



What are your Options for Inkjet Printing on Table Tops?





Caption for cover page: Table top printed with UV curable printer.



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Introduction

FLAAR is in the process of undertaking research on all aspects of beneficial applications of wide format UV-curable inkjet flatbed printers. We are especially interested in the potential of UV-curable ink flatbed printers for architecture, interior decoration, and museum displays.

A wide variety of people from the inkjet printing industry visit the FLAAR offices. So I felt it would be appropriate if our modest meeting room could be decorated with inkjet materials. The floor, walls, and table top cry out for decoration.

Furniture in many offices, institutions and even homes is often decorated with plastic looking pseudo-mahogany patterns. If you have lived in Central America you are used to real mahogany, which is not at all the color imagined by furniture makers in the US or Europe. So rather than put up with the fake mahogany table tops in our university offices, I would like something more innovative.

As a non-profit research organization we don't have a huge budget for interior decoration so rather than having a custom-made table top, I decided just to print a thin material, put it on top of the present table, and cover it with table-glass to hold it down (and keep it from being scratched).

Another reason for printing on a thin material, and not directly on the table top itself, is that the best images are those printed onto white material. If the table top is wood, unless the wood is painted white, the dark grain of the wood will show through the thin layer of inkjet ink (see the FLAAR Reports on "Printing Directly on Wooden Doors").

So recently we scanned some autumn leaves on the Cruse scanner at high resolution. We obtained a file of about 290 MB. This provided a file large enough for a 71 inch table top. There was a pile of white styrene sheets next to the Durst Rho printer at SFC Graphics; it was the whitest and most smooth material within reach, so this is what we printed on.

Printing on photo paper with an HP, Mimaki, or Epson would have been an alternative, but this particular project was part of our UV-curable ink flatbed printer initiative, so we used styrene and UV-curable ink. I assume the ink is from Coates, since that was the ink partner that co-exhibited with Durst USA at SGIA 2004 trade show.



Here is the Durst Rho 160 UV-curable ink flatbed printer and the finished sheet of white material.

In the future we will have our designers select something more appropriate for a table-top, but at least the autumn leaves will be a conversation piece for sure.

We just finished buying the glass and the table is now finished.

Alternatives

How could we have printed on a table top otherwise? And achieved a brighter image?

- First, we could have tweaked the image, such as boosting the saturation.
- Second, we could have spray-treated the surface of the table top pure white and then run it through an Encad NovaJet 850.
- Third, we could have painted the entire surface of the table top white and run it through a UV-curable ink flatbed printer.
- Option four is printing on glossy paper or any other material and applying this material to the table top. This is one of the easier solutions so is what we started with.
- Fifth, run the table top directly through a flatbed solvent ink printer such as those manufactured by Vutek or Oce. These grand format printers can print on an entire table top, but at a high resolution than possible with UV-curable ink. It would probably be necessary to prime the surface of the table, and it would take a long time to dry (during which time it would outgas noxious solvents).
- Sixth, obtain a material whose surface is prepared for receiving dye sublimation heat transfer. In this technology you print onto transfer paper. You then take the paper and put it on top of the object you wish to transfer the design to. You use an iron or heat press to transfer the design from the paper to the substrate. The heat sublimates the ink into a gas which permeates the primer on the surface of the material. This would probably give you the brightest image of any process. However heat presses are expensive, and none that I am familiar with take large flat objects the size of a table top. So you would be limited to a thinner material to apply on top of the table top as a layer.



The advantage of printing on a thin white material is that it can easily be cut to size (easier than cutting a wooden table top).

But I was determined to print something I could use as a table top decoration and that is exactly what I did.

Several FLAAR Reports of various premium series cover the theory and technology involved in several of the other alternatives. You can find listings and previews of all FLAAR Reports on wide-format inkjet printers on www.wide-format-printers.NET.



