FLAAR Reports

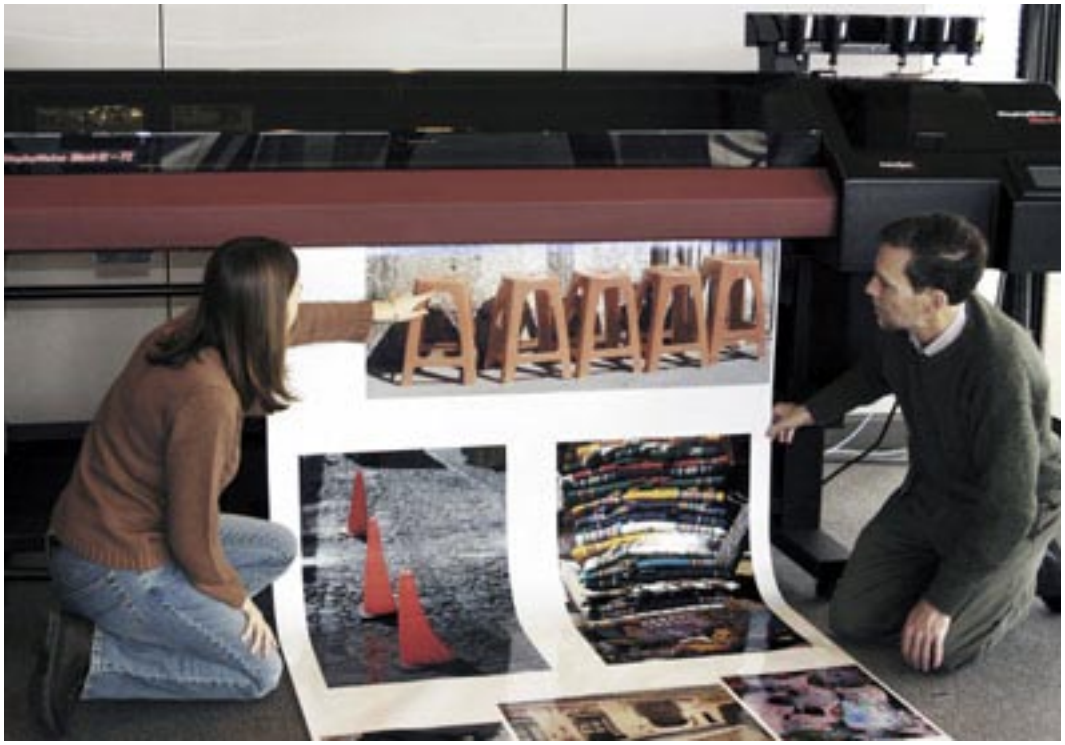
Nicholas Hellmuth

Updated JULY 2004

Previews of the Report Series

For
Photographers of all levels;
Photo Labs; Photo Studios; Enthusiasts; Pro-sumers; Pros

Wide Format Inkjet Printers for Exhibit-Quality Photos



FLAAR headquarters at BGSU facilities printing photo quality with ColorSpan Mach 12

This series is intended for commercial photographers, portrait photographs, nature photographers, and fine art photographers of all levels.

We include tips, help, and facts about which inkjet printer is good for product photography, advertising photography, architectural photography, and scientific photography.

Which wide format printer is a good choice when you need exhibit-quality photo-realistic prints?

There are two museums on our campus. FLAAR has organized different art exhibits of wide format prints for both museums. Which printers did we select? Which other printers turned out to be inappropriate (and why)?

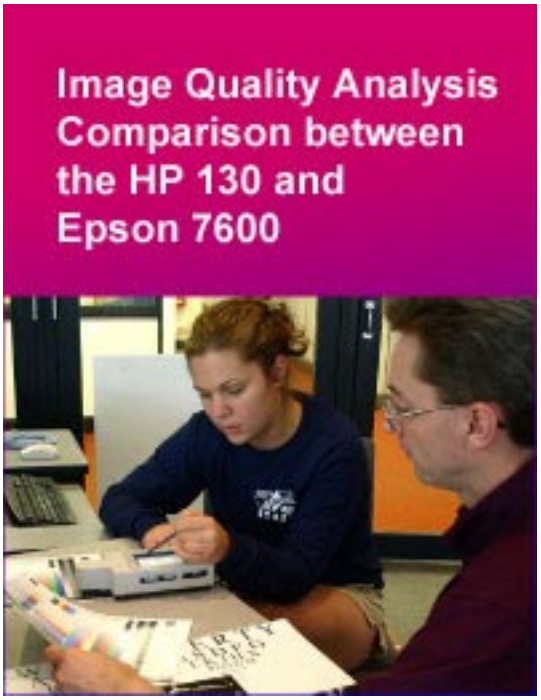
This report is completely different than the introductory report on fine art giclee printers (which is a comparative review of all printers). In distinction the present report shows an actual art exhibit of wide format inkjet prints and explains what printer accomplished this, why we selected that printer over others, and what the museum goers thought of the prints.

Contents

Abstract
Overview
Considerations
Conclusions
Learning from Experience
Summary
PostScript
Pps
Contact Information
Other venues for the FLAAR art exhibit
Acknowledgements

Real life jury, looking at every detail. If the printer is inadequate, the exhibit goers will reject the prints. Since it has 18 printers to choose from, which printer does Nicholas pick for museum exhibits of his photographic prints?

