by Xerox).

ColorSpan DisplayMaker at PhotoEast

Speed

Speed is based on the number of passes the printhead makes across the image and on the number of inks. If you have three parallel sets of CMYK ink (in the 12 ink holders) you get a wide swatch printed simultaneously. It is this wide swatch that gives the speed. Of course using just CMYK colors does not give you the famed quality and rich colors of the 8-color or 12-color modes.

The top speed of most printers is "draft" speed. This is a polite way of saying that the image is rather rough looking and will tend to have noticeable banding. Draft images are not good enough to sell, indeed whether on a Roland, Mimaki, or ColorSpan a draft image may be just that, a quickie to check the overall positioning of all the elements of the design. Most users report that the draft speed, whether on a ColorSpan, Hewlett-Packard or other printers, is not realistic. All it takes is for the humidity in your facility to be different than the humidity in the manufacturer's race track, and that will slow down your printer. Indeed many users will never actually attempt to print anything at draft speed.

The next level up in quality (which means a tad slower than draft) is what I would term "production speed." This is a realistic speed where the resulting images are good enough to sell and good enough to make the average client content. I have seen production speed on the ColorSpan and the output was good enough to frame and put on exhibit.

The options on the ColorSpan that produce its legendary quality is the HiRes 8 pass mode or with two sets of 6 colors. This gives apparent 1200 dpi. The Film Quality mode uses 4 pass with all 12 colors of EnduraChrome dye based ink and results in an apparent 1800 dpi. Output is officially rated at 60 sq feet an hour.

Compare this with the 1440 x 1440 output of a Roland 8 color, namely amost two hours for a single print (perhaps 42 x 42" in size). This estimate is based on the advertised print options listed for the Roland, a nice case of truth in advertising. Of course you can load the Roland with two sets of CMYK and get a quicker print, good enough to sell, but then you don't get six colors and definitely don't get eight colors. Appearancewise, however, a Roland with any number of colors will probably beat any equivalent Encad in quality. In other words the Roland 8 color output looks noticeably better than the output from the Encad 850, but the Encad is much faster. The ColorSpan 8 color is potentially better in appearance and so much faster that users report they earn quite a bit of profit in their sign shops when they have a ColorSpan. Indeed this is an observation that I hear most often from people who own a ColorSpan, namely that they make plenty of money in their business for two reasons: the clients love the top quality; the printshop gets enough production speed to beat the competition in output.

In summary, even at its slowest speed the ColorSpan is probably faster than many printers at their quickie speed, which is of such embarrassing appearance that no sign shop would consider using such an option. The touted "fast speeds" of Roland and Epson are, quite frankly, of such awkward appearance that they are not even usable for average signs. Roland at its top quality (two hours per print) is, however, close to the quality of a ColorSpan printer at its top quality (several prints every hour). In other words, both the Roland, ColorSpan, Mutoh, and Mimaki (and HP 5000 as well) are all capable of excellent quality. The downside is the glacial slowness of equipment with piezo-electric printheads from Epson. All Rolands, Mutohs and Mimaki printers, they all have more or less the same piezo printheads, all made by Epson. These are basically the same printheads as in the Epson 9000.

Printhead Technology

The ColorSpan uses a variant of the thermal print-head technology developed by Hewlett-Packard.

If you are curious about the distinctive features of the piezo vs thermal printhead systems, fact vs fiction, what the piezo printheads do well (and what they do poorly) as compared with the thermal printheads (what they do well and what they can't do at all) then ask for the "*FLAAR report on piezo vs thermal print-heads*." Be prepared for some surprises, since this report cuts through considerable hype about piezo printheads as well as pointing out a few features where the piezo printhead design does indeed have advantages.

ColorSpan DisplayMaker XII printheads

Special Features

The ColorSpan XII offers printhead adjustment for thicker media. This feature is not available on the Hewlett-Packard printers. The ColorSpan Esprit offers even more height adjustment as well as a straight-through paper path. So if you need to handle stiff media then the Esprit is a good option.

The ColorSpan XII includes a dryer, a real dryer, not some jerry-rigged contraption stuck on later. You don't need a dryer with an Epson or Roland because they print so slowly that the ink dries during the course of printing the image.

ColorSpan DisplayMaker XII

Media For Colorspan Printers

ColorSpan has the advantage that one of the other divisions of MacDermid actually makes the media (Kilborn). This makes it possible for the media to be fine-tuned for ColorSpan. Actually some of the fine art giclee canvas used by people with Roland printers is actually made by MacDermid (Kilborn). This means you can get the same fine art giclee canvas for your ColorSpan, with all the ICC profiles and everything.

Foibles

Every printer does some things well and other things not so easily. Backlit prints are poorly done by most Epson and other piezo printhead systems, such as Epson, Roland, Arizona for example. The ink is simply not thick enough to hold up to the back lighting. The image looks thin and washed out. With most Epson piezo printhead systems you need to print two images, and somehow mount them together so that the double thickness gives the backlit image that you need. Besides, most piezo printhead systems are too slow to mass produce any image. Thus if you have to produce a single backlit, that's okay, but if you have to produce 10 to 100 copies don't try that with a piezo system.

With the ColorSpan the magic eye (on-board sensor system) can't read on transparent media. So you have to do a manual color matching system with an X-rite tool if you need color management with backlit. Other than that, if you use appropriate media you should be able to produce backlit with your ColorSpan. If this is a special need for your sign shop, then ask for a sample print on backlit material.

