

Learning about UV printers by visiting the factories

**Dr. Nicholas Hellmuth
President, FLAAR**

**Director
Large Format Digital Imaging Division
Bowling Green State University
Bowling Green OH 43403-0156**

Introduction

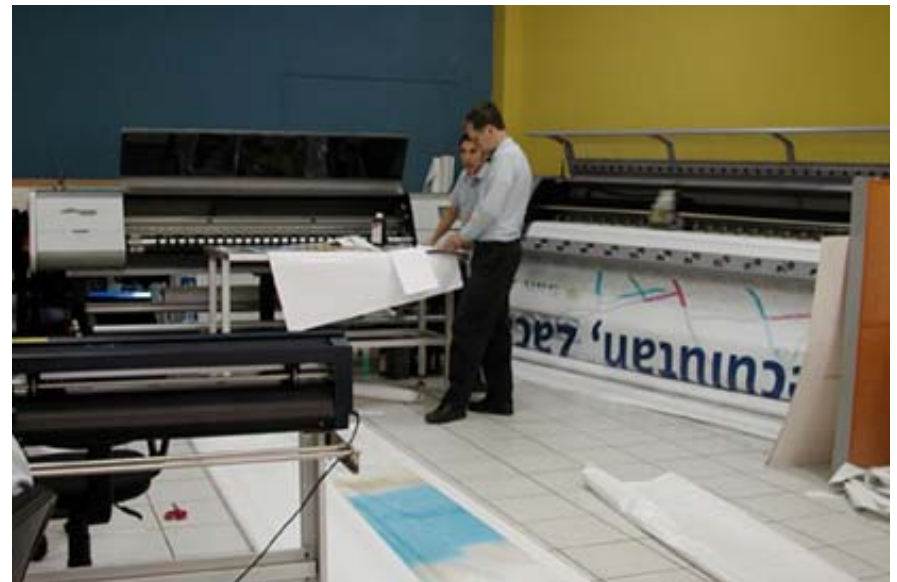


The advantage of visiting a trade show such as Graph Expo '07 is that you can see diverse brands and models of UV printers all in one place.

But after you have made your short-list of UV printers, it is a good idea to undertake site-visits and factory/demo room visits.

We define a site-visit as a trip to a screen printing company, photo lab, franchise sign shop, or other digital printing company that already has the precise printer that you wish to consider.

This presentation for Graph Expo '07 is an introduction to what it's like to visit the company headquarters, main demo rooms, and associated actual factories of where the UV flatbed printers are manufactured.



A demo room is usually either at the manufacturer's factory, or at their main distribution facility in the US.

Many regional resellers also have demo rooms, but this discussion will primarily be on demo rooms that are associated with the factories.

The advantage of the company headquarters is that you can inspect the printer inside-out, and they usually have all the different models.

Plus you can meet with, and speak with, the engineers, ink chemists, and managers who have designed and created these new technologies.

Admittedly it's easier for a research professor to have this level of access, but we are making a list of those factory/demo rooms that welcome visits



If a printer is shoddy, poorly constructed, uses cheap low-bid parts, then the manufacturer may prefer that you don't come anywhere near their factory or demo room.

The purpose of this lecture is to share our experiences with what it's like to be inside the manufacturing and design facilities.

After all, if you are about to spend between \$75,000 and \$750,000, or more, you might wish to invest in seeing where your new machine comes from.

If your staff does not have time, and if the travel costs are high, then you can get the information from FLAAR at educational venues such as this lecture series organized by Sonia O'Donnell at the Wide Format Pavilion of Graph Expo trade show in Chicago.



This presentation is for

- Screen printers (management and printer operators)
- Photo labs that want to offer more options beyond an Epson
- Sign shops, including franchise shops and family businesses
- Reprographic shops that want to continue to transition into digital
- Individuals within the industry
- Students as well as faculty associated with print management programs



Factory Visit History

In order to learn about the company behind the products, starting in 2006 FLAAR initiated a long-range program to visit as many UV printer companies as possible: meaning the actual factories and headquarters of the manufacturers. So far we have visited :

- ColorSpan,
 - Gandinnoventions,
 - GRAPO,
 - Inca,
 - IP&I
 - NUR,
 - Sun FastJet (next to Inca),
 - Sun LLC (in Russia),
 - Teckwin
 - VUTEK
- and others.

Not only do these visits allow us to learn about how well a UV printer is manufactured, but we have an opportunity to see how much corporate substance stands behind a given printer brand.