Image Quality Analysis: Comparison between the HP 130 and Epson 7600:



New, September 2004
This is the first report that we know of to analyze image quality in a neutral objective manner. The printer manufacturers want you to buy the printer with the biggest number of dpi. So we decided to look at the individual dots with a microscope. What we found was horrifying. I am not sure I would want 720, 1440, or 2880 of these splotchy dots to create my posters, POP, signage, graphic design, or graphic design.

If you are a commercial photographer, portrait photographer, fine art photographer, scientific photographer, or graphic designer, you might want to see what the university testing lab found out when they compared the HP 130nr and the Epson 7600 (an Epson 9600 and Epson 10600 would have been comparable). We at FLAAR were very surprised. We had no idea we could uncover this much information about image quality.

In short, it makes little difference if there is a longevity rating for 100 or 200 imaginary years if the image itself is poor quality. Neither you, nor your client, will be present to worry about what the photo looks like in 100 years. Your client wants the photo to look nice, now.

Contents

HP 30 and 130
First Results of Printing with the HP DesignJet 30
Dye Ink and Proofing
Fast Color Stability
Dye Ink and Photography
Color Management
Media Selection
RIP Solutions
Longevity
Gloss Differential
Continuous Tone
Comparative Facts
Thick and Rigid Material
Commentary
Acceptable Paper Sizes
Summary
Appendix A *Setup and Installation of the HP DesignJet 30*
Please Note
Citing and Crediting
Legal notice
Advisory
Factors influencing output
Acknowledgements

Which Large Format Inkjet Printers are optimal for Photo Realistic Quality Inkjet Printing on Canvas, Photo Glossy, Satin, Matte, and other diverse Inkjet Media.

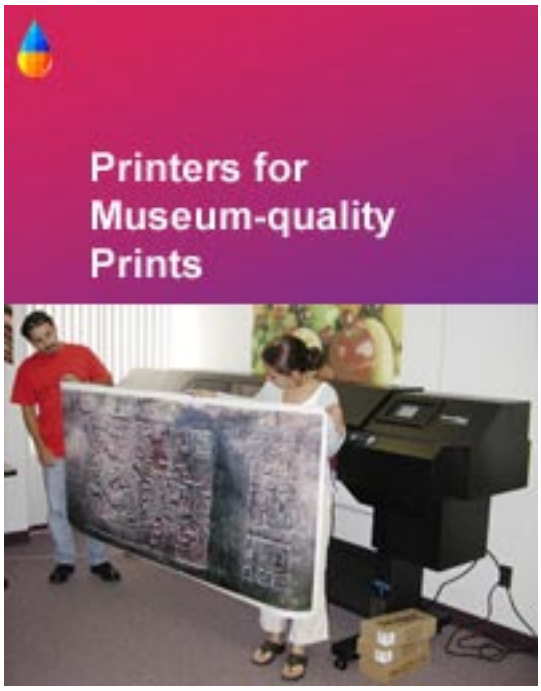
We have eighteen inkjet printers at two universities. The lab manager at each university can select any printer in the studio. No one bribes the lab manager to choose that specific printer. He simply selects the printer which produces exhibit-quality output quickly, efficiently, and at reasonable cost. Each lab manager has an Epson and an HP, right next to each other (actually we have three Epson printers at Bowling Green State University).

Yet both lab technicians, at each university, with no premeditated connivance (they are so busy they don't actually often communicate with each other) they both tend to use one brand most of the time, both for longevity and for color gamut.

Why? One brand sucks ink by the gallon. The other brand uses less ink, and the ink seems more reasonable in price too.

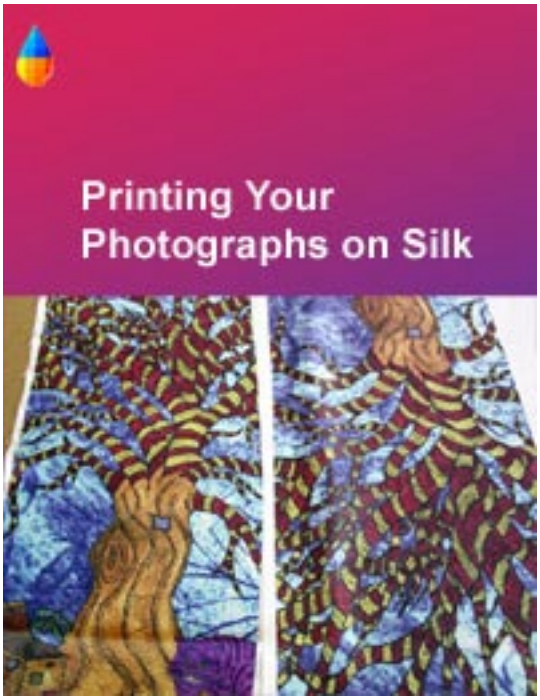
One printer leaves banding defects all across the picture. The other printer does that seldom.