Here is how we photographed the red leaves with the Cruse digital camera/reprographic scanner. You can obtain more information about the Cruse capabilities from the FLAAR Giclee Series (on www.wide-format-printers.net, in the link for giclee) or from www.cru.digital.com; contact is Mike Lind, malind@msn.com

What Options do We Recommend?

If you need to produce hundreds of these table tops, then consider Option One combined with a UV-curable ink flatbed printer. UV-curable ink printers have no solvent-ink odor, no solvent-ink environmental problems (VOC's), no solvent ink health considerations (inks with potentially carcinogenic chemicals), and thereby few of the solvent-ink legal restrictions.

Outgassing odor was an issue for about 10 days. Outgassing is something inherent in several kinds of inks. With UV-cured inks, when you set the machine for "gloss finish," the curing is not as fast. This gloss mode may cause more outgassing than regular fast-cure mode. But after these 10 days we did not find any odor that was noticeable.

We placed the table top under glass since people spilled coffee, tea, and Coca-Cola from time to time, or put printers or other sharp objects onto the table.

If you needed to produce thousands of such a concept, then screen printing would be the normal way. But screen printing is not continuous tone, has a noticeable printing (screen) pattern, and is not the "look" we sought. Besides, we are an institute devoted to research on wide format inkjet, not an institute devoted to screen printing.

Factors in UV-curable ink flatbed printers are odor (not as bad as solvent ink), high cost, matte appearance, and if you need white in your design you are limited to materials that are pure white by themselves or a printer (such as a Durst Rho or Mimaki) that can jet white ink.

If you are in a country with few restrictions, then a solvent-ink flatbed printer is a possibility. Downsides, other than health and environmental considerations, are that not many flatbed printers use solvent ink. UV-curable ink printers are easier to obtain and can print on more substrates. The advantage of solvent-ink is that the image will be much brighter than using matte UV-inks. If the solvent ink printer that you select is a Mimaki JV3, you can achieve dramatically better resolution, definition, and image quality than UV-curable ink technology (though UV-curable ink printers are catching up year by year).

If image quality, and color gamut are the main considerations, then dye sublimation will produce the most spectacular image quality. But you need to read the entire report on dye sublimation heat transfer to be aware of the full range of pros and cons of this technology.

There is a new dye sublimation process, developed in Japan, that we cover in the FLAAR Report on continuous tone imaging. But this is not a flatbed system and works only on about five kinds of media (backlit, photo glossy, etc). However the quality is the best of any technology; only the output of a LightJet would be better. But again, none of these printers can print directly on table-tops; you would have to print on photo paper and then apply this to the table top. But yes, these printers do handle photo paper the size of a table. And the quality would be significantly better than UV-cured ink.

In summary: FLAAR itself intends to explore all three technologies. Over the long run we would like to install more of our own table top designs in our offices.

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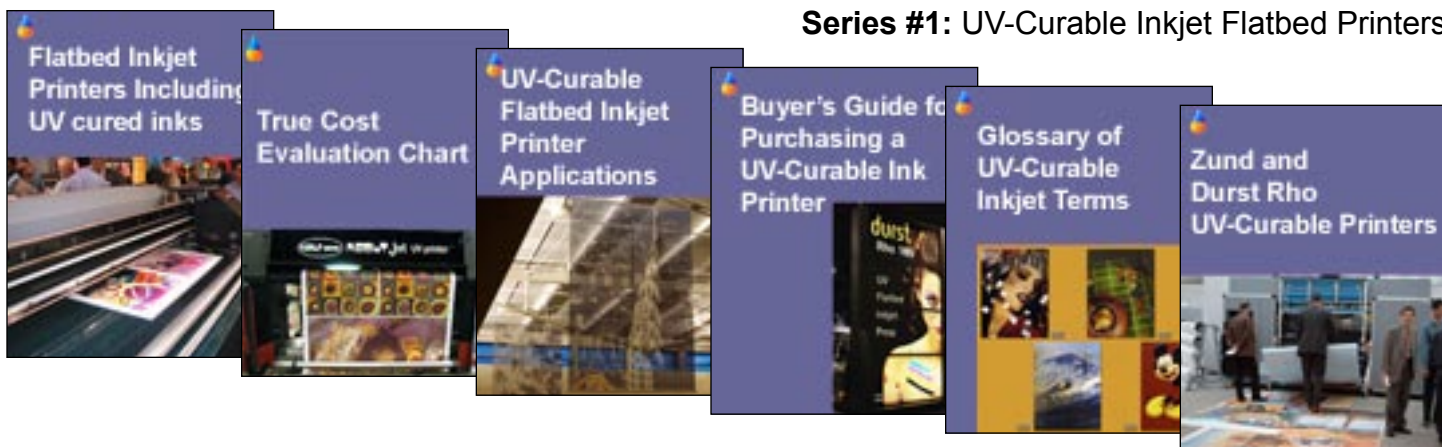


