FLAAR Reports

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February 2007

Site-Visit Case Studies of UV Flatbeds

as a resource for the FLAAR Reports

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The Difference between a Success Story and Reality

There is a genre of articles called “Success Stories.” These are either downloads from the manufacturer’s web site, or they are periodically in the trade magazines.

- They are short, and sweet: usually one page.
- They list everything that a printer does well.

But why don’t the list what the printer has problems with? And why, when we visit a print shop that has the same brand, why does the owner explain to us in detail all the parts of the printer that have broken, such as how many times he had to repair the transport belt on the combo UV printer?

It’s not just because people open up to a professor of digital imaging. It’s that the print shop owners, managers, and printer operators really seek answers: “Did I buy the wrong printer? Should I really have bought another brand or model?”

Screen printing and sign shop owners also ask “What innovative applications can I print with my new printer so I can pay off the printer and make a profit?” When FLAAR visits a print shop, the owner, manager and/or printer operator get as much information from FLAAR as we ask of them about their new UV flatbed machine.

So far we have accomplished about 18 visits to printing companies that have recent model UV-curing wide-format inkjet printers. We also have perhaps seven site-visits on solvent inkjet printers and several visits to giclee ateliers or photo studios.

We don’t have to buy or sell printers to survive so our FLAAR Reports don’t have to omit the deficiencies in order to cover over a defect in a printer. Yes, naturally we have corporate sponsors: most university printing departments actually have more sponsors than we do. But our sponsors know (or find out quickly and bluntly) that their printers may be scrutinized all the more thoroughly. After all, if a company is a sponsor, then we get to wander around the factory and poke into every aspect of the printer to find out what its really like.

Each site-visit is initiated with a standardized questionnaire. This way we get comparable coverage of each printer so that comparisons among brands are fair. The questionnaire format also asks precisely the questions that will

- Help learn more about the adhesion (or lack of adhesion) of the UV ink,
- Better understand the nice features and also the real issues with each material being printed on,

- And for hybrid and combo style UV printers, it is absolutely essential to lean the reality of transport of each of the multitude of completely different kinds material through the machine,

A site-visit is the only sure way to learn tech support and a host of other crucial issues.

This particular report covers primarily UV and solvent printers. We also do site-visit case studies of giclee printers such as Epson, HP, and now Canon. We cover giclee printers in our Fine Art Giclee and Photo Series within other FLAAR Reports themes.

One of our most important site-visits during 2006 was a study of a DuPont Cromaprint 22uv. This is the first published assessment that provides factual documentation what it is really like to have this UV flatbed printer in your sign shop. All other articles on this machine are either unrealistic Success Stories or official PR releases. If you compare the FLAAR Reports and the others, you can see why sign shop owners and screen printing owners and management prefer the FLAAR Reports.

ColorSpan 72 UVR, Site-Visit Case Study

Our flight was delayed and we got into the hotel about 3:17 am; our meeting at the print shop was about 9 am. Not only were my eyes out of focus with so little sleep, the camera was seemingly also sleep deprived, so this is a visit without many adequate photos. They had two model 72UV printers: one for flat material and one for roll-fed (including fabrics).

This company was a photo lab. It was interesting to see how UV-cured printers were so well accepted in a company with Durst Lambda technology and all the traditional darkroom equipment.

ColorSpan 72UVX, Site-Visit Case Study

Our second ColorSpan 72UV site-visit was easier: it's less than 45 minute drive from the university. So we pop in regularly, indeed we were there the day the printer arrived. In subsequent months we returned several times.

ColorSpan 9840UV

This substantial printer was a move into the more sophisticated realm of mid-range combo-style printers: the realm of Vutek and Durst Rho. So we were unsure of what we might find.

But when we did a factory visit (on a pre-production printer a week before this model was released) we could not help notice that this pre-production printer performed better than many “finished” printers that had been out over six months. Nonetheless, we were very curious to find out what this printer was like once you got it into your own print shop.

So I flew to Chicago to inspect one; it was quite a revelation. I spent about 5 hours interviewing the print shop owner. He kindly took time to patiently explain every detail of the printer inside out.

So our resulting FLAAR Site-Visit Case Study is the first comprehensive evaluation of what it is really like to own this heavy-duty production UV printer.

DuPont Cromaprint 22UV

Normally I telephone or e-mail in advance. But when I am in St Louis (which is where I grew up and where my father's company's international headquarters still is), I tend to sometimes just sort of drop in on print shops. So I simply drove up to this shop, and introduced myself.

The owner was very kind even though I had no appointment. He took time to explain the concerns, problems and work-arounds. He also carefully described how much attention DuPont devoted to repairing each issue (keep in mind this machine is contract-manufactured in China).

A key question is, what is the difference between contract-manufacturing and simply buying a printer from China? This is what we set out to learn, and this is what we discuss in this FLAAR Reports. The results of this site visit are far-reaching, because for 2007-2008 a major aspect of decision-making, both for manufacturers and for print shop owners, is "should be consider a Chinese or Korean-made printer." We continue to study all aspects of these questions, indeed have already made our first trip to Korea and intend to go to China as well.

Since we don't have a Chinese-made printer in our university, we have to go out into the real world to find and inspect them. So far we have inspected several brands of Chinese-made UV printers. The results are very similar, indeed predictable. All the details are in the FLAAR Reports, available from www.wide-format-printers.NET.

Agfa and Mutoh rebrand UV printers manufactured in Korea. This turns out to be vastly different than printers made in China. So we look at these situations from every angle. But virtually every item of clothing that I am wearing as I write this is made in China. The Macintosh 17" laptop computer that all FLAAR Reports are written on is made in China. So it is only a matter of time before most inkjet printers are too. The Epson 3800 is already reportedly made in China.