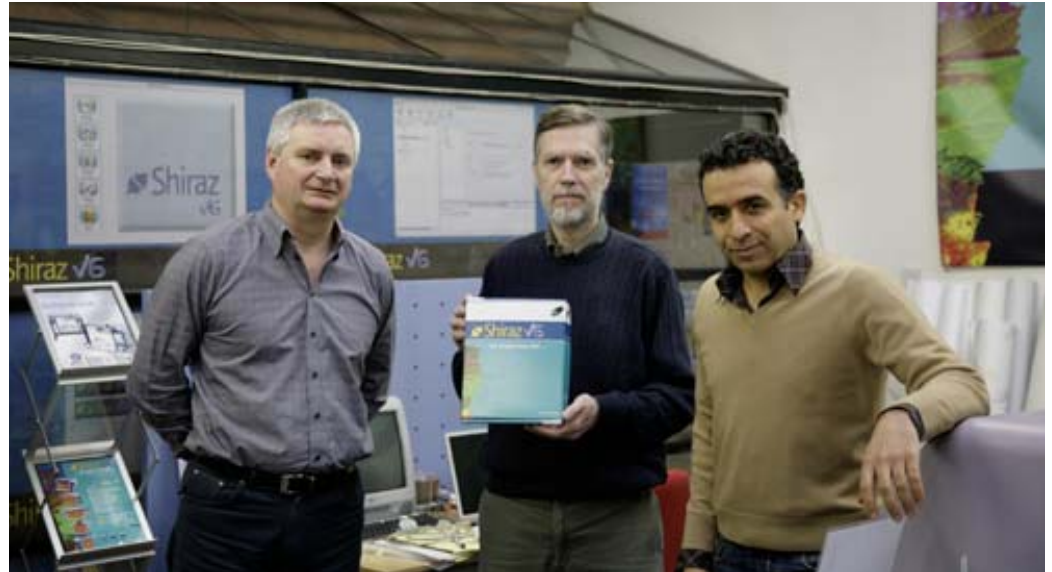


We also are doing this kind of familiarization visits for RIP companies (have visited AIT Shiraz, PerfectPrint (ProofMaster), and Wasatch. FLAAR visited BEST twice in Krefeld before they were purchased by EFI.

We do the same for medium format camera manufactures: so far have visited Phase One and ColorCrisp (since absorbed by competitors) in Denmark, MegaVision in California and Leaf headquarters in Israel.

In most instances the manufacturer covers the airfare and hotel since our university does not pay a professor's travel expenses nowadays, especially since we have to travel every single month all year long, even during Christmas and summer vacations.

At present I have inspected UV printer manufacturers in every major world area other than Japan.



UV Printer Manufacturers in Canada

Oce and Gandinnovations both have their manufacturing plants in Canada (Oce is in Vancouver, Gandinnovations is in Toronto).

Gandinnovations Factory, Toronto, Canada

I classify them as the fastest growing UV printer company: other companies are larger because they have been around longer. But Gandinnovations sells more UV-cured printers than Agfa, DuPont, HP-Scitex, Mimaki and Neolt put together. For 2007 and definitely by 2008, Gandinnovations will reach par with VUTEk and could potentially gradually outsell them.

When you visit the Gandy company headquarters in Toronto you can see why they are so successful. Everyone here is excited about their constantly developing new technologies, new products, new ink chemistries.



I guess no printer is perfect, but it would be a challenge to find something about these printers that fails to function.

Since each machine is modular, improvements can easily be added. You are not stuck having to buy an entirely new and different model.

With other printer brands, once they find out what is iffy on a current model, they have to completely redesign the entire system to overcome the issues. So people get stuck with an old model with minimal resale value. And only people that buy the new and different model get the improvements.

With L&P Virtu and with Gandinnovations Jeti printers, the new features can usually be added to older current models.

Chinese printer models get confusing because they change them too often: this makes finding spare parts unrealistic even a year afterwards.



UV Printer Manufacturers in the US

MacDermid ColorSpan, VUTEk, ISI, and other companies are still manufacturing in the US.

MacDermid ColorSpan UV Printers: 9840uv

I have been to the factory of MacDermid three times. The second time was to inspect the 9840uv a week before it was introduced to the public, at FESPA Digital in Amsterdam.