Other printers also can't "read" onto any transparent media. The work-around there is to add a paper backing.

What Colorspan Does Best

The 72" width is there not only so you can produce 72" images but also so you can produce dual 36" images or nesting of smaller images. The 72" width is among the widest available in any inkjet in its price range ($30,000). Grand format printers cost $250,000, and up.

What ColorSpan prints do best is win you customers away from your competition who have an Encad or other comparable lesser printer. Not even the new Encad 8 color printer can match the speed or quality of the ColorSpan. People who compare print quality (same image done on various brands of printers) generally recognize that the ColorSpan can produce a more attractive print than most other inkjet equipment. ColorSpan printers win the "best print quality" award year after year at trade shows. Indeed the various ColorSpan owners who I have interviewed, when I asked them why they selected ColorSpan, they all said they had checked all the available printers and simply did not find another printer which could match the output of a ColorSpan.

How can ColorSpan accomplish an apparent 1200 dpi and up to 1800 dpi? The same way that Epson can achieve 1440 dpi from its heads. Epson printheads are only 720 dpi. Everything else is software, and advertising claims. The reason Epson's prints look so nice is their patented dithering pattern, it's the best yet developed. Epson is already claiming 2480 dpi for desktop printers. So ColorSpan can easily get 1800 dpi from its HP 600 dpi heads through the additional colors (12 colors rather than 6 used by Epson or HP itself), and by dithering around the main drop so to speak. Actually it's not the numbers that count but whether your clients like the quality of your output for them produced with a ColorSpan printer.

Here is a verbatim statement by a person who recently bought a ColorSpan DisplayMaker XII: *My Colorspan machine is a dream! I have had almost no difficulties with it. It has been the bright spot of my experience. Even my fear of head clogging has not really materialized.*

However this owner, as well as two others, have noted that it's crucial to find a knowledgeable dealer. This is especially important for installation and then for warranty service calls. Anyone can sell you a printer; anyone can make promises. But only an experienced dealer will have the capability to handle service calls.

We note that more than half of the problems with ColorSpan printers were more with the naïveté of the dealer rather than the printer. In one of the cases the owner was simply not prepared to handle a printer that needs tender loving care. In most cases the printer had been sold while ColorSpan was still owned by VirtualFund, a deservedly unpopular company that paid pathetic attention to customer needs. The new owner of ColorSpan is an international graphic arts company, MacDermid. MacDermid has totally reorganized the philosophy and response time of the technical department. Besides, now you can get free training at ColorSpan headquarters. Once you know how to handle your printer you won't need as many service calls. Also, aspects of the printer have been redesigned to lesson need for technical assistance.

The ultimate test will be if FLAAR itself can handle this printer. Thus as soon as we have more experience at the state university this summer, we will report back. Two of the FLAAR staff have already taken the basic operator training course. We will select two people who are more adept at machines than are the editors (who research and write but don't dissect the inner mechanisms of thermal printheads and servo motors).

Our other office is in Latin America. The largest printing company in the city here also has a ColorSpan Displaymaker XII, so we will inspect it and write up an actual-factual end-user report.

We eventually intend to prepare a manual "*The Care and Feeding of your ColorSpan Printer*" to assist other users in handling this remarkable digital system.

Cleaning & Maintenance

If you have no intention of cleaning and servicing your own printer (or don't have a person on staff to do this for you), then don't buy a ColorSpan printer. These printers produce their awesome output only when you keep the heads cleaned and the overall system calibrated. You must do preventative maintenance every day, yes, that's correct, every morning.

Cleaning the 12 printheads of the ColorSpan

However you do not need a degree in rocket science to do this. Two of the FLAAR editors both learned how to do this rather quickly. Any person with basic common sense can, on their own, keep their ColorSpan printer clean, and hence content.

The free two-day course shows you how easy it is to wipe the heads clean (just dab printhead with a cloth). Run an auto-test (the auto-eye camera on-board does all the adjustments for you. Clean the service station (the parking area under the printheads). The service station is a platter; it comes out with a single click. Just rinse under running water. Dry and install (as you note, none of this requires a technical genius).

Then prime the inkjets (really tough assignment, namely press a button and the printer does everything for you).

If a printhead needs its vacuum reset, this takes 5 minutes. Overall, the entire process from beginning to end is far less effort than for an Encad and definitely less mess. We know because we have an Encad and it requires considerable time and effort to keep it clean and running properly. In theory the daily cleaning is supposed to take 20 minutes. Most ColorSpan owners say it is better to devote half an hour. If you need to reset the vacuum on several ink lines, overall the printer may take just under an hour to prepare.

One printing company that we interviewed said they have owned their ColorSpan for more than 18 months and never needed a service call. Nonetheless, that situation is rare and we highly recommend that you purchase a service contract. This is because a single replacement part can cost more than the service contract. Once you have the contract, most of such parts are free.

By the way, don't think you can escape cleaning and calibrating a printer by buying some other brand. Roland requires constant cleaning as well or you get clogged heads, lost colors, banding, and lack of color matching. Older Encad printers are the most labor intensive of all. HP DesignJet's require the least attention. They are specifically designed to work entirely on their own with virtually no operator intervention.