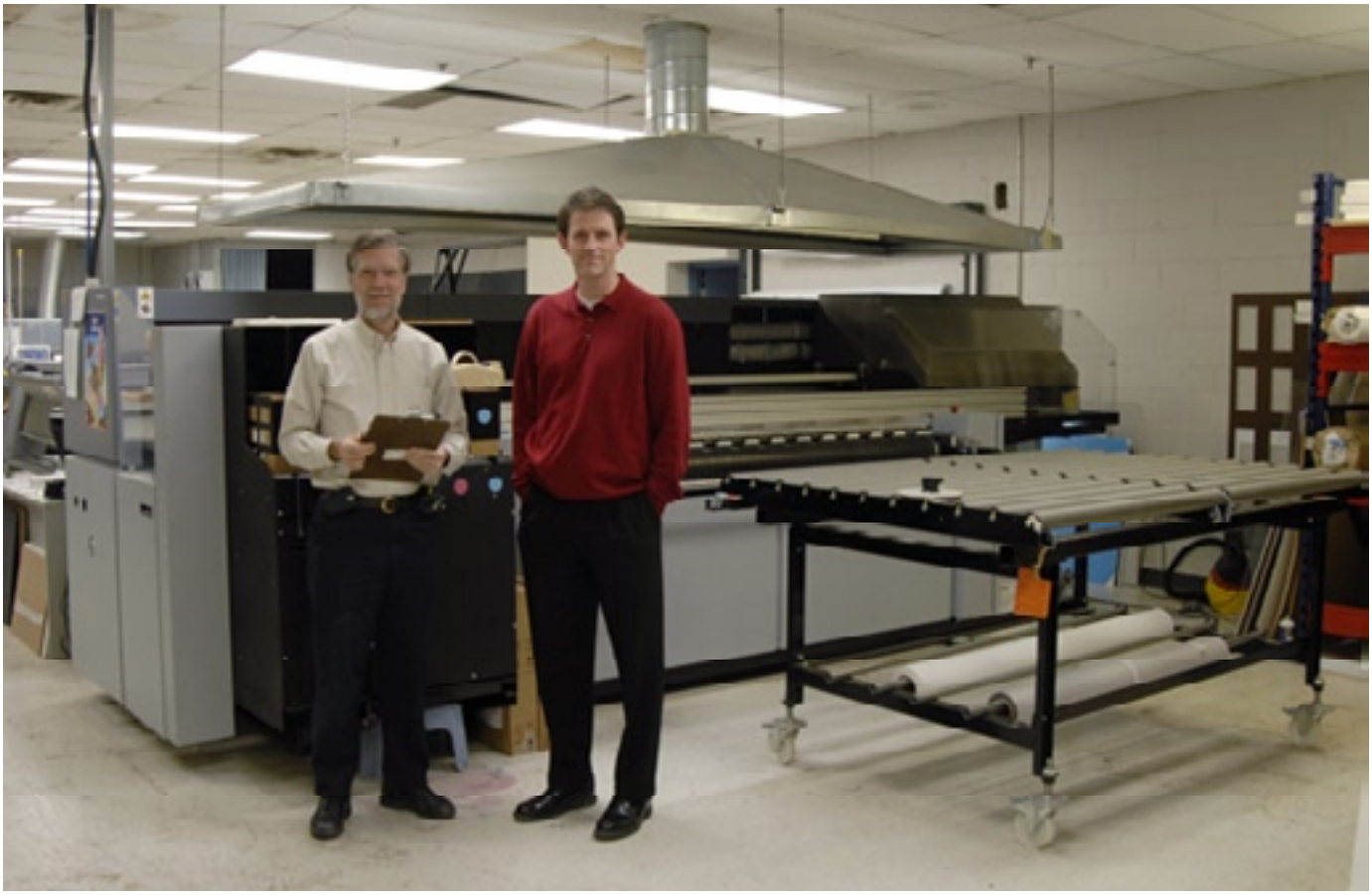
Durst Rho 160

This was our first site-visit case study, several years ago. When I re-read this report I can really see how far our site-visit evaluation procedures have progressed in the last five years. I can also recognize how far FLAAR has come in understanding UV-curing ink chemistry, printheads, and the mechanics of moving thick, rigid, and roll-fed materials through a printing machine.

This Rho 160 is at a large digital printing company near our university. The president has a MS degree from the prestigious Rochester Institute of Technology. Many of the employees here are graduates of BGSU, indeed many worked with FLAAR before they graduated. So I have re-visited this Rho 160 several times a year since the first time I was here.

Durst Rho 600

I was very surprised to learn what this sign shop has to live through during the first six months of having this sophisticated European-made UV printer. After this visit I realize that I really need to get to the demo room in Rochester and the factory in Lienz (southern Austria) in order to learn about the improvements that were added to the printer to reverse the initial issues.



Gandinnovations Jeti 3150 Site-Visit Case Study

I have visited this printshop twice: once after they had just received the UV flatbed; a second time after the printer had been there a year. I have also maintained communication with the owner so I can find out how he likes the newer model with 1200 dpi capability.

The interesting thing about this site-visit is that this company is a small family-owned business with about four employees (two of whom are the owners). Their prior printers were several HP 5000's. Yet they felt there was enough business to allow them to expand and lay out $350,000 for an entirely new and different technology.

So this particular FLAAR Report is especially helpful to small and family run sign shops, to provide you with the results of what might it be like if you buy a sophisticated UV printer.

A second Gandinnovations Jeti 3150 Site-Visit Case Study

This site-visit is in Europe. The owner bought a flatbed Gandinnovations UV machine (this one), a roll-to-roll UV and they also have a 3.3 meter solvent inkjet printer.

FLAAR spent two days here, so you get a reality report.

What would it cost you to fly to this same printshop and stay for two days? Besides, our list of questions is very comprehensive. So if you are a print shop owner these reports are a god-send.

Besides, this printshop first bought another completely different brand of UV printers, a $300,000 combo design. It did not function well at all, and after six months they got rid of it and bought two Gandy UV printers to replace it.

Maybe it would have been easier if they had bought the FLAAR Reports first.

Gandinnovations Jeti RTR

A roll-to-roll UV is very different than a flatbed UV in the sense of materials and applications. So learning the difference between dedicated roll-to-roll, dedicated flatbed, combo and hybrid designs is crucial: before you make your final decision of which printer to buy.