My most recent visit was to inspect an early pre-production beta version of the new 5400uv series three months before it was announced to the public. I was under so many layers of Non-Disclosure Agreement that I could not even tell my own staff what I had seen. The NDA was released on Feb 12th, and our FLAAR Reports was on www.wide-format-printers.net by late afternoon. Our page with two photos and first comments has been on www.large-format-printers.org since the morning of Feb. 12th.



The first visit was many years ago to get training on the DisplayMaker water-based printers.

We received two of these for evaluation at our university.

Of course today (2007) ColorSpan is concentrating on UV printers exclusively. They no longer manufacture water-based printers.

However tech support, and parts and ink, are still available for all their earlier giclee printers, water-based sign printers, and solvent machines.

I recently visited a company that still had ColorSpan printers dating back to the mid-1990's. They were functioning just fine.



MacDermid ColorSpan UV Printers: 5440uv series

We at FLAAR have also visited local ColorSpan dealers, such as Queen City Reprographics (Resource Imaging Supply, tel 800 INK-JETT) in Cincinnati.

If your local dealer or distributor has a fully-equipped demo room in your home town, this may be more convenient than traveling to Minneapolis.

Here is a sample UV workshop, organized by this regional dealer in Cincinnati. The lectures were by FLAAR.



VUTEk factory in New Hampshire

I have visited the EFI VUTEk factory three times this year.

My most recent visit was to inspect and do test printing of their 3360 solvent ink printer, an innovative model that allows you to switch to dye sub inks in about 10 minutes (or less actually).

The VUTEk factory was very busy since all their printers are popular, both the model 3360 Fusion (dye sub to solvent changeover model) and their UV machines.



VUTEk PressVu 200/600 & VUTEk QS2000, QS3200

At most factories, such as VUTEk and Zund, the metal structure of the printer is already made elsewhere.

So the printer assembly factories don't have to be very large.



Combo style as compared with hybrid style

Currently there are four major types of UV-curable wide-format inkjet printers:

- Hybrid (with pinch rollers over grit rollers, and a flat non-moving platen)
- Combo (with no grit rollers; no fixed metal platen; instead they use a conveyor belt)
- Dedicated roll-fed
- Dedicated flatbed



Unusual systems also exist, such as roll-to-sheet, but they are rare.

Presently VUTEk makes only combo style UV printers (with a conveyor belt) but since the market is evolving there are increased demands for dedicated roll-fed and dedicated flatbed models.

In the VUTEk factory I had the opportunity to see an actual transport belt.

As a professor of inkjet printing it helps to see these features “inside out” so to speak. Thus I definitely appreciate the access that VUTEk has made available.

In the IP&I factory in Korea it was possible to get inside their combo style printer and see the unique way that they drive and “steer” their transport belt.



UV Manufacturers in the UK:

Inca Digital is the best known manufacturer in the UK. The same factory also makes the FastJet for Sun Chemical.

Page-Array UV Printer Factory Visit

By late March added this new UV printer factory visit. This was quite an experience, especially because this is a million-dollar UV printer with a page-array of printheads.

“Page-array” means that the printheads don’t move; there are so many of them that they go across the entire width that the printer can do. Page-array is the new technology.

Within two years you will find it in more desktop office printers, and \$30,000 60” photo-quality printers. You can already get inkjet presses that use page-array technology.

There is now a separate report on this printer after our visit.



UV Manufacturers in Israel: NUR

Scitex Vision (HP Scitex), Matan, and NUR are three international manufacturers of UV-cured printers whose main offices are in Israel.

NUR was the first company to develop and manufacture a UV-cured printer in dedicated roll-to-roll format (introduced at DRUPA '04).

Their Expedio series now comes in two sizes (3.2 meters and 5 meters) and in several iterations (Expedio Inspiration and Expedio Revolution).

The dedicated flatbed shown here, the Tempo Q, also has a roll-fed option (and the dedicated roll-fed printer has a dedicated flatbed option).



The visit to NUR headquarters was an eye opener. Our observations will be in several new FLAAR Reports that should be available later this summer.

NUR Macroprinters was a leader in grand format solvent printers for years. Their BlueBoard and current Fresco III solvent printers are known for holding up for years of productive output.

NUR has now for several years gone full force into UV-curable printing and as mentioned was the first company to produce a production-class roll-to-roll UV printer.

Since their headquarters is far away not many people are familiar with the company other than their nice trade show booths. So when an opportunity was available, I went to Israel to learn about NUR, and their UV-curable inkjet printing hardware, software, and ink chemistry first hand. With my background in archaeology and history, visiting Israel was also of personal interest to me.