RIP(s) for ColorSpan

Most aftermarket RIPs can handle only six colors. In fact many older RIPs can handle only four colors.

For the ColorSpan you need, minimally, a RIP for six colors. If you can find a RIP that handles eight colors then that is better. It is unlikely you will find a RIP that can actually handle the full 12 colors. This is because most people use the 12 colors as double-six or three times CMYK in parallel. So you don't need to forgo a 12 color dream machine just because no RIP can address every nuance. With my first large format printer (Encad Nova JetPro in 1997) ICC profiles barely existed and the EFI Fiery RIP had primitive color management (still does as recently as 2000).

For the ColorSpan DisplayMaker printer in our office we use the ColorSpan hardware RIP with 1GHz processor. I have no earthly idea how many of the 12 colors this RIP actually handles, but I can definitely say that the prints produced have precisely the colors I need.

When you purchase your printer you can select the following RIP options:

1. If you already have a Wasatch, Onyx PosterShop, Ilford IlfoStar (their version of Onyx PosterShop) or ColorGate RIP you can potentially add your new ColorSpan as a second printer. Some RIPs will run more than one printer simultaneously.
2. Some models of ColorSpan include a mini-RIP on-board. Experience demonstrates, however, that sooner or later most users will prefer a full-featured RIP. This is a polite way of saying that most mini-RIPs don't have all the features you really need for full-scale production.
3. You can opt for ColorSpan's own RIP. This comes in a PC enclosure with a small monitor to go along with it. This is the easiest solution because then you get the free training because the same person who installs your ColorSpan printer can install your RIP. You get all your ICC profiles for the media.
4. You can opt for an after-market RIP. Wasatch, PosterShop, Ilford IlfoStar, and ColorGate are the ones which drive the ColorSpan. It is possible that BEST color management RIP may be added in the future.

If you need assistance understanding what a RIP is, just ask for the FLAAR report on "*RIP+help for first time buyers of large format printers*."

During the test session with the ColorSpan DisplayMaker XII we sent a FLAAR file through the Color-Span RIP system. Somewhat like the EFI Fiery hardware RIP, it takes a while to download a large file (our files tend to be 200 to 350 MB in size). But what we liked about the ColorSpan RIP was that it took our file and was capable of enlarging the image to 36 inches wide by about 12 feet in length. Indeed the RIP was capable of expanding our original file up to 700+ MB, which was what was required for mural length. Neither of my two EFI Fiery RIPs have ever been capable of accomplishing this feat.

I am writing this report in Germany from memory so don't have the notes on the amount of time it took to print the 10 to 12' image but I would guess about 20 minutes. This banner-sized image would have taken an Epson or Roland several hours.

The ColorSpan RIP that came with our machine is so much faster than the "ps" on board the HP 5000ps that everyone notices the difference. Of course if you use PosterJet RIP with the DesignJet 5000 you get even faster speed than a hardware RIP. But overall we are pleased with the capabilities of the 1 GHz version of the ColorSpan RIP. Its worth pointing out that EFI Fiery uses a whimpy 433 MHz, and a Celeron chip (the cheapest of the low-end chips). Now you know why EFI Fiery never impressed our reviewers.

ColorSpan also has a new agreement with Monaco color management software. It's so new I don't yet know the details. Monaco is well known in the industry.

How do current models differ from previous models

Like everything else mechanical, ColorSpan is constantly adding improved features to its current models. Now that MacDermid owns the company, much of the dead-end mentality of the previous owners is gone. So even details such as de-kinking sleeves are now included with the ink lines. The training course is now free too, as well.

A new model has been introduced almost two years ago, the Mach 12. For the first year this model had teething pains (severe banding). We waited until the Mach 12 had been improved to rectify these early problems. The Mach 12 we received has no significant banding problems that we have yet seen. The output is museum exhibit-quality at photo modes. We are estimating that at top speeds banding is

to be expected (on any printer) but we don't need those speeds since even at photo mode the output velocity is just fine for our particular needs at the university.

The Mach 12 uses the same mature thermal printheads heads as in the HP 5000. The Mach 12 model is much easier to clean since the heads lift up as a group in-place. The output is much much less grainy. The Mach 12 evidently has two digital camera sensors as opposed to evidently one in the DisplayMaker XII.

Used ColorSpan Printers

ColorSpan still offers extended warranties and service for all its former models, even as far back as the LaserMaster printers. Spare parts are evidently still available for all elderly and original models as well. This kind of service is unprecedented in the industry.

In the last two months we got several letters from people who asked about buying used ColorSpan printers. One person said he was offered a 3-year old printer for $20,000! Another was offered printer + RIP for $18,000. Problem is that the prices, new, just dropped. Most of the people selling their older ColorSpan printers remember only what they paid for them (probably $30,000+). But today those identical printers can often be purchased new, for less than used.

Check out the FLAAR report "*Should I buy a Used Inkjet Printer*" before you sign a check.

How does a colorspan printer differ from its competition

Tough to answer this question because so far there is no competition in 72" printers. None of the HP nor any piezo printer are that wide. The grand format printers such as Nur, Scitex, and Vurek are piezo printers, low dpi, and have unsightly banding when seen close up, so are not appropriate for photo-realistic images at the viewing distance you would get at a museum, or at a trade show for that matter. To make your P.O.P. signs pop out of the merchandise it sure helps to have top quality. Besides, the grand format printers cost between $150,000 to $300,000, and up.