Before you buy what the ads lure you to believe is the cats meow, you might like to read this report. Hopefully we know digital photography equipment; we have a $97,000 Cruse digital camera, two very costly BetterLight scan backs, a Nikon D100, Foveon chip in a Sigma SD9, and several Nikon Cool-Pix models. We also print for the art department. They own an Epson printer, so why do their students and faculty come to the FLAAR studio and use another brand of printer?



Contents

Abstract
How are evaluations accomplished by FLAAR?
Continuous Tone Printers vs Inkjet Printers
Fuji Pictography
Encad, compared with other brands for printing photographs
Epson: A Reality Check
Epson 7000 and 9000
Epson 7500 and 9500
Epson 7600 and 9600
EFI Fiery RIP with Epson 5000,7000, 7500, 9000, or 9500
Epson 10000
Epson 10600
No more hardware RIP for the Epson 10000 or 10600
Recommendations for Epson Printers
Summary on Epson Printers
Speed Claims with any Printers
Ink costs for any printer that prefers its own proprietary ink and media
Roland: Ups and Downs
Kodak 5260 for photo labs: another example of banding problems
with piezo printhead design
What is Banding?
Several Printer Designs Work specifically to reduce or avoid banding
Mutoh Printers for Fine Art and Photo Quality
Newest Mutoh, the Falcon II and Agfa GrandSherpa
Mimaki JV-4
Hewlett-Packard: Ease of Use and Reliability
HP 500 and 500ps
HP 800 and 800ps
HP 1050, 1055, and 1055+
Some key Differences between HP and other Printers
ColorSpan Printers
ColorSpan Mach 12
Canon BJ-W9000
New Canon Printers, since Autumn 2002
Used Printers?
Desktop Printers for Photos
Black and White Prints
Color Limitations
Profit Potential
Longevity Ratings
Decision-making Factors
Summary
Inkjet printers for portrait labs
Inkjet printers for photo murals, tradeshow graphics
Inkjet printers for dye sublimation and/or for printing on textiles
Inkjet printers for signs, posters, banners
Pricing and Where to Find what you Need
Follow-up Service
Training on actual Inkjet Printers
Training Courses in input (digital photography)
Glossary of Terms
Sources and Resources on the Internet



Printing your Photographs on Silk.
Professor Hellmuth explains how easy it is to print your own photos onto pure silk, in your home or office. Nicholas lists which printers, what inks, and where to obtain the silk. Amaze your friends, relatives, and business associates when they jealously look at your photos printed onto silk.

Contents

Printing your Photographs on Silk
Printers for silk
Inks for printing on silk
Summary
For further information
Warning
Sources and Resources on the Internet

FLAAR Fast Facts: ***Comments on Cymbolic Sciences LightJet, Durst Lambda and ZBE Chromira***

Many of our readers as “Should I buy a LightJet or Lambda, or have Inkjet printers caught up yet in continuous tone quality.” This report is by Brent Cavanaugh, who writes from many years experience in a pro photo lab in Dallas, Texas, before taking over as manager of the FLAAR+BGSU wide format printer facility at Bowling Green State University. Comments have been added by Nicholas Hellmuth based on his inspection of a photo lab which had several Durst Lambda’s. Was an eye-opening experience.

Contents

Abstract
Lightjet 5000
Advantages
Disadvantages
Comparisons
Summary
Comments on Durst Lambda and ZBE Chromira (Nicholas Hellmuth, FLAAR and BGSU)

B&W Printing with Wide Format.

We get so many requests for help with B&W photography and printing that we are initiating evaluations of various solutions. B&W prints from the most popular low-cost piezo inkjet printers turn green; black-and-white prints from the most popular thermal printers have a bad magenta cast. So you might want to avoid them and their problems with metamerism by checking out this report. Newly updated after PMA 2003

Before and after (color and B&W), trellis shadow pattern, Malta Centre for Restoration, photo by Nicholas Hellmuth, Nikon D100.

Contents

Abstract
B&W Printing on the Desktop
Black and White Inkjet Printing: An Essay on Reality in the Art World
General Observations on various printers
Ilford Quad-tone ink set for Encad, Oce, Ilford and Kodak thermal printhead printers
New B+W Inkset for ColorSpan printers
Problems producing balanced grayscale with inkjet printers
How to prepare your B&W print in Adobe Photoshop?
Absolute top quality, the Iris and Ixia giclee printers
Don't buy from the wrong source
How to reach a decision?
Resources
Sources
Legal notice
Advisory
Acknowledgements

Scanners and Scanning 35mm, medium format and large format negs and chromes.

FLAAR has significant experience as consultant for scanning slide archives, such as for the Japanese National Museum. Nicholas Hellmuth started with Nikon CoolScan at entry level then began to use the CreoScitex EverSmart Supreme. Currently FLAAR also has a Cruse Reprographic scanner systems. These years of practice are condensed in this report so you can learn from our experience.