Here are some initial snapshots of the NUR factory. It is clean, well-organized, and clearly looks prosperous. Their main discussion was that they have more orders for new Tempo flatbeds and Expedio roll-to-roll than they can produce.

It is not appropriate to reveal or publish on their proprietary technology and UV ink chemistry, but one thing I can say clearly: my impression of NUR, as a company and as a family of products, was dramatically changed by being here an entire day, indeed far into the evening at a follow-up business dinner that night overlooking the Mediterranean Sea.

I learned a lot about their UV inks and why they don't use UV inks from Sun any more (Sun are not bad inks, but the rest of the story of why NUR's new inks are better is best left under NDA).



UV Printer Manufacturers in Europe

Neolt and Durst are both Italian companies, but Durst does most of their manufacturing in adjacent southern Austria. I have not yet been to these factories but have spent two days at Zund's factory and two days at GRAPO's factory.



Swiss Manufacturing Plants: Zünd

There are three manufacturers of UV printers here: Zünd, Sprühl, and Lüscher. On this trip we visited only Zünd, since we were interested in their model 250-combi UV-cured printer.

The first thing we learned at the Zünd factory is that you see so much more at a company's headquarters than you will ever experience at any trade show.

Indeed the next week at FESPA, I took several printshop owners to the Zünd booth, and was able to explain features of this printer to them that they had not noticed before (even though they had seen the printer at trade shows elsewhere).

The two days in the Zünd factory and in the demo room was a worthwhile investment in time, effort, and funding.



European factory visit: GRAPO

GRAPO makes two printer platforms:

- combo (with conveyor belt)
- and dedicated flatbed.

One thing you learn when you do a site-visit case study is that these are just as important as a factory visit.



The GRAPO Octopus is a good example of the problems inherent in trying to move materials of all sizes and weights and surface texture on a transport belt.

You quickly find that most transport belts cause skew of some materials.

Chinese Factory Visits

While visiting the Shanghai summer 2007 sign printing trade show it was possible to visit three wide-format factories:

- Chitang (makes printers sold under brand names Myjet and Kanger)
- Hangzhou Honghua (makes printers sold under Infiniti, Fina, Challenger, and house-brand Aprint)
- Teckwin (makes printers for their own Teckwin brand name)



Chinese UV-Manufacturer: Teckwin



Chinese UV-Manufacturer Hangzhou Honghua: “Infiniti”



The brand name of Infiniti is changing in most countries outside of China:
Augend Technology in Europe, Fina in the US, and Aprint elsewhere.

The name Infiniti will continue, but only in areas controlled directly by that company.

Assembling or Retrofitting Chinese-made Printers: Raster Printers

FLAAR spent one week in the Raster Printers headquarters in summer 2005 and made an additional visit in 2006.

Although these printers are manufactured in China (by the same company that makes Flora and DuPont Cromaprint 22uv) they are remanufactured in California.

The Chinese printer comes in, a dozen parts are removed and replaced with sturdier parts made in Europe, the US, or Japan. So we will consider this as a factory visit.

If you spend an entire week inside the headquarters building of a printer company you can't help but learn a lot about them. And I mean more than just the machines; you learn about the people, whether they are capable or not.

It turns out that most of the managers and owners of Raster Printers company each have more than 12 years experience in wide-format inkjet printers.

Although this by itself may not make a printer's mechanical parts and software work flawlessly, it does point in the right direction. The model 720UVX and Daytona have become progressively better as everyone involved has gained more experience in UV printers.



The next generation Raster Printers machine is being manufactured entirely in the US, and we anticipate being invited to see this other factory in the future (as soon as they are ramped up to produce this new model, a 4x5-foot dedicated flatbed, the Daytona T600UV).

The current Chinese-made UV printer is a hybrid design (platen, pinch rollers working together with grit rollers).



Assembling or Retrofitting Chinese-made Printers: Sun LLC, Russia

So far Sun LLC is the most successful of the companies that retrofit Chinese frames.

The reason for their success is that they have

- their own ink factory,
- their own ink chemists,
- their own engineers.

Overall Sun LLC has over 200 employees (so probably more than most printer manufacturers in the US).



Visiting Korea UV printer Factories

Presently there are three well-known Korean manufacturers of UV-curable printers:

- Dilli (a company related to D.G.I.)
- IP&I
- Keundo

Plus several other Korean manufacturers who do not yet exhibit in trade shows in the US.