Laminating & Trimming

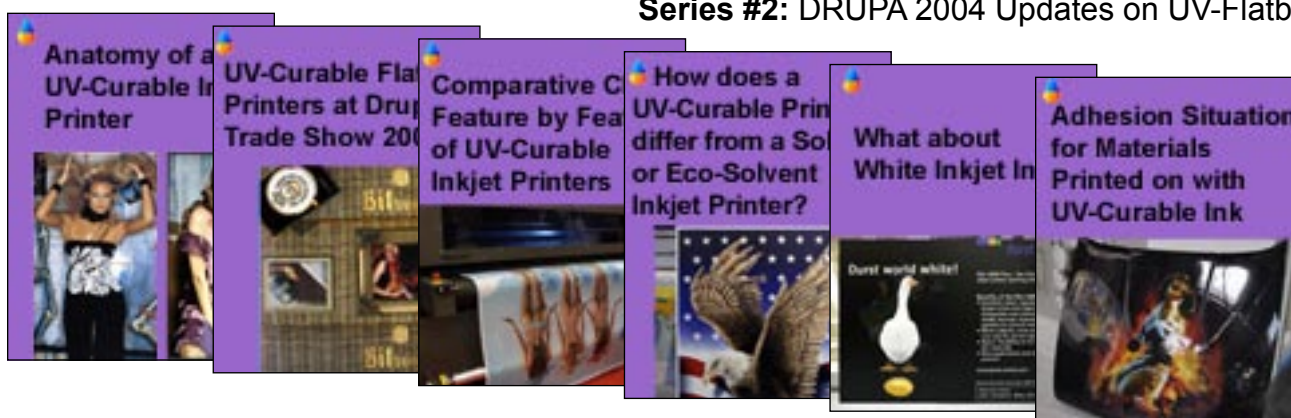
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FLAAR Reports of UV Curable Series