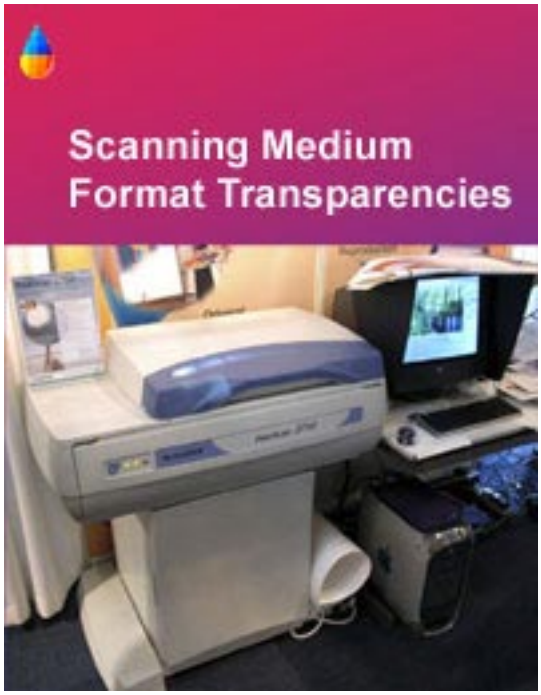
The entire FLAAR program in digital imaging began with scanning their photographic archive of 50,000 35mm slides and thousands of medium format, 4x5, and 8x10 chromes. Here a Scitex EverSmart Supreme scanner at work in Nicholas's office in Germany.

Contents

Abstract
Introduction
Color negatives
Scanning b+w or scanning color to create b+w
How much DPI do you need?
Scanning for the internet, or for home or hobby?
Jpeg and compression schemes
Toaster-shaped scanners for 35mm slides and negs
Auto-loader (especially on Nikon scanners)
General information on scanning and scanners
Scanning objects with relief, or 3-d objects
Newton rings from flatbed scanners
Scanning into the film grain
What about the Imacon scanners?
Scanners from Fuji
Sweet spot
Turnkey systems or scanners as part of a package
Kodak photo CD
Using scans on stock photo CDs
Creo(Scitex) EverSmart flatbed scanners
Drum scanners
Older models of scanners or used scanners
Umax
Heidelberg scanners and LinoColor software
Scanner software
Sharpening
Digital imaging software
RGB vs CMYK
Storage of your digital images
Training and books
Where to buy
FLAAR
Other FLAAR reports on scanning
General
Advisory
Acknowledgements

Scanning Medium Format and 4 x 5 inch Transparencies for Photographers who wish to print on wide format printers: inkjet and/or laser-light RGB digital imagers.

Scanning medium format and large format chromes is a bit different than scanning 35mm negs and slides, so we have a separate report on each in this series. The entire FLAAR project on digital imaging is based on the Japanese ministry of education providing a grant for Professor Hellmuth to assist the National Museum of Ethnology, Osaka, on how to scan their photo archive (which was largely Dr Hellmuth's own photos which the museum had purchased the year before). This Japanese project and a succeeding scanner project had a budget of about $250,000. So you get all the results of all these years experience, for an economical $124 for the entire series (or discounted down still further to $100 if you have already become part of the FLAAR favored readers by filling out the inquiry form).



Contents

Abstract
Kodak Photo CD and Kodak Scanners
Printing Stock Photos from CDs
JPEG and Compression Schemes
RGB vs CMYK
Scanner selection
Update on scanner brands
What scanners does the FLAAR photo archive use?
What about the Imacon scanners?
Older models of scanners or used scanners
Scanner software
Toaster-sized 35mm slide scanners
Batch Scanning Attachments
We don't recommend entry-level flatbed scanners
UMAX scanners
Fuji flatbed scanners
Reality of good scanners
Overhead Scanning Systems to handle large originals such as paintings
Can you use your megapixel digital camera?
How much dpi do you really need?
Which computer to use?
Software
Summary
The History of Scanning Technology
Where and How to Store your scanned images?
Summary of where to buy and/or where to obtain further information
Other
Books on photography and scanning
Sources and Resources on the Internet
For further information
Advisory
Acknowledgements

Wide Format Inkjet Printers for Commercial Photography should they be a different make and model than printers for Fine Art Photography?

New March 2004.

Portrait photography, architectural photography, commercial photography, fine art photography, and taking pictures of paintings to reproduce as giclee prints all call for different cameras and slightly different kinds of wide format inkjet printers. Nicholas Hellmuth has 42 years experience in photography and every size and shape of wide format inkjet printer in his two university labs. So here is the ideal place to get some facts, before you spend big bucks on what may be the wrong printer.

Contents

Inkjet printers for portrait photography
Aerial photography
Scientific and medical photography
Architectural photography
Travel photography
Commercial photography
Summary
Nature photography
For further information

HP DesignJet 130: Evaluation, Comments, Samples of Printing Capabilities,

Pros & Cons

New September 2004

This FLAAR Report is a complete evaluation from day of arrival, what it is like to unpack and install, and then actually using the printer.

Contents

Introduction
General Information
Specifications And Printhead Technology
Tech Support
Rip
Media And Ink
Customer Satisfaction
Additional Questions that you may want to Consider
Appendix: Setup and Installation of the HP DesignJet 130
Evaluation of the HP 130 Printer
Conclusion
Editor's Comment (Nicholas Hellmuth)
HP Ease of Use

First Look at New Generation Photo-Quality Printers: HP DesignJet 30

New, September 2004.
We received both sizes of new photo printers to evaluate, the desk-top-sized HP 30 and the 24" HP 130. So we have reviews of each model.