Infiniti UV, Site-Visit Case Study

We visited this company in the Midwest on two occasions; first after they had this Chinese made UV printer a few months. Then about four months later we returned.

The opinion of the print shop owners (father, son, daughter) are worth hearing.

Infiniti UV, Second Site-Visit Case Study

Same situation for this Chinese UV printer in Latin America. Our first visit was when they had the printer only about two months. Then we returned when they had seven months more experience.

Their feelings about the printer had changed dramatically after they found out what it was really like.

What is it really like to have a Lüscher JetPrint UV-Cured Inkjet Flatbed? Site-Visit Case Study

This is a $650,000 printer that we inspected in Europe. The same printshop also has a Gandinnovations Jeti solvent printer, a Scitex Vision solvent machine, Mimaki, etc.

The big question here is whether it is better to buy one huge $650,000 printer or two agile $325,000 machines.

Is the Lüscher JetPrint in Beta-Stage or a Finished Printer? Site-Visit Case Study,

This printshop is in the Midwest (USA). It is a large photo-quality oriented digital company. Same question as the printshop in Europe: is it recommended to buy one giant UV printer, two medium sized ones, or four smaller hybrid UV printers.

When you visit any printshop that has just bought an over half-million dollar printer, and you ask "are you satisfied?" the answer is always yes. If's like asking the question "You just spent half-a-million-dollars of your company's money; was it wisely spent?

Of course the corporate answer will be yes. Most business owners would not answer that they had made a mistake with their $650,000 investment.

But then you ask,

- Well, how long did it take you to get the printer up and running?
- How often is the printer down?
- When printer is down, how quickly do you get tech support?
- Is tech support available during US workday, or during European work day?

Once you hear the answers to these questions (which are in the FLAAR Reports) you can reappraise the answer to the first question of whether it is always wise to buy one single huge printer, or perhaps it might be worth considering whether to buy one dedicated flatbed and one dedicated roll-to-roll at the same price as the single giant flatbed.

In other words, if you are about to spend any amount of money on a UV printer, you ought to consider first investing in several of the appropriate FLAAR Reports before you sign the check to buy the printer itself.

Besides, a FLAAR Report costs less than one liter of ink.

Vutek PressVu UV 200/600: Site-Visit Case Study

Because the Vutek PressVu series is a popular printer it is all the more essential to get your hands on this FLAAR Report first. We have visited several owners of Vutek UV printers (of various models).

We have also visited print shops where they started with one UV printer (the most “popular” model of that year) but then found out that model was a mistake. They then bought a completely different brand. In some cases they bought a third UV printer after that.

Screen printing companies and sign shops that check the FLAAR Reports first have a much better idea of what to expect.

An Additional Site-Visit Case Study of a Vutek PressVu 200/600 UV Printer

It is relatively easy to find Vutek UV printers, so we have several site-visits on them. Since a Vutek costs over $250,000 and a ColorSpan 9840uv costs about $150,000, it helps to have both these reports to learn the pros and cons of each printer.

Zund UVjet 215 UV-curable Inkjet Flatbed Printer: Site-Visit Case Study

These Zund printers were designed in the 1990's by another company and in those years sold by PerfectaPrint. Then Zund bought the rights to manufacture these printers. We have actually visited three printshops that have this printer, so have a good sense of what this printer is like, and how it has improved since 2001.

An additional site-visit case study of the Zund UVjet 216-Plus (6-color version)

Most "Success Stories" don't tell you the history of inkjet printing. The Zund is one of the first three UV printers ever made, indeed it is the only machine designed in 1999 which is still sold today (unless you count the HP Scitex flatbed, the former VEEjet+, which is also a 1990's chassis).

Of course if something is made right to begin with, no need to change it. But with other printers, they modify their design and features with each new generation. So there are many aspects of the decision that you face. This is why FLAAR works hard to learn about all these printers.

What site-visits would we like to do next?

It would be good to undertake a site-visit case study of the Zund 250. However there are hardly any in the US, so this would require a trip to Switzerland. If funding becomes available we would initiate an update on our coverage of this printer.

We would be interested in studying the L&P Virtu. Some of their models are manufactured in Switzerland.

The Korean UV printers really need factory-visits and site-visits too. That's because sign shop owners don't yet know enough about Korean-made printers. So we look forward to working with Dilli, IP&I, and Keundo more in the future.

In general we would be interested in researching any current model of UV printer; it is too expensive to try to do site-visit case studies of all the older models. The Rho 160 report we update simply because they are near our university plus the same print shop has a newer ColorSpan 72UVX and will be acquiring a third UV printer shortly.

As funding becomes available we will be doing many more site-visit case studies and factory visits during 2007.

Summary

All our UV Site-Visits together

Here are the front covers of all our site-visit case study FLAAR Reports on UV printers. You can order these from www.wide-format-printers.NET

All our UV Printer FLAAR Reports

Here is our list of all our UV printer reports, including the crucial evaluation-reviews. The first list is by size and shape of printer; the second list is alphabetical. You can order these from www.wide-format-printers.NET

COMBO UV: SERIOUS PRODUCTION

- ColorSpan 9840uv: First Look at a New Productivity Combo Flatbed UV-Curable Inkjet Printer, $150
- FLAAR Site-Visit Case Study of the ColorSpan 9840uv, $112
- Site Visit and Case Study of Zund UV-Curable Flatbed Printer Compared with a Durst Rho UV-Curable Flatbed Printer, $112
- Durst Rho 205, $110
- Durst Rho 600, $112
- Durst Rhopac, $50
- Leggett & Platt Virtu $50
- Vutek PressVU UV 200/600 with comments on PressVu UV 180/600, $120
- What it is really like to own and operate a Vutek PressVu UV 200/600: Site-Visit Case Study, $150
- An Additional Site-Visit Case Study of a Vutek PressVu 200/600 UV Printer, $150
- Vutek PressVu UV 320/400, $80
- Vutek QS2000 AND QS3200, $120