No other printer is as fast as the ColorSpan either, since none have a path with 12-printheads each offering a different color. Mimaki has dual 6's; Roland has dual 6's too (but they were banding at Seybold San Francisco '02). The new Roland evidently does not offer 8 colors, but rather dual six (and not simultaneously dye and pigmented either? Only Mimaki JV4 offers two different inks loaded simultaneously.

Besides, with a 72" width you can print double 36" images parallel to each other or gang up a 50" image with smaller 20" images (your software will nest them automatically if you tell it to).

And I have yet to find a printer whose output beats that of a ColorSpan.

But to answer this question in detail. A Roland is a nice printer, indeed many people have bought Rolands after reading the FLAAR reviews (at least they know what to expect). But they report back that the printers are slow, too slow for commercial work. Other readers comment that their Roland printer suffered head strikes (when the head hits a boil or ripple in the media, often caused by the Epson piezo printhead propensity to lay down too much ink, or caused by the curl at the far edge of the paper, a fault of one specific kind of Roland media). A head strike with a Roland is the end of your print head, all $530 worth (or over $1000 dollars if you destroy both your heads). A head strike with an HP printhead on your ColorSpan does not kill the head. I have done self-destruct damage tests with my HP 2800 (same basic head as the ColorSpan) and was unable to destroy the heads. The printer continued to print exhibit-quality images after I did an auto prime.

Where possible FLAAR seeks to obtain information from end users. Here is a comment by a person in the process of trying out various printers and making his decision on which one to buy:

-----Original Message-----

Sent: Saturday, March 03, 2001 9:20 AM
greg@…..prepress.com
Subject: 30 Jan, Greg …., follow up #2

Thanks for all the input, I tested 4 machines and the Colorspan came out on top...

I have ordered one for now,(colorspan esprit) and may order a hp 5000 if all works as planned.

The roland never out of 2 test could make the correct color. The hp did not match the true color of the job, but could be made to work.   Greg

What more can we say. We have heard comparable color matching problems with the Roland printer from other users. For the HP we will check this out as soon as our HP 5000ps goes through further testing. So far, however, the color from the HP is just fine as long as you tone down the yellows. In our tests so far we found the color just fine other than excess yellow, but we did not have the original to compare the output with. We just judged by eyeball and it looked great.

When people compare a Roland print with a ColorSpan print rarely does anyone tell them that it took perhaps two hours to do the single Roland print, yet you can do multiple prints from the ColorSpan in that same amount of time.

We often get e-mails from people who have tested both printers (or had a dealer do the test…few buyers are patient enough to sit wasting their time for 120 minutes while the Roland is at work). Some people prefer the Roland print but more seem to prefer the ColorSpan print.

Thus would depend on the nature of the image and its colors. Roland can't produce some colors (like many reds and some either blue or cyan in pigmented inks).

The new ColorSpan Mach 12, with its new HP wide-path printheads, uses a newer UV ink that does a better job on blue, cyan, and all of the reds.

Mach 12

Epson printers can handle media up to 1.5 mm thick. The ColorSpan DisplayMaker Mach 12 can handle media up to 3.175 mm thick, so over twice as thick as any Epson printer.

Although the HP DesignJet 5000 is our favorite printer, it is neither able to handle thick media nor rigid media.

X12

It was possible to look over the newest ColorSpan model, their X12, at SGIA tradeshow. However we do not usually evaluate models directly off the assembly line. We usually wait a month or so while they mature. The difference here is that the X12 is not a totally re-designed model. Such completely new models sometimes have teething pains. Instead, the X12 is an improved, updated, and enhanced version of the Mach 12.

We prefer the reliability of updated models such as this X12. When something is done fresh from scratch, there is too much chance of some feature simply not working.

General Comments Relative to All ColorSpan models

Test Prints

Occasionally we get back a letter from someone who says "the test prints from the ColorSpan sales rep was no good…" First, the sales rep does not work for Color-Span but works for the local reseller. Second, in some cases the sales rep may have inadequate experience using the ColorSpan. If the sales rep is lazy he might not have cleaned and calibrated the printer recently.

In a worse case scenario, a sales rep may prefer to sell you another model (on which he gets a larger commission). In such a case it would not be unexpected that the output is deliberately lackluster.

Or the sales rep may be using a lousy paper or trying to show you how fast the machine prints. The top speed will almost certainly produce banding. Thus if you get an uninspired print from a ColorSpan you might doublecheck to see whether it was the printer or the operator.

One of FLAAR staff using ColorSpan DisplayMaker XII

Ease of use

Although we will need to train a person to clean and calibrate the ColorSpan DisplayMaker XII, so far the printer has not needed any special treatment. That may be because we don't use the printer day and night in a commercial setup. Being a university we just print items as they become needed. So far, however, the students learn how to mange the RIP and make prints after about an hour of instruction.

The art department on our campus has an Epson 9000. It has been a problem since it arrived and the art department is now trying to get their money back.

The technology department has an Epson 7500; the images suffer metamerism and not much media works with those proprietary inks.

None of these problems have occurred with the ColorSpan DisplayMaker. Now you can see why we like it. Besides, the print quality is outstanding.