Contents

HP 30
First Results of Printing with the HP DesignJet 30
Dye Ink and Proofing
Fast Color Stability
Dye Ink and Photography
Color Management
Media Selection
RIP Solutions
Longevity
Gloss Differential
Continuous Tone
Comparative Facts
Thick and Rigid Material
Commentary
Acceptable Paper Sizes
Summary
Appendix A *Setup and Installation of the HP DesignJet 30*
Please Note
Citing and Crediting
Legal notice
Advisory
Factors influencing output
Acknowledgements

Resolution: How much DPI do you need for Inkjet Printing?

This report actually informs you the different requirements for thermal printheads (Canon, Encad, ColorSpan, and HP) vs piezo printheads (Epson, Mimaki, Mutoh, Roland). Professor Hellmuth also adds facts on what resolution is required for RGB laser light imagers such as Durst Lambda, LightJet. Dye sub dye transfer printers (wax or resin ribbons) are a different technology again, and require a resolution which is not the same as inkjet. Everything on resolution, for your scanner, for your digital camera, for your printer, are all contained here.

This report helps you how to understand the mumbo-jumbo of DPI and Resolution

- *What DPI to scan at?*
- *What DPI do you need to photograph at?*
- *What DPI does your printer really need?*

Professor Helmuth cuts through some of the nonsense about 2880 dpi as well as analyzes the concept of "apparent resolution." We have noted a fair amount of misunderstanding of these terms, especially relative to the Iris (apparent resolution of 1500 dpi), the ColorSpan in 12 color mode (apparent resolution of 1800), and the LightJet and Lambda (apparent resolution of 4000 dpi).

Learn the ploys manufacturers use to trick you into falling for their advertising claims. First, virtually no one uses 2880 dpi after their first attempt. Most commercial labs skip 1440 dpi as well (too slow, uses too much ink). The average user sticks with 720 dpi. Thus we have to smile when we see specs touting 2880 or 1440 dpi. It takes a Roland Hi-Fi Pro a precise two entire hours to do a full sized print at full 1440 dpi. In that same time the Hewlett-Packard 5500 would have filled the room with flawless 1200x600 dpi prints, photo-realistic museum quality. We know because our research facility is on a university campus associated with two art museums on the other side of the campus.

New, May 2003.

Contents

General introduction to digital imaging resolution
Resolution of a camera lens vs resolution of a digital camera sensor
Where in the software do you handle Output Resolution?
Print resolution for desktop publishing (laser printers)
Print resolution for solid ink printers
Print resolution for desktop digital photo printers
Print resolution for dye sub printers, desktop
Print resolution for hybrid desktop printers, such as Fuji Pictography
Print resolution for large format dye sub such as Matan
Print resolution for large format LED and laser light digital imagers
Print resolution for inkjet printers: desktop, tabloid, and large format
Print resolution for oil-based inkjet printers
Print resolution for grand format solvent ink printers (Vutek, etc)
Print resolution for electrostatic printers
Calculating File Size: Translating Pixels to Resolution
Interpolating Up
Interpolating Down
How much resolution do you really need?
Clever way to Damage your Digital Images
File compression
What camera can provide lots of dpi?
A quick primer on digital cameras as input for wide format
What about software enlarging of images?
Where some books cover pixels and resolution (also see all glossaries)
Resources on the Internet which discuss Resolution
Pictures showing resolution

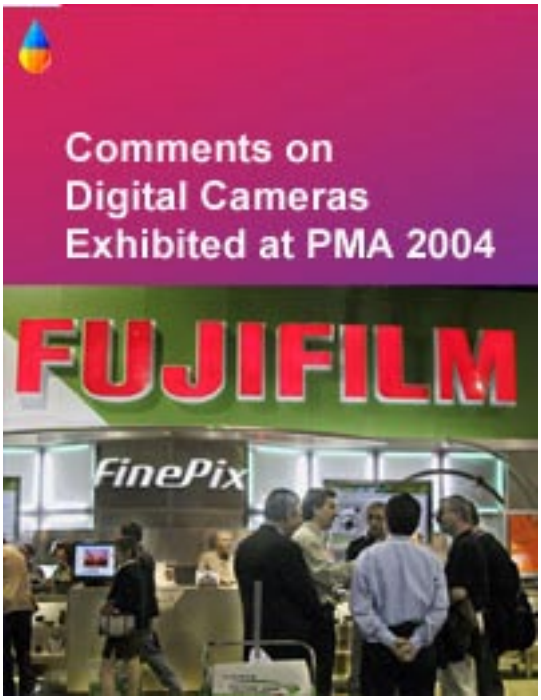
Digital Cameras Exhibited at PMA 2004.

PMA is the largest photography trade show in North America. PMA is about three times larger than PhotoPlus in New York. Professor Hellmuth spent 5 days at PMA and offers his commentary on what he saw and experienced.