COMBO UV: MID-RANGE

- Agfa :Anapurna L, Agfa :Anapurna XL; Mutoh Cobra S65uv, Mutoh Cobra S100uv, $140
- Dilli: NeoJet UV-Curable Ink Flatbed Models, $120
- DuPont Cromaprint 22UV, $140
- Site-Visit Case Study of a DuPont CromaPrint 22UV, $160
- Eastech: Mature UV-flatbed Printers from Taiwan, $140
- Flora FUV2214 $80
- GCC Stellar Jet 250UV, $120
- GRAPO Octopus, $140
- GO Fuzion UV Flatbed Printer, $120
- IP&I Cube260 UV Printer, $70
- Zund UVjet 215-C, Zund UVjet 215-Plus, $120
- Zund UVjet 215 UV-curable Inkjet Flatbed Printer: Site-Visit Case Study, $160
- An additional site-visit case study of the Zund UVjet 216-Plus (6-color version), $120
- Zund UVjet 250-Combi, $140

COMBO UV: UNUSUAL DESIGN

- Agfa :Anapurna and Mutoh Cobra 100, $100

HYBRID UV: ENTRY LEVEL

- Anhui Liyu 1800, 2500, 3200, Lyric UV & Eureka 1808, $100
- ColorSpan 72 UVR: Evaluation, $112
- ColorSpan 72 UVR, Site-Visit Case Study, $120
- ColorSpan 72UVX, Site-Visit Case Study, $120
- New ColorSpan 5440UV, ColorSpan 5460UV, ColorSpan 5445UV, ColorSpan 5465UV, $112
- DuPont Cromaprint 18UV, $120
- Flora LJII 1800 UV Flatbed & Flora LJII 1800 UVS-Pro, $100
- GCC Stellar Jet 183uv, $60
- Gerber Solara UV2 Printer, $120
- Infiniti, $120
- Infiniti UV, Site-Visit Case Study, $140
- Infiniti UV, Second Site-Visit Case Study, $140
- Oce Arizona 60UV, $60
- Raster Printers, Inc, RP-720 UV, 720UVZ, and Daytona, $140
- Techwin Techsmart 1600 UV (Shanghai Teckwin) UV Printer, $120

HYBRID UV: MID-RANGE

- NeoltJet UV Printer, $120

FLATBED UV: HIGH END

- Gandinnovations JETi 3150 UV Flatbed, Jeti 1224, Jeti 2030 $120
- Gandinnovations Jeti 3150 Site-Visit Case Study, $120
- A second Gandinnovations Jeti 3150 Site-Visit Case Study, $120
- Inca Columbia Turbo, $60
- Lüscher JetPrint 3530 UV, $140
- What is it really like to have a Lüscher JetPrint UV-Cured Inkjet Flatbed?
- Site-Visit Case Study, $160
- Is the Luscher JetPrint in Beta-Stage or a Finished Printer? Site-Visit Case Study, $160
- NUR Tempo II, $120

FLATBED UV: MEDIUM PRODUCTION

- GRAPO Manta: Dedicated Flatbed Printer
- Inca Spyder 320, $30
- New Mimaki Flatbed: IPF 1326 (JF-1631 and JF-1610) , $120
- Oce Arizona T220U, $80
- PIT, $60

FLATBED UV: SPECIALTY

- Mimaki UJF-605C, $100
- Roland? Why no UV Printer Yet?, $120

FLATBED UV: ENTRY LEVEL

- Digirex Technojet Flat UV (Yishan), $120
- Inca Spyder 150, $30

ROLL-TO-ROLL UV: HIGH END

- Roll-to-Roll UV-Curable Printer: Gandinnovations Jeti 3324 UV RTR, $120
- Durst Rho 350R, $60

ROLL-TO-ROLL UV: SPECIALTY

- Mimaki UJV-110, $100
- Mimaki UJF-605R, RII, and RH, $140

UV PRINTERS MADE IN CHINA

- Anhui Liyu 1800, 2500, 3200, Lyric UV & Eureka 1808, $120
- Digirex Technojet Flat UV (Yishan), $120
- DuPont Cromaprint 22UV, $140
- Site-Visit Case Study of a DuPont CromaPrint 22UV, $160
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- Infiniti UV, Second Site-Visit Case Study, $140
- Raster Printers, Inc, RP-720 UV, 720UVZ, and Daytona, $140
- SkyJet UV Flatbed Printer , $80
- Techwin Techsmart 1600 UV (Shanghai Teckwin) UV Printer, $120
- Teckwin 1800, $100

UV PRINTERS: KOREA, TAIWAN

- Agfa :Anapurna L, Agfa :Anapurna XL; Mutoh Cobra S65uv, Mutoh Cobra S100uv, $140
- Azero Creon, Azon, Hypernics change to $80
- Dilli: NeoJet UV-Curable Ink Flatbed Models, $120
- Eastech: Mature UV-flatbed Printers from Taiwan, $140
- GCC Stellar Jet 250UV, $120
- GCC Stellar Jet 183uv, $60
- GO Fuzion UV Flatbed Printer, $120
- IP&I Cube260 UV Printer, change to $70

ALPHABETICAL LIST, BY BRAND OR MODEL

- Agfa :Anapurna 100 and Mutoh Cobra 100, $100
- Agfa :Anapurna L, Agfa :Anapurna XL; Mutoh Cobra S65uv, Mutoh Cobra S100uv, $140
- Anhui Liyu 1800, 2500, 3200, Lyric UV & Eureka 1808, $120
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- NUR Tempo II, $120
- PIT, $60
- Oce Arizona T220U, $80
- Oce Arizona 60UV, $60
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First posted March 2007

Reality Check

Being at a university absolutely does not mean we know everything. But intellectual curiosity often leads us to enter areas that are new to us. So we do not shirk from entering areas where we are obviously not yet expert. If in your years of wide format printing experience have encountered results different that ours, please let us know at ReaderService@FLAAR.org. We do not mind eating crow, though so far it is primarily a different philosophy we practice, since we are not dependent on sales commissions we can openly list the glitches and defects of those printers that have an occasional problem.