Summary

Why do we like the ColorSpan printers? Because after having our test images printed on countless makes and models of other printers, the ones done on a ColorSpan get the most uuuuhs and ahaaas when people see the prints in our studio. It's a simple test: show someone several different prints. Watch their eyeballs expand, watch them suck their breath in, wait to hear them say "what in the world kind of printer produced this superlative image."

FLAAR is an institute dedicated to museum photography of pre-Columbian art. We want the best printer to show off the beauty of the original artifact as well as the capability of our large-format (BetterLight + Sinar + Schneider lens) photography system.

Where to get further information

FLAAR is a non-profit institute at a university so we do not sell printers. But most people who write ask where they can get more information. Since it will be a while before we experience all aspects of our new ColorSpan, it makes more sense to forward your request to people we met at the ColorSpan booth at recent trade shows. You can also e-mail them directly, productinfo@colorspan.com. FLAAR's main offices are in Latin America and Europe so there is no way you can easily telephone us for further information. Thus it's a lot easier when the companies who know the products the best are forwarded your e-mail so they can do the follow-up personally. FLAAR itself is an American research institute despite our affiliations on various continents.

The ColorSpan web site itself is a mine of information, including user manuals in PDF format for most of the current and recent models: www.colorspan.com

Two of the FLAAR review editors took the "new operator training course" on the ColorSpan. Maru Mayen had never before operated a large format printer, never loaded ink or any of this. You can ask her directly for her opinion on the ColorSpan equipment, their RIP, and overall on the people she met during the several days she was working on the printers. Just send an e-mail to fineart@ufm.edu.gt being sure to put "ColorSpan questions for Maru" in the subject line (because there are five different people at the university who receive and answer your e-mails).

Additional reports

FLAAR adds new report themes every month. Currently about 72 reports are available. The list of report titles is available for instant download via PDF format but in the meantime here are some pertinent titles:

Large format printers suitable for signs, posters, banners, trade show displays, and comparable indoor use. Comparative reviews of Encad, HP, ColorSpan, Epson, Roland, and other printers.

Large format printers suitable for outdoor signs, billboards including how to produce signs that withstand weather without lamination. Covers standard printers as well as printers which use solvent-based inks.

Which large format printers are best for photo-realistic output, museum exhibit quality photographs, on canvas, photo paper, or whatever media you wish? Discusses the best printers for top quality output.

Which large format printers are best for fine art giclee prints? Covers 24" and wider; FLAAR reports do not cover desktop sized printers.

Piezo-electric printheads (Epson, Roland) vs thermal printheads (ColorSpan, Hewlett-Packard): fact vs fiction, myth vs reality, the benefits and downsides of each printhead technology.

RIPs+help for first time users of RIPs and first time users of large format printers as well. General tips for survival.

All reports are listed on a new web site, www.wide-format-printers.NET.
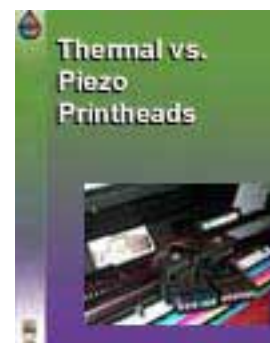
Feedback

If this FLAAR report provided you information that helps in your decision making process, we would appreciate you telling other people about our web sites and free consulting services. Notifying news groups and other references via e-mail is nowadays the easiest way for you to return the favor.

Another way you can return the favor of all the results of our evaluations that have been sent to you, is when FLAAR itself needs feedback from your initial experiences from whatever particular printer you bought.

We don't own stock in any printer company nor do we get sales commissions, so we don't keep track of who buys what printer. But it is informative to us to learn what printer you eventually decided to acquire and whether this printer satisfied your expectations. The department of our university that handles user-experiences will get in touch with you at some future point. When this happens we will appreciate it if you can give back to us at least a portion of the helpful tips that we have already rendered to you.

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To obtain a legitimate copy, which you know is the complete report with nothing erased and hence a report with all the description of pros and cons, please obtain your original and full report straight from FLAAR.

Your only assurance that you have a complete and authentic evaluation which describes all aspects of the product under consideration is to obtain these reports from FLAAR at Francisco Marroquin University, via www.wide-format-printers.NET.

Citing and Crediting

The material in this report is not only copyright, it is also based on years of research. Therefore if you cite or quote a pertinent section, please provide a proper credit, which would be minimally "Nicholas Hellmuth, year, www.FLAAR.org." If the quote is more than a few words then academic tradition would expect that a footnote or entry in your bibliography would reference the complete title. Publisher would be www.FLAAR.org.

If you intend to quote any portion of a FLAAR review in a PowerPoint presentation, if this is in reference to any product that your company sells or promotes, then it would be appropriate to license the report or otherwise notify us in advance. FLAAR

reports are being updated every week sometimes, and our comment on that product may have been revised as we learned more about the product from end users. Also, we noticed that one company cited the single favorable comment we made on one nice aspect of their printer, but neglected to cite the rest of the review which pointed out the features of the printer which did not do so well. For them to correct this error after the fact is rather embarrassing. So it is safer to ask-before-you-quote a FLAAR review on your product.

Legal notice

Inclusion in this study by itself in no way endorses any printer. Equally, exclusion from this study in no way is intended to discredit any printer. The same is true for the RIP, ink and media choices.