So far it has been possible to visit IP&I: two days in their factory and one day visiting printshops that used IP&I Cube 260uv printers.

IP&I personnel have previous experience in UV-curing inkjet from Hypernics, a company that produced the Azon UV printers in Eastern Europe and the Azero Creon UV printers in the US circa 2003. Hypernics went out of business in 2004 and IP&I evolved at approximately the same time.

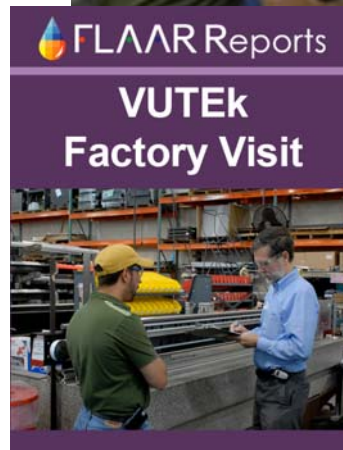
IP&I currently manufacture two series: Cube 260 and Cube 1606.



Other UV Printer Factory Visits

A factory visit makes it possible for FLAAR to accomplish the following:

- We can more easily write a FLAAR Reports on the printer, because we can learn more about its capabilities in the peace and quiet of a factory visit.
- It is possible to learn more about what makes a particular printer good when we can see inside. At a trade show you can't really see what makes a printer tick.
- A sloppy factory, sloppy welds, cheap components are easy to spot. But if the assembly is professional, you see high-tech at European or good American quality (which is what we saw at Grapo, Gandinnovations, NUR, VUTEK, and MacDermid ColorSpan).

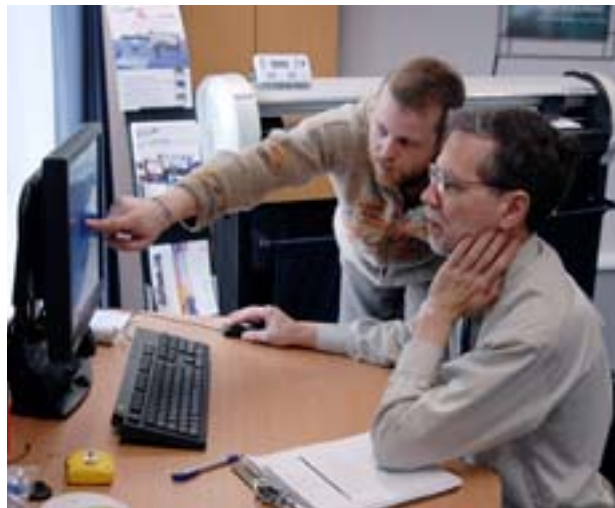


A visit is a minimum of an entire day (not inside the factory, whew, no, most of the time is needed in the demo room). But we prefer two days+ (one day general familiarization, one day for each individual printer in the demo room).

Mutoh Europe requested an entire week because there we undertook a planned project of evaluation and testing. Four FLAAR publications resulted plus mention in several trade magazines.

The factory visits that have taken place since this was written will be added to separate additional reports.

If requested, we sign a Non-Disclosure Agreement (NDA) prior to entering the factory, so we can't report the intimate details of their 2008 generation of new technology, but we do have permission to document the features of their current printers in a way that no trade magazine or anyone else has made the effort to do.



Mutoh-Europe, factory & demo rooms .

We are proud that FLAAR uses initiative to get out and bring back documentation so that print shops can have realistic and factual information.

And the factory staff, headquarters staff generally are very pleasantly surprised how much they learn from FLAAR when we are at their factory.

That's why some visits are two or three days long or if only a day, then we get invited back year after year.

At a recent factory visit, I could not help but notice how many managers and business analysts from the company came to sit in on my PowerPoint presentation on the general state of the UV economy worldwide.



Final Observations

So I hope this PowerPoint presentation provides you with an idea of the effort that we make to bring world-class documentation to the FLAAR Reports.

There are so many pseudo-reviews, sham reviews, and PR releases masquerading as reviews, that we need to differentiate ourselves. Being a professor at a research institute rather than a PR agent helps.

We have found several trade magazines, such as SIP in Germany and Digital Graphics magazine in the US that also recognize that merely publishing corporate PR releases is not always a service to their readers. Both SIP and Digital Graphics magazine dare to publish their own opinion, even if this is not what advertisers want to hear, which is rare.

But as a research institute, we need to be consistently dedicated to using initiative to get out in the world and seek documentation that can assist our readers.