FLAAR and the university have corporate sponsors but FLAAR web sites do not accept advertising, so we don't have to kowtow to resellers or manufacturers. We respect their experience and opinion, but we prefer to utilize our own common sense, our in-house experiences, the results from site-visit case studies, and comments from the more than 49,000 of our many readers who have shared their experiences with us via e-mail (the Survey Forms).

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Update Policy

Starting in 2008, updates on UV-curable wide-format inkjet printers are available for all individuals and companies which have a subscription, or to companies who are research project sponsors. To obtain the next update write ReaderService@FLAAR.org.

There is a free PDF that describes the UV-curable inkjet printer Subscription system. Subscriptions are available only for UV-related wide-format printer publications.

FLAAR Reports on UV-curable roll-to-roll, flatbed, hybrid, and combo printers are updated when new information is available. We tend to update the reports on new printers, on printers that readers ask about the most, and on printers where access is facilitated (such as factory visits, demo-room visits, etc).

Reports on obsolete printers, discontinued printers, or printers that not enough people ask about, tend not to be updated.

FLAAR still publishes individual reports on solvent printers, and on giclee printers, but subscriptions on these are not yet available; these FLAAR Reports on solvent, eco-solvent, and water-based wide format printers have to be purchased one by one.

Citing and Crediting

A license from FLAAR is required to use any material whatsoever from our reports in any commercial advertisement or PR Release.

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 ask us first. FLAAR reports are being updated every month 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.

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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.

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Inclusion in this study by itself in no way endorses any printer, media, ink, RIP or other digital imaging hardware or software. Equally, exclusion from this study in no way is intended to discredit any printer.

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 may 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 FLAAR facilities. 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 trade show, 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. Yet such a glitch that we don't emphasize may turn out to be adverse for your different or special application needs.

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. Our evaluations go through a process of acquiring documentation from a wide range of courses and these naturally include the manufacturer itself. Obviously we take their viewpoints with a grain of salt but often we learn tips that are worthy of being passed along.

But even when we like a product and recommend it, we still 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. For ink and media, especially after-market third-party ink and media, it is essential that you test it first, under your conditions. We have no way to assure that any ink or media will be acceptable for your specific needs in your specific print shop. 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. For example, some chemicals such as cyclohexanone do not sound like chemicals you want to breathe every day. Be sure to obtain, read, and understand the MSDS sheets for the inks, media, and laminates that you intend to use. Both solvent, eco-solvent, and UV-curable inks are substances whose full range of health and environmental hazards are not yet fully revealed. It is essential you use common sense and in general be realistic about the hazards involved, especially those which are not listed or which have not yet been described. FLAAR is not able to list all hazards since we are not necessarily aware of the chemical components of the products we discuss. Our reports are on usability, not on health hazards.

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 trade show, during visiting a print shop, or having been informed about a product via e-mail or other communication.

Be aware that trade show results may not be realistic. Trade shows are idealized situations, with full-time tech support to keep things running. The images at a trade show may be tweaked. Other images make be "faked" in the sense of slyly putting on primer without telling the people who inspect the prints. Most UV inks don't stick to all materials; many materials need to be treated.

Or the UV prints may be top-coated so that you can't do a realistic scratch test.

Booth personnel have many standard tricks that they use to make their output look gorgeous. In about half the cases you will not likely obtain these results in real life: in most cases they are printing uni-directional, which may be twice as slow as bi-directional.

Trade show examples tend to be on the absolutely best media. When you attempt to save money and use economy media you will quickly notice that you do not get anywhere near the same results as you saw in the manufacturer's trade show booth, or pictured in their glossy advertisement. Five years ago we noticed Epson was laminating prints to show glossy output because their pigmented inks could not print on actual glossy media. The same equipment, inks, media, and software may not work as well in your facility as we, or you, see it at a trade show. 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.

You absolutely need to do print samples with your own images and the kind provided by your clients. Do not 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.

And many materials don't feed well through hybrid (pinch roller on grit roller systems) or combo UV systems (with transport belts). Banding, both from poor feeding, and from bi-directional (lawnmower effect) are common on many UV-curable inkjet printers.

Heat, humidity, static, 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 test results or demo room results.

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 accept 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. We let the manufacturers know when end users complain about their products so that the manufacturers can resolve the situation when they next redesign the system.

Most newer printer models tend to overcome deficiencies of earlier models. It is possible that our comparative comments point out a glitch in a particular printer that has been taken care of through an improvement in firmware or even an entirely new printer model. So if we point out a deficiency in a particular printer brand, the model you may buy may not exhibit this headache, or your kind of printing may not trigger the problem. Or you may find a work-around.

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.

So if we inspect a printer in a printshop (a site-visit case study), and that owner/operator is content with their printer and we mention this; don't expect that you will automatically get the same results in your own printshop.

In some cases a product may work better on a Macintosh than on a PC. RIP 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.

And if a printer, RIP, media, or ink does not function, return it with no ands, ifs or buts. Your best defense is to show an advertising claim that the printer simply can't achieve. Such advertising claims are in violation of federal regulations, and the printer companies know they are liable for misleading the public.

But before you make a federal case, just be sure that many of the issues are not user error or unfamiliarity. It may be that training or an additional accessory can make the printer do what you need it to accomplish. Of course if the printer ads did not warn you that you had to purchase the additional pricey accessory, that is a whole other issue. Our reviews do not cover accessories since they are endless, as is the range of training, or lack thereof, among users.

The major causes of printer breakdown and failure is lack of maintenance, poor maintenance, spotty maintenance, or trying to jerry-rig some part of the printer. The equally common cause of printer breakdown is improper use, generally due from lack of training or experience. Another factor is whether you utilize your printer all day every day. Most solvent and UV printers work best if used frequently. If you are not going to use your printer for two or three days, you have to put flush into the system and prepare it for hibernation (even if for only four or five days). Then you have to flush the ink system all over again.