Advisory

We do our best to obtain information which we consider reliable. But with hundreds of makes and models of printers, and sometimes when information about them is sparse, or conflicting, we can only work with what we have available. Thus you should be sure to rely also on your own research, especially asking around. Find another trustworthy end user of the same make and model you need to know about. Do not make a decision solely on the basis of a FLAAR report because your situation may be totally different than ours. Or we may not have known about, and hence not written about, one aspect or another which is crucial before you reach your decision.

The sources and resources we list are those we happen to have read. There may be other web pages or resources that we missed. For those pages we do list, we have no realistic way to verify the veracity of all their content. Use your own common sense plus a grain of salt for those pages which are really just PR releases or outright ads.

We are quite content with the majority of the specific printers, RIPs, media, and inks we have in the two FLAAR facilities at the two universities. We would obviously never ask for hardware, software, or consumables that we knew in advance would not be good. However even for us, a product which looks good at a tradeshow, sounds good in the ad literature, and works fine for the first few weeks, may subsequently turn out to be a lemon.

Or the product may indeed have a glitch but one that is so benign for us, or maybe we have long ago gotten used to it and have a workaround. And not all glitches manifest themselves in all situations, so our evaluator may not have been sufficiently affected that he or she made an issue of any particular situation.

Equally often, what at first might be blamed on a bad product, usually turns out to be a need of more operator experience and training. More often than not, after learning more about the product it becomes possible to produce what it was intended to produce. For this reason it is crucial for the FLAAR team and their university colleagues to interact with the manufacturer's training center and technicians, so we know more about a hardware or software.

But we can't guarantee or certify any make or model nor its profitability in use because we don't know the conditions under which a printer system might be utilized in someone else's facility. As a result, products are described "as is" and without warranties as to performance or merchantability, or of fitness for a particular purpose. Any such statements in our reports or on our web sites or in discussions do not constitute warranties and shall not be relied on by the buyer in deciding whether to purchase and/or use products we discuss because of the diversity of conditions, materials and/or equipment under which these products may be used. Thus please recognize that no warranty of fitness or profitability for a particular purpose is offered.

The user is advised to test products thoroughly before relying on them. We do not have any special means of analyzing chemical contents or flammability of inks, media, or laminates, nor how these need to be controlled by local laws in your community. There may well be hazardous chemicals, or outgassing that we are not aware of. Be aware that some inks have severe health hazards associated with them. Some are hazardous to breathe; others are hazardous if you get them on your skin. And most inks are clearly not intended to be consumed. Obviously these tend to be solvent inks and UV-curable inks. Yet other inks are edible, seriously, they are printed on birthday cakes. Indeed Sensient is a leader in a new era of edible inks. Therefore the user must assume the entire risk of ascertaining information on the chemical contents and flammability regulations relative to inks, media or laminates as well as using any described hardware, software, accessory, service, technique or products.

We have no idea of your client's expectations. What students on our campus will accept may not be the same as your Fortune 500 clients. In many cases we have not ourselves used the products but are basing our discussion on having seen them at a tradeshow, during visiting a print shop, or having been informed about a product via e-mail or other communication. Tradeshows are idealized situations, with full-time tech support to keep things running. The same equipment may not work as well in your facility as we, or you, see it at a tradeshow. All the more reason to test before you buy; and keep testing before you make your final payment. Your ultimate protection is to use a gold American Express credit card so you can have leverage when you ask for your money back if the product fails.

Heat, humidity, dust, experience level of your workers (whether they are new or have prior years experience): these are all factors that will differ in your place of business as compared with our two universities.

Actually you may have people with even more experience than we do, since we deliberately use students to approximate newbies. FLAAR is devoted to assisting newcomers learn about digital imaging hardware and software. This is why Nicholas Hellmuth is considered the "Johnny Appleseed" of wide format inkjet printers.

Therefore this report does not warranty any product for any quality, performance or fitness for any specific task, since we do not know the situation in which you intend to use the hardware or software. Nor is there any warranty or guarantee that the output of these products will produce salable goods, since we do not know what kind of ink or media you intend to use, nor the needs of your clients. A further reason that no one can realistically speak for all aspects of any one hardware or software is that each of these products may require additional hardware or software to reach its full potential.

For example, you will most likely need a color management system which implies color measurement tools and software. To handle ICC color profiles, you may need ICC color profile generation software and a spectrophotometer since often the stock pre-packaged ICC color profiles which come with the ink, media, printers and/or RIPs may not work in your situation. Not all RIPs handle color management equally, or may work better for some printer-ink-media combinations than for others.

Be aware that some RIPs can only <u>accept</u> ICC color profiles: you quickly find out the hard way that you can't tweak these profiles nor generate new ones. So be sure to get a RIP which can handle all aspects of color management. Many RIPs come in different levels. You may buy one level and be disappointed that the RIP won't do everything. That's because those features you may be lacking are available only in the next level higher of that RIP, often at considerable extra cost. Same thing in the progression of Chevy through Pontiac to Cadillac, or the new Suburbans. A Chevy Suburban simply does not have all the bells and whistles of the Cadillac Escalade version of this SUV.

Don't blame us… besides, that's why we are warning you. This is why we have a Survey Form, so we can learn when you find products that are inadequate.