Contents:

Introduction
- Medium Format Digital Backs
- Medium Format Cameras to hold the Digital Backs
- Large Format digital backs
- Large Format Cameras (to hold digital backs)

Large Format Reprographic System
Point and Shoot Digital Cameras
35mm SLR digital cameras
QTVR
Filters
CompactFlash Memory for Digital Cameras
Batteries for Digital Cameras
Accessories
Color Management for Digital Cameras
Scanners
Books
- Sterling Publishing
- Amherst Media
- Amphoto Books



Wide Format Inkjet Printers Exhibited at PMA 2004

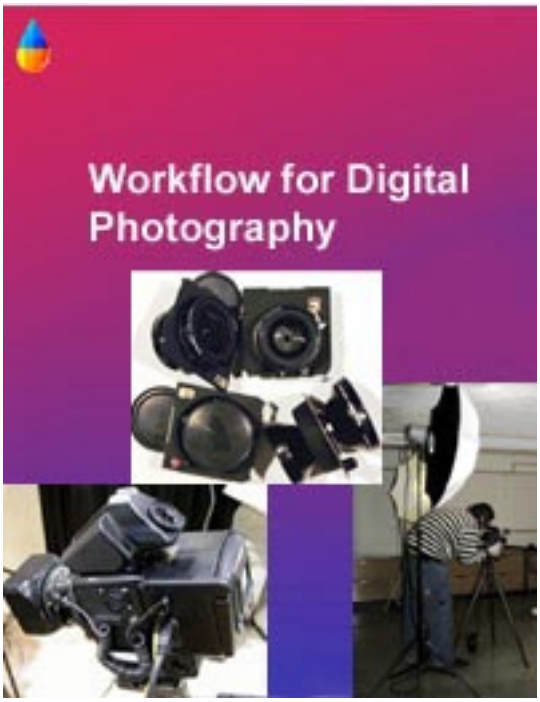
Since more and more photographers are printing their images with inkjet instead of darkroom enlargers or RGB laser light or LED imagers, it is logical that a photography trade show such as PMA would feature lots of wide format inkjet printers. Canon, HP, and Encad revealed new wide format inkjet printers. Roland was absent, why? Lots of tips, help, info, and behind the scenes tidbits that Dr Hellmuth is infamous for.

The FLAAR Report on PMA is divided into two halves, this one on printers, and another separate report on cameras and scanners.

Contents:

Inkjet Printers
- Epson
- Roland Incorporated
- Encad
- Canon
- Hewlett-Packard
- Mutoh
- Mimaki

General Observations
Inks
- Solvent Ink
- Inkjet Media
- RIPs
- Color management for inkjet printers
- Awards



Workflow for Digital Photography: from taking the picture through enlarging the image with an inkjet or other digital printer. New, May 2003.

Summary of lots of what you need to think about in doing the original photography to sending the image through software to get it enlarged with an inkjet printer, Fuji Pictrography, Durst Lambda, LightJet, or other kind of digital printer.

Contents

Introduction
Color Balance your Monitor
Decide what Camera to Use
Decide what Lens and Filter to Use
Decide what Lighting to Use
Decide what ISO to Use
Decide what F-stop to Use
Decide on Desired Plane of Focus and Depth of Field
Decide what Resolution to Use
Compose
Do White Balance or Gray Balance
White Point, Black Point
Decide if you wish to Apply Color Management
Shoot
Imaging
Conclusion of the Course
Appendix A: Raw Image File Format
Sources and Resources on the Internet

Continuous Tone RGB Printers compared with CMYK Inkjet Printers

The goal of every photographer is to find a low-cost inkjet printer that can recreate the continuous tone of a traditional darkroom print. We all want to get the quality and longevity of a Cibachrome print from our inkjet printers.

Since Nicholas is a professional photographer who exhibits frequently, you get his infamous pithy comments on pros and cons of each system. Two inkjet printer manufacturers have been hyping their printers as offering continuous tone! They attempt to lure you into buying their printers instead of a Lambda or LightJet.

Almost every week a photo lab or photographer asks FLAAR by e-mail: "*When will inkjet prints be truly continuous tone? Should I buy a Durst Lambda or Cymbolic Sciences LightJet for $150,000, or wait a year and hope for an inkjet at $3,200 that can do continuous tone?"*

FLAAR can provide independent documentation since obviously we do not sell either system. But we feel it would be sad for you to make a purchase based on misrepresentation of the reality of inkjet printing, not to mention the true facts about what is involved if you own a LightJet or Lambda. Each system has its pros and cons. Neither is perfect yet each has many benefits. Before you purchase, you might want to learn from an outside source such as FLAAR. Nicholas has found the new Canon wide format printer has surprised everyone in the lab with its capability to match the Epson on quality and beat the Epson on speed and ink costs.

Value for your Purchase

The entire series on inkjet printers for photography, 32 years of photography experience combined with seven years wide format inkjet printing experience of Dr Nicholas Hellmuth, is $142. If you are a Favored FLAAR Reader we discount down to $120 for you (if you have filled out the Inquiry Survey form you get this discount).

If you prefer to buy both the Giclee SERIES and also the Photo SERIES the two are available as a combined SET at discounted price.

If you are a photo-journalist, portrait photographer, product photographer you should select the Photography SERIES. If you intend to reproduce your photos on canvas, on watercolor paper, or as giclees on photo-base inkjet media, then we recommend you select the Giclee SERIES.