Also realize that the surface of inkjet prints are fragile and generally require lamination to survive much usage. Lamination comes in many kinds, and it is worth finding a reliable lamination company and receiving training on their products.

Also realize that no hybrid or combo UV printer can feed all kinds of rigid materials precisely. Some materials feed well; others feed poorly; others will skew.

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.

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 trade shows….but don't use only the booth…ask questions 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

Fortunately the university covers some of the operating costs of FLAAR on their campus. Thus we do not really have much incentive to pocket hush money from producers of lousy products. We feel that the pros and cons of each product speak more than adequately for themselves. Just position the ad claims on the left: put the actual performance results on the right. The unscrupulous hype is fairly evident rather quickly.

With 12 employees the funding has to come from somewhere, so although the universities cover the core expenses, we do welcome project sponsorship, research grants, contributions that facilitate our educational programs, scholarships for co-op interns and graduate students, and comparable project-oriented funding from manufacturers. The benefit for the end-user is a principle called academic freedom, in this case,

- the freedom of a professor or student to speak out relative to the pros and cons of any equipment brought to them to benchmark.

- The freedom to design the research project without outside meddling from the manufacturer.

Fortunately, our budget is lean and cost effective as you would expect for a non-profit research institute. As long as we are not desperate for money we can avoid the temptation to accept payment for reprinting corporate PR hype. So the funding is used for practical research. We do not accept (nor believe) and certainly do not regurgitate corporate PR. For example, how many manufacturer's PR photos of their products have you seen in our reports or on our web sites?

Besides, it does not take any money to see which printers and RIPs function as advertised and which don't. We saw one hyped printer grind to a halt, malfunction, or otherwise publicly display its incapabilities at several trade shows in a row. At each of those same trade shows another brand had over 30 of their printers in booths in virtually every hall, each one producing museum quality exhibits. Not our fault when we report what we see over and over and over

again. One of our readers wrote us recently, “Nicholas, last month you recommended the … as one of several possible printers for our needs; we bought this. It was the best capital expenditure we have made in the last several years. Just wanted to tell you how much we appreciate your evaluations….”

FLAAR is a non-profit educational and research organization dedicated for over 36 years to professional photography in the arts, tropical flora and fauna, architectural history, and landscape panorama photography.

Our digital imaging phase is a result of substantial funding in 1996 from the Japanese Ministry of Public Education for a study of scanning and digital image storage options. This grant was via Japan’s National Museum of Ethnology, Osaka, Japan. That same year FLAAR also received a grant of $100,000 from an American foundation to do a feasibility study of digital imaging in general and the scanning of photographic archives in particular.

The FLAAR web sites began initially as the report on the results of these studies of scanners. Once we had the digital images we began to experiment with digital printers. People began to comment that our reports were unique and very helpful. So by 1999 we had entire sections on large format printers.

FLAAR has existed since 1969, long before inkjet printers existed. Indeed we were writing about digital imaging before HP even had a color inkjet system available. In 2000 FLAAR received an educational grant from Hewlett-Packard large format division, Barcelona, Spain, for training, for equipment, and to improve the design and navigation on the main web sites of the FLAAR Network. This grant ran its natural course, and like all grants, reached its finishing point, in this case late 2005.

In some cases the sponsorship process begins when we hear end-users talking about a product they have found to be better than other brands. We keep our ears open, and when we spot an especially good product, this is the company we seek sponsorship from. It would not be wise of us to seek sponsorship from a company with a sub-standard or otherwise potentially defective printer. So we usually know which printers are considered by end-users to be among the better brands before we seek sponsorship. After all, out of the by now one million readers, we have heard plenty about every single printer out there.

We thank MacDermid ColorSpan (now part of HP), Hewlett-Packard, Parrot Digigraphic, Color DNA, Canon, Gandinnovations, and other companies for providing funding for technology training for the FLAAR staff and our colleagues at Bowling Green State University and for funds to allow us to attend all major international trade shows, which are ideal locations for us to gather information. We thank Drytac, Sun LLC, Bordeaux Digital PrintInk, Mutoh Europe, NUR (now part of HP), IP&I, Dilli, Yuhan-Kimberly, VUTEk and Zund for providing funds so that we can make more of our publications free to end-users. During 2000-2001 we had grants to cover all the costs of our publications, and all FLAAR Reports were free in those early years. As that early grant naturally expired after a few years, we had to begin charging for some of our reports to cover costs. Currently our reports on lamination tips are sponsored by Drytac and our publications on eco-solvent ink printers are sponsored by Mutoh Europe. Now (in 2007), we are seeking corporate sponsorship so we can gradually return to making at least 20% of our publications free to our readers.

It has been helpful when companies make it possible for us to fly to their headquarters so we can inspect their manufacturing facilities, demo rooms, and especially when the companies make their research, engineering and ink chemistry staff available for discussions. When I received my education at Harvard I was taught to have a desire to learn new things. This has guided my entire life and is what led me into wide-format digital imaging technology: it is constantly getting better and there is a lot to learn every month. Thus I actively seek access to improving my understanding of wide format printer technology so that we can better provide information to the approximately quarter-million+ readers of our solvent and UV printer web site (www.large-format printers.org) and the over 350,000+ who read either our wide-format-printers.org site or our roughly half million combined who read our digital-photography.org and www.FineArtGicleePrinters.org sites.

ColorSpan, Grapo, IP&I, Mutoh, Dilli, GCC, NUR, Sun, Teckwin, VUTEk, Xerox, Yuhan-Kimberly, Zund have each brought FLAAR staff to their headquarters and printer factories. Bordeaux and Sunflower ink have brought us to inspect their ink manufacturing facilities and demo rooms. We have visited the world headquarters and demo rooms of HP in Barcelona and received informative and helpful technology briefings. We are under NDA as to the subjects

discussed but it is important that we be open where we have visited. Mimaki Europe has had FLAAR as their guest in Europe to introduce their flatbed UV printer, as have other UV-curable manufacturers, again, under NDA as to the details since often we are present at meetings where unreleased products are discussed. Xaar has hosted an informative visit to their world headquarters in the UK. You don't get this level of access from a trade magazine writer, and I can assure you, we are provided much more detailed information and documentation in our visits than would be provided to a magazine author or editor. Companies have learned that it's a lot better to let us know up front and in advance the issues and glitches with their printers, since they now know we will find out sooner or later on our own.