Just remember that every machine has quirks, even the ones we like. It is possible that the particular kind of images, resolution, inks, media, or other factors in your facility are sufficiently different than in ours that a printer which works just fine for us may be totally unsatisfactory for you and your clients. However it may be that the specific kind of printing you need to do may never occasion that shortcoming. Or, it may be that your printer was manufactured on a Monday and has defects that are atypical, show up more in the kind of media you use which we may not use as often or at all during our evaluations. Equally possibly a printer that was a disaster for someone else may work flawlessly for you and be a real money maker for your company.

In some cases a product may work better on a Macintosh than on a PC. Software may function well with one operating system yet have bugs and crash on the same platform but with a different operating system. Thus be sure to test a printer under your own specific work conditions before you buy.

You absolutely need to do print samples with your own images and the kind provided by your clients. Do <u>not</u> rely on the stock photos provided by the printer, ink, media, or RIP manufacturer or reseller. They may be using special images which they know in advance will look fabulous on their printer. Equally well, if you send your sample images to the dealer, don't be surprised if they come back looking awful. That is because many dealers won't make a serious effort to tweak their machine for your kind of image. They may use fast speed just to get the job done (this will result in low quality). Check with other people in your area, or in the same kind of print business that you do. Don't rely on references from the reseller or manufacturer (you will get their pet locations which may be unrealistically gushy): find someone on your own.

Another option is to bring your images on a CD disk to the FLAAR facility at BGSU. Here you can test your images on an Iris 3047 giclee printer (Ixia version), Mimaki JV4 (with textile inks for silk), either of two ColorSpan printers (DisplayMaker XII, Mach 12, HP 5000 (essentially same quality as the HP 5500 which is primarily faster). We also have a Canon W7250, Epson 5500, Epson 7600, HP 120nr and the HP 20ps. If you are curious to see your images on a color laser, we have 13 x 19inch color output available on a QMS-Minolta 6110. Such a visit is treated as a consultation which implies a 1-day minimum consulting fee plus the ink and media used.

Although we have found several makes and models to work very well in our facilities, how well they work in your facilities may also depend on your local dealer. Some dealers are excellent; others just sell you a box and can't provide much service after the sale. Indeed some low-bid internet sales sources may have no technical backup whatsoever. If you pay low-bid price, you can't realistically expect special maintenance services or tech support later on from any other dealer (they will tell you to return to where you paid for the product). This is why we make an effort to find out which dealers are recommendable. Obviously there are many other dealers who are also good, but we do not always know them. To protect yourself further, always pay with a level of credit card which allows you to refuse payment if you have end up with a lemon. A Gold American

Express card allows you to refuse payment even months after the sale. This card may also extend your warranty agreement in some cases (check first).

Most of the readers of the FLAAR Reports look to see what printers we use in our own facilities. Readers realize that we will have selected the printers that we like based on years of experience and research. Indeed we have met people at trade shows who told us they use the FLAAR web site reports as the shopping list for their corporate purchases.

Yes, it is rather self-evident that we would never ask a manufacturer to send a product which we knew in advance from our studies was no good. But there are a few other printers which are great but we simply do not have them in our facilities yet. For example there are three Mimaki printers we would love to have (their flatbed, their newest textile printer, their new UV-curable ink printer)

We would definitely like to have a Gradco Mammoth (flatbed up to 3 inches). Would like to evaluate an Encad NovaJet 880 to print on thick material (up to half an inch if I remember correctly).

When Roland finally comes out with an 8 color version of Epson's 10000 printhead generation which offers 32 passes, wider than Epson's 44 inch limit and no banding whatsoever (if that is possible) that would be the ultimate fine art giclee print-ing factory. But since that printer does not yet exist, the art students on our campus use our HP DesignJet 5000ps, newly arrived HP 5500ps, Canon W8200, and ColorSpan Mach 12. The art department does museum exhibits and wins awards with the output.

We are also interested in the Western Graphtec cutter-printer with eight heads (that was producing outstanding quality output at the SGIA '03 tradeshow).

So if a printer is not made available by its manufacturer, then there is no way we can afford to have all these makes and models in our facility. Thus to learn about models which we do not feature, be sure to ask around in other print shops, with IT people in other corporations, at your local university or community college. Go to tradeshows….but don't use the booth…ask ques-tions of people in the elevator, in line at the restaurant, anywhere to escape the smothering hype you get in the booth.

Taking into consideration we do not know the conditions in which you may be using your hardware, software, or consumables, neither the author nor FLAAR nor either university is liable for liability, loss or damage caused either directly or indirectly by the suggestions in this report nor by hardware, software, or techniques described herein because.

Acknowledgements

giclee printer.

We thank 3P Inkjet Textiles and HP for providing inkjet textiles so we could learn about the different results on the various textiles. IJ Technologies, 3P Inkjet Textiles, ColorSpan, Encad, HP, Nan Ya Pepa, Oracal, Tara and other companies have provided inkjet media so we can try it out and see how it works (or not as the case may be; several inkjet media failed miserably, one from Taiwan, the other evidently from Germany!). We thank Aurelon, ColorGate, ColorSpan, ErgoSoft, HP, PerfectProof, PosterJet, Onyx, Ilford, ScanvecAmiable, Wasatch and many other RIP companies for providing their hardware and software RIPs.