If you are either, and wish to print giclee quality photographs, then buy the combination SET. SETs are described at the end of Series on www.wide-format-printers.NET.

If you order any Series you get one Bonus Report free.

If you buy any two Series you get two bonus reports free. Simply send an e-mail to FLAARtest@aol.com stating that we owe you such-and-such Bonus Reports because you already purchased such-and-such Series. We will immediately send you whichever 2 free Bonus Reports that you ask for.

Combo photo-giclee Set counts as two series. Enterprise Set counts as three series.

If you ordered three series you get three bonus reports free.

If you order four series you get four bonus reports free.

If you order five FLAAR Report Series you get all bonus reports

If you order four or more Series, you can consult directly with Dr Hellmuth by telephone. See the information on consulting on any FLAAR web site, or at the end of this report in the section on consulting.

FLAAR will provide you with Nicholas's telephone number and suggested times he is available. You can fax or e-mail your questions in advance if you wish. You then get 30 minutes consultation via telephone. Or you can visit in person for an hour in Ohio or when Dr Hellmuth is at the other university in Guatemala.

If you wish additional hours, you can pre-pay at the rate of $300 per hour for consulting.

Some Bonus Reports are also included in pertinent Series. In that case they do not use up your quota of still more Bonus Reports from the rest of the Bonus list.

Titles of the bonus reports

Encad NovaJet 1000i, First Look, First Questions
New March 2004.

We first saw the Encad NovaJet 1000i over a several day period at PMA trade show. Two machines were present in the Kodak booth. The purpose of this brief commentary is to ask the key questions to really find out the status of this brand new printer. This FLAAR Report is the only independent outside commentary available. All other stuff on the Internet is PR releases from Kodak Inc or from Encad Inc. If you wish to learn how to evaluate a printer yourself, by evaluating the ad claims, this report may enlighten you.

Wide Format Inkjet Printers at ISA Trade Show 2004, New, by late April 2004.
Lots of new printers, mild-solvent, lite-solvent, eco-solvent, UV-curable flatbeds, white ink, dye sublimation systems, and a ton of imports from Korea, mainland China. We report which of these are premature, which are worth considering. FLAAR had five editors on the floor of ISA, so we have lots of photos, facts, and commentary.

Evaluation of Setup and Installation of the HP DesignJet 5500ps new, Sept. 2003.
Comprehensive report by Tim Brown, BGSU+FLAAR on the recent arrival of the HP 5500ps.

Canon W7250 Large Format Printer Setup Notes
A detailed explanation of what it is like to receive this dye-based ink 24" Canon printer into your home or company. Shows that you too could unpack and set up this printer on your own.

Evaluation of the CANON imagePROGRAF W7250 24" Large Format Printer
This printer can be used for proofs, comps, graphic design, CAD, GIS, and does outstanding color with any short term photographic display or signage.

Note that each full-scale evaluation has two parts: part 1 is set-up and installation; part 2 is usage, practicality, suitability, and comparisons with other printers.

Canon W8200 Setup and Installation
Complete discussion of what you can expect if you order a pigmented ink 44" Canon printer, whether for signs, giclee, photography, or in-house corporate use. This FLAAR Report covers the initial reality of what it's like to have these printers actually available.

The evaluation of each printer after installation is a separate report in the appropriate Series or Bonus Reports.

Canon imagePROGRAF W8200, new, January 2004.
This is Canon's first pigmented ink wide format printer. It only became available in the USA in October, and FLAAR already has a report available on it. The printhead technology is phenomenal. This printer is appropriate for signage, photos, giclee and fine art: it is multi-talented and fast, as well as easy to use.

Determining Input Needs: Large Format Printing. This is a comprehensive discussion of how many pixels and what dpi each class of wide format printer actually needs. This is a PDF version of a published magazine article by Nicholas Hellmuth.

Direct Digital Printing on Fabrics with Wide Format Inkjets. An easy to read introduction to wide format printing on inkjet textiles such as silk, polyester, nylon, cotton and canvas.

Large Format Printing: Everything your Inkjet Printer can do. This is a PDF version of an article by Nicholas Hellmuth published in a magazine.

Seybold San Francisco 2002, report on all the new wide format printers introduced at this trade show: HP 5500, three Roland Pro II printers and lots more.

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www.laser-printer-reviews.org
www.ctpid.ufm.edu.gt
www.flatbed-scanner-review.org
www.FLAAR.org
www.wide-format-printers.NET
www.large-format-printers.org
www.flatbed-scanner-review.org