They actually tell us they realize we will find out on our own anyway.

Contributions, grant, sponsorships, and project funds from these companies are also used to improve the design and appearance of the web sites of the FLAAR Information Network. We thank Canon, ColorSpan, HP, ITNH, and Mimaki for providing wide format printers, inks, and media to the universities where FLAAR does research on wide format digital imaging. We thank Epson America for providing an Epson 7500 printer many years ago, and Parrot Digigraphic for providing three different models of Epson inkjet printers to our facilities on loan at BGSU (5500, 7600, 7800). We thank Mimaki USA for providing a JV4 and then a Mimaki TX-1600s textile printer and Improved Technologies (ITNH) providing their Ixia model of the Iris 3047 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, Canon, ColorGate, ColorSpan, ErgoSoft, HP, PerfectProof, PosterJet, Onyx, Ilford, CSE ColorBurst, 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 thank Betterlight, Calumet Photographic, Global Graphics, Westcott, Global Imaging Inc. Phase One, and Bogen Imaging for helping to equip our archaeological photo studios at the university and its archaeology museum in Guatemala. Heidelberg and Cruse, both in Germany, have kindly provided scanners for our staff to evaluate.

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. 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.

Sometimes we hear horror stories about a printer. The only way we can tell whether this is the fault of the printer design, or lack of training of the operator, is to have the printer ourselves in-house. Of course some printer manufacturers don't understand the reasons we need to have each make and model; they are used to loaning their demo units for a week or so. That is obviously inadequate for a serious review.

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 (HP Color Pro GA), 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 brand or printer at both locations: 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. Same with RIPs, we have consistent statements of people using one RIP, and only realizing how weak it was when they tried another brand which they found substantially better. Thus we note that companies which experiment with more than one brand of product tend to realize more quickly which brand is best. This is where FLAAR is in an ideal situation: we have nine RIPs and 25 printers. Hence it is logical that we have figured out which are best for our situation.

Grant funding, sponsorship, 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 year. 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.

Contributions, grants, sponsorships, and funding for surveys, 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 trade shows 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 trade show. 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 deserve to have access to competing information. Competition is the cornerstone of American individualism and technological advancement.

FLAAR also covers its costs of maintaining the immense system of 8 web sites in three languages and its 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. It is especially useful to all concerned when manufacturers learn of trends (what applications are popular and for what reasons). For example, manufacturers need to know whether to continue designing software for Mac users, or concentrate software for PC users. So the survey form that you fill out is helpful to gather statistics. You benefit from this in two ways: first, you get the FLAAR reports in exchange for your survey form. Second, your comments bring (hopefully) change and improvement in the next generation of printers. When we do survey statistics, then the names, addresses, and telephone numbers are removed completely. A survey wants only aggregate numbers, not individuals. However, if you ask about a specific brand of printer, and do not opt out, we forward your request to a pertinent sponsor so you can obtain follow-up from that brand, since we ourselves do not have enough personnel to respond to each reader by telephone. But we do not provide your personal information to outsiders and our survey form has an opt out check-off box which we honor.

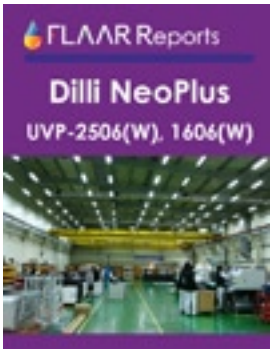
FLAAR also serves as consultants to Fortune 500 companies as well as smaller companies and individuals who seek help on which printers to consider when they need digital imaging hardware and software.

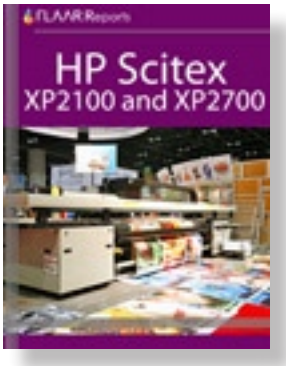
A modest portion of our income comes from our readers who purchase the FLAAR series. All income helps continue our tradition of independent evaluations and reviews of inkjet printers, RIPs, media, and inks.

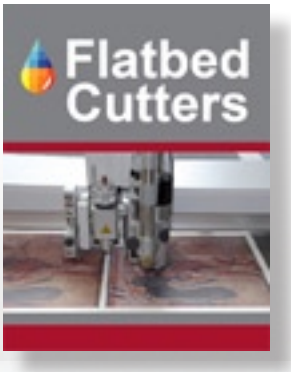
Free Sample Publications

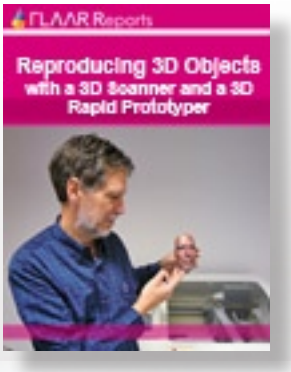
FLAAR Reports

You can find these and more reports at: www.wide-format-printers.NET









These

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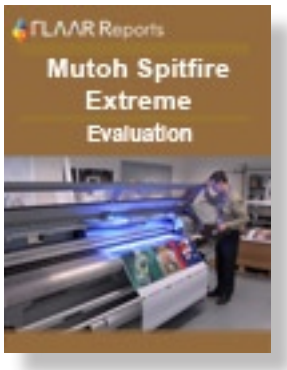