We thank Dell Computers for providing awesome workstations for testing RIP software and content creation with Adobe Photoshop and other programs. We also appreciate the substantial amount of software provided by Adobe. As with other product loaned or provided courtesy of ProVar LLC (especially the 23" monitors which makes it so much easier to work on multiple documents side by side).

We really liked some of the results whereas some of the other products were a bit disappointing. Providing samples does not influence the evaluations because the evaluators are students, professors, and staff of Bowling Green State University and Francisco Marroquin University. These personnel are not hired by any inkjet printer company; they are universities employees (as is also true for Nicholas Hellmuth). The testing person for the HP ColorPro (desktop printer) said he frankly preferred his Epson printer. When we saw the rest results we did not include this Heweltt-Packard ColorPro printer on our list of recommended printers, but we love our HP DesignJet 5000ps so much we now have two of them, one at each university.

Some of the media provided to us failed miserably. Three printers failed to meet common sense usability and printability standards as well (HP 1055, one older desktop model, and one Epson). Yet we know other users who had better results; maybe ours came down the assembly line on a Monday or Friday afternoon, when workers were not attentive. One costly color management software package was judged "incapable" by two reviewers (one from the university; second was an outside user who had made the mistake of buying this package).

So it's obvious that providing products or even a grant is no shield from having your products fail a FLAAR evaluation. The reason is clear: the end user is our judge. The entire FLAAR service program is to assist the people who need to use digital imaging hardware and software. If a product functions we find out and promulgate the good news. If a product is a failure, or more likely, needs some improvement in the next generation, we let people know. If a product is hyped by what an informed user would recognize as potentially false and misleading nonsense, then we point out the pathetic discrepancies very clearly.

This is what you should expect from an institute which is headed by a professor.

Actually, most of our reviews are based on comments by end users. We use their tips to check out pros and cons of virtually every product we discuss. You can't fool a print shop owner whose printer simply fails to function as advertised. And equally, a sign shop owner who earns a million dollars a year from a single printer brand makes an impact on us as well. We have multiple owners of ColorSpan printers tell us that this printer is their real money earner for example. We know other print shops where their primarily income is from Encad printers. Kinkos has settled on the HP 5000 as its main money maker production machine, and so on.

Yet we have documentation of several print shop companies whose business was ruined by specific brands that failed repeatedly. It is noteworthy that it is always the same two brands: one due to banding and printheads then simply no longer printing one color; the other brand due to pokiness of the printer simply not being competitively fast enough.

Grant funding, demonstration equipment, and training are supplied from all sides of the spectrum of printer equipment and software engineering companies. Thus, there is no incentive to favor one faction over another. We receive support from three manufacturers of thermal printheads (Canon, ColorSpan and HP) and also have multiple printers from two manufacturers of piezo printers (Epson and Mimaki). This is because piezo has definite advantage for some applications; thermal printheads have advantages in different applications. Our reviews have universal appeal precisely because we feature all competing printhead technologies. Every printer, RIPs, inks, or media we have reviewed have good points in addition to weaknesses. Both X-Rite and competitor GretagMacbeth provided spectrophotometers. Again, when all sides assist this program there is no incentive to favor one by trashing the other. Printer manufacturer ad campaigns are their own worst enemy. If a printer did not make false and misleading claims, then we would have nothing to fill our reviews with refuting the utter nonsense that is foisted on the buying public.

It is not our fault if some printers are more user friendly, print on more media than other brands. It is not our fault that the competing printers are ink guzzlers, are slow beyond belief, and tend to band or drop out colors all together. We don't need to be paid by the printer companies whose products work so nicely in both our universities on a daily basis. The printers which failed did so in front of our own eyes and in the print shops of people we check with. And actually we do try to find some redeeming feature in the slow, ink gulping brands: they do have a better dithering pattern; they can take thick media

that absolutely won't feed through an HP. So we do work hard at finding the beneficial features even of printers are otherwise get the most critique from our readers. Over one million people will read the FLAAR Information Network in the next 12 months; 480,000 people will be exposed to our reports on wide format printers from combined total of our three sites on these themes. You can be assured that we hear plenty of comments from our readers about which printers function, and which printers fail to achieve what their advertising hype so loudly claims.

We turn down offers of funding every month. These offers come from PO Box enterprises or products with no clearly visible point of manufacture. Usually the company making the offer presumes they can buy advertising space just by paying money. But that is not what our readers want, so we politely do not accept such offers of money.

Grants, sponsorships, and funding for studies and research is, however, open to a company who has an accepted standing in the industry. It is helpful if the company has a visible presence at leading tradeshows and can provide references from both end users and from within the industry. Where possible we prefer to visit the company in person or at least check them out at a tradeshow. Obviously the product needs to have a proven track record too. Competing companies are equally encouraged to support the FLAAR system. We feel that readers ought to have access to competing information. Competition is the cornerstone of American individualism and technological advancement.

FLAAR also covers it's costs of maintaining the immense system of 12 web sites in three languages and its two university facilities in part by serving as a consultant such as assisting inkjet manufacturers learn more about the pros and cons of their own printers as well as how to improve their next generation of printers. FLAAR also serves as consultants to Fortune 500 companies as well as smaller companies and individuals who seek help on which printers to consider when they need digital imaging hardware and software.

A modest portion of our income comes from our readers who purchase the FLAAR series. All income helps continue our tradition of independent evaluations and reviews of inkjet printers, RIPs, media, and inks.

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