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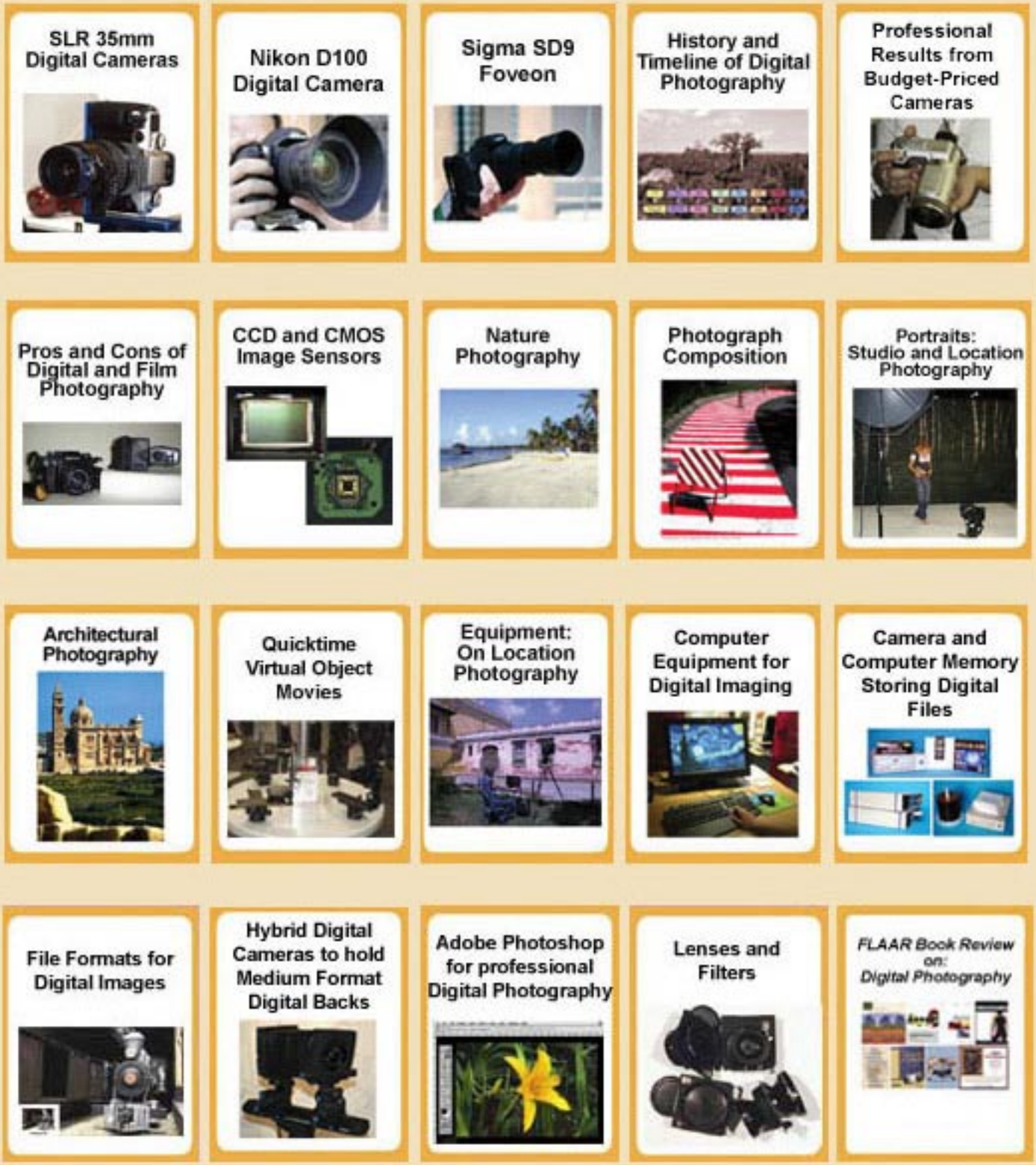

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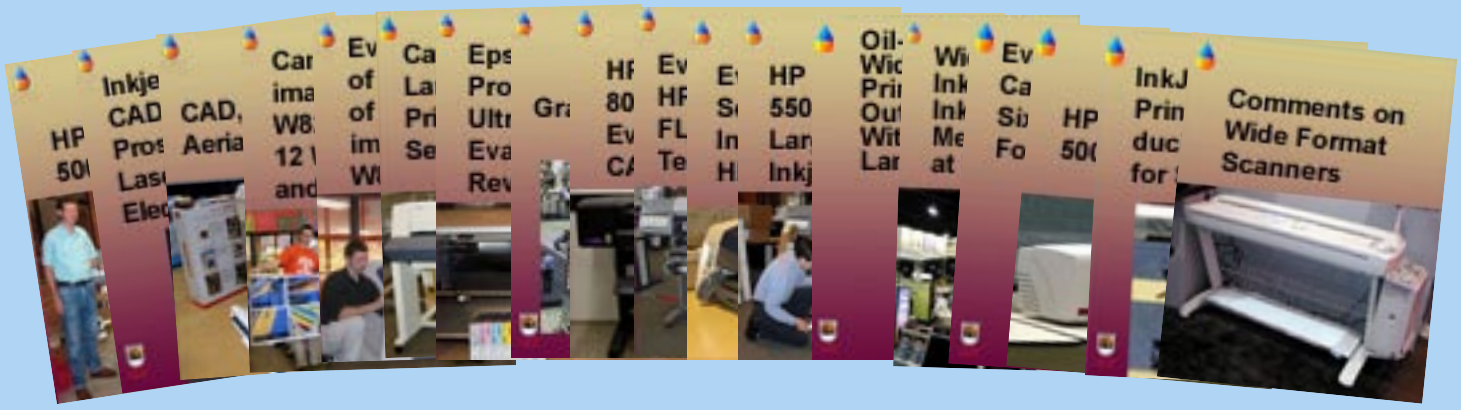
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