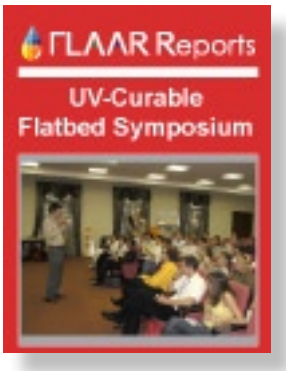

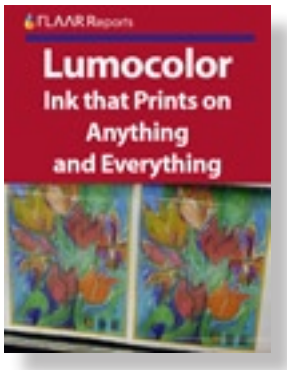

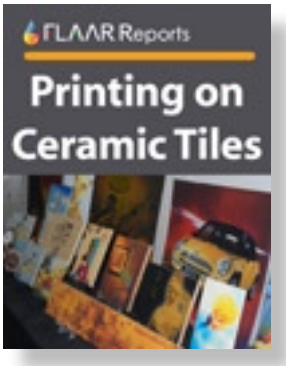

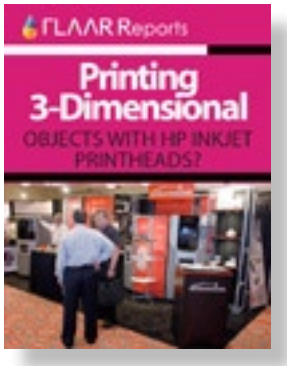

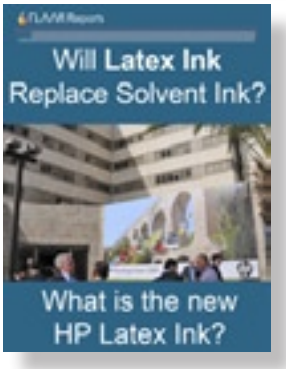

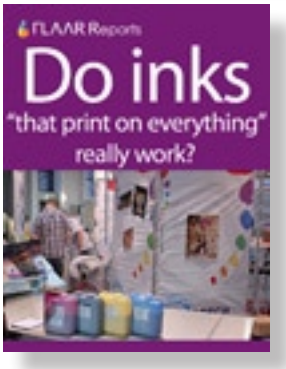

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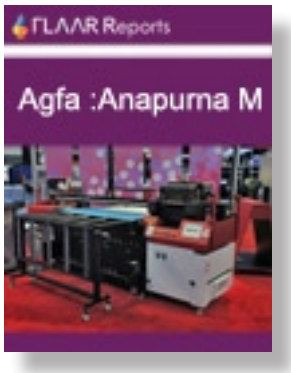

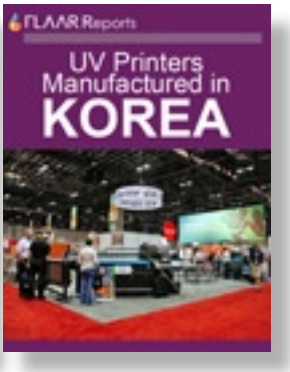

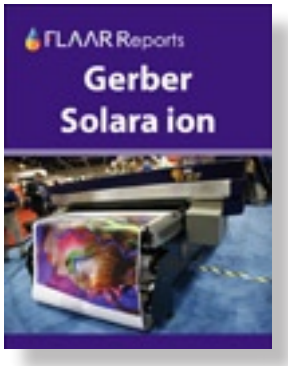

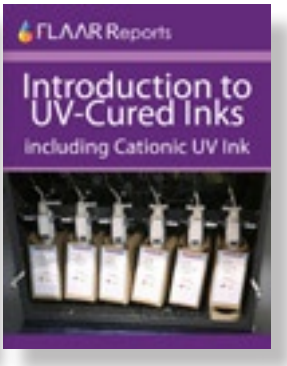

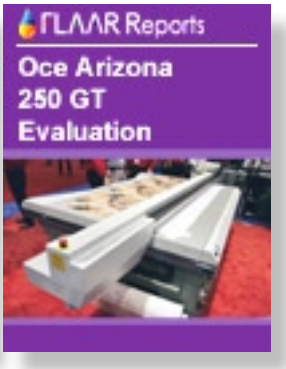

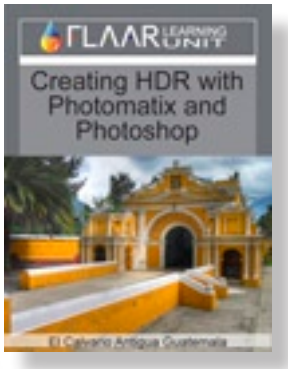

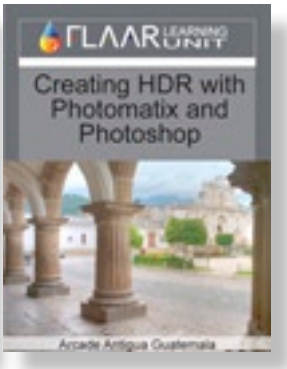

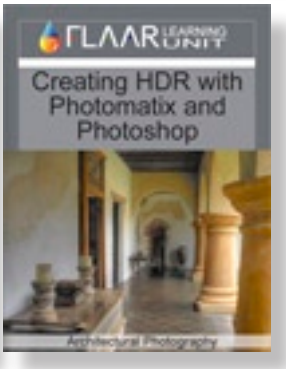

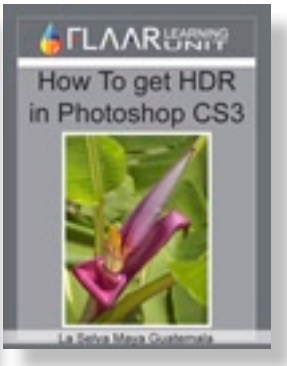

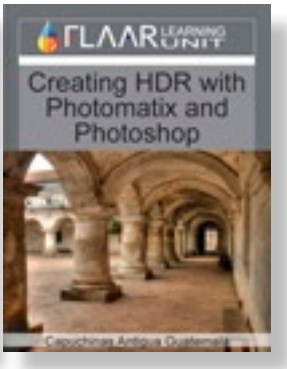

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