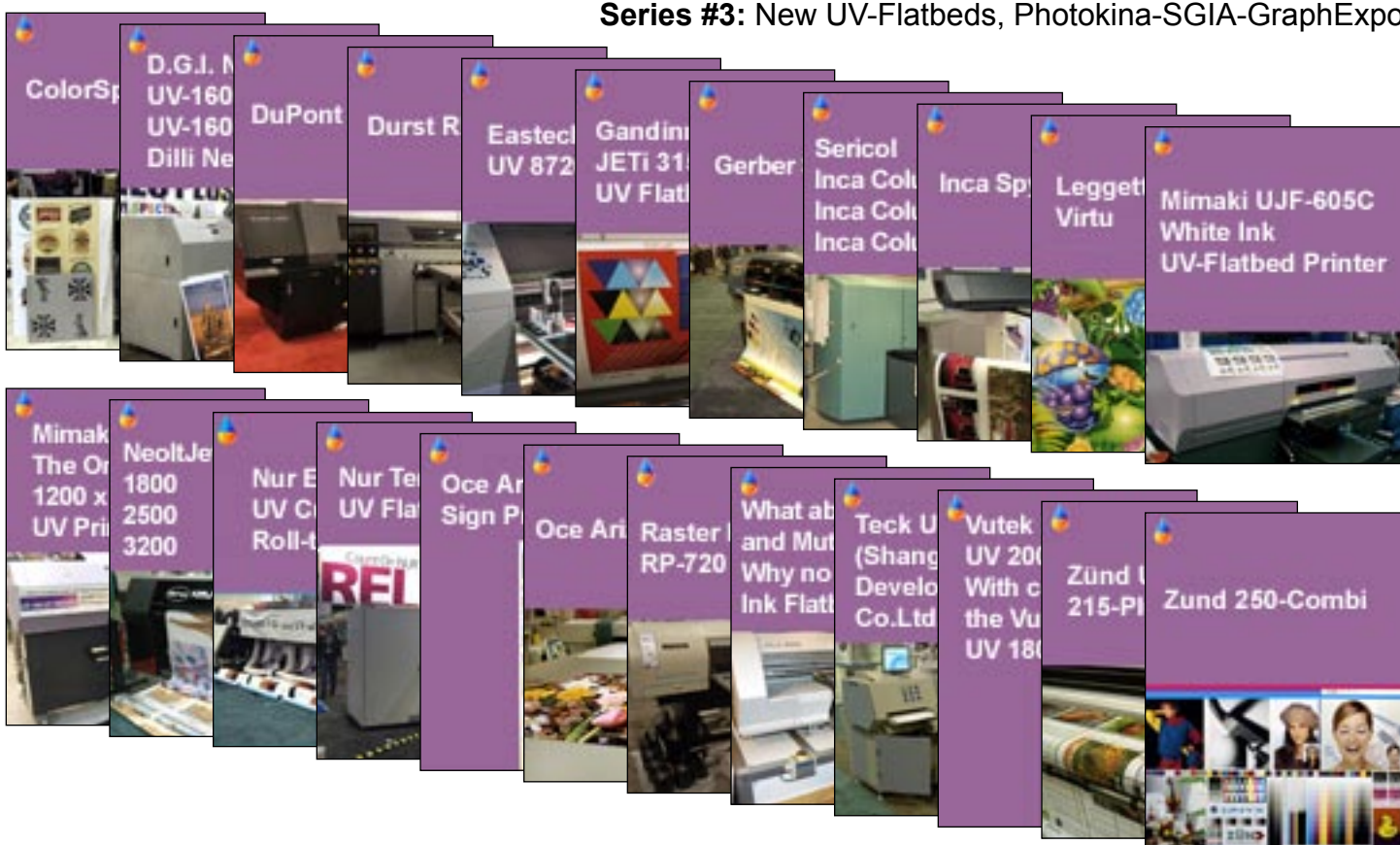
Series #1: UV-Curable Inkjet Flatbed Printers



Series #2: DRUPA 2004 Updates on UV-Flatbed Printers



Series #3: New UV-Flatbeds, Photokina-SGIA-GraphExpo



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FLAAR Reviews:
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Magazines



DP 201 : Taking Digital Photography to the Next Level

Digital Image Resolution



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Cameras to hold Medium Format Digital Backs



Recommended Equipment for Creating a Digital Studio



Lighting Modifiers for Portrait Photography



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Panoramic Photography for Digital Cameras



Digital Panoramic Cameras



Architectural Photography with Medium and Large Format Cameras



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Color Management for Digital Photography



Bit Depth and Dynamic Range



Workflow Summary for Medium and Large Format Digital Photography



Glossary of Digital Photography Terms



History of Panorama Photography: Circa 1840-1980



Photography of Art: Sculptures, Artifacts & other 3-Dimensional Works of Art



Taking Photographs with a Reprographic Copy Stand



History of Rollout Photography



Lighting for Product Photography



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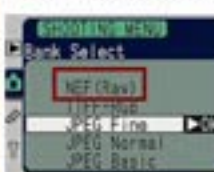
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