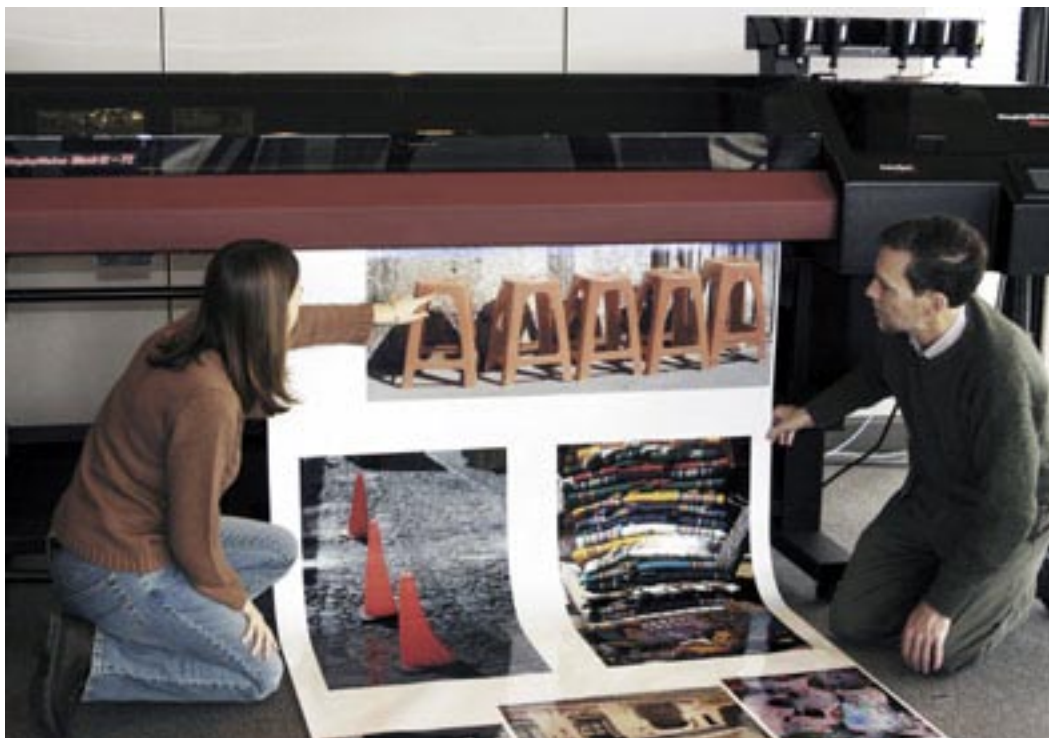# Previews of the Report Series

**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

FLAAR Digital Imaging Resource Center

Report SERIES for Photographers, Photo Labs, and Museums

Wide Format Printers for Photo-realistic Quality

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

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.
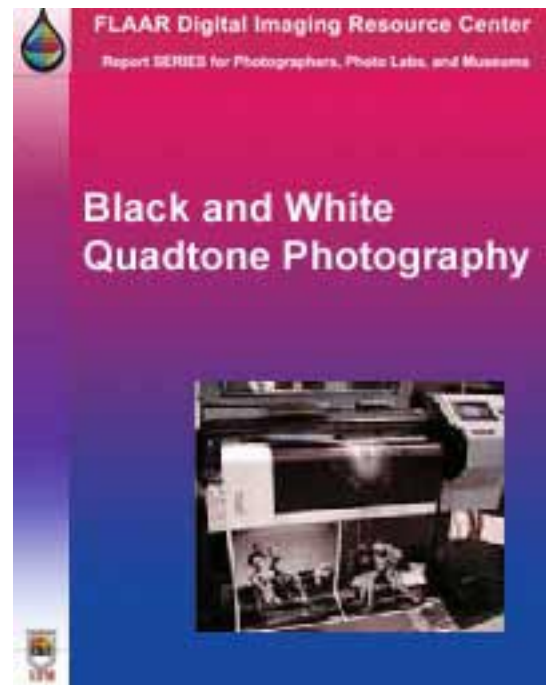
Contents

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?

FLAAR Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

Black and White Quadtone Photography

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

FLAAR Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

Large Format Printers for Museum and Photo-realistic Quality

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.

Contents

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?

***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 CreoSci-tex 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.

FLAAR Digital Imaging Resource Center

Report SERIES for Photographers, Photo Labs, and Museums

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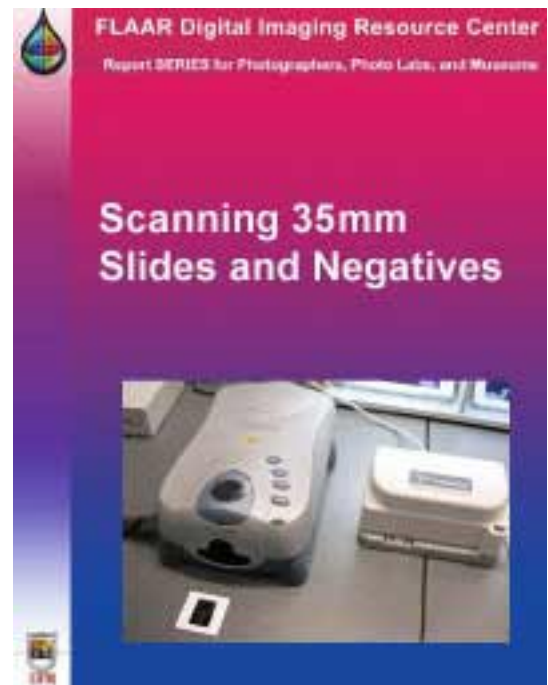
The entire FLAAR program in digital imaging began with scanning their photographic archive of 50,000 35mm slides and thousands of medium format, 4x5, and 8x10 chromes. Here a Scitex EverSmart Supreme scanner at work in Nicholas's office in Germany.

Contents

FLAAR Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

Scanning Medium Format and 4x5" Transparencies for Photographers

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 $142 for the entire series (or discounted down still further to $120 if you have already become part of the FLAAR favored readers by filling out the inquiry form).

Contents

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.

FLAAR FAST FACTS
Digital Imaging, Software, Media, and Inks

Continuous Tone RGB Printers Lambda, LightJet, Chromira

Contents

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

FLAAR Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

Printing your Photographs on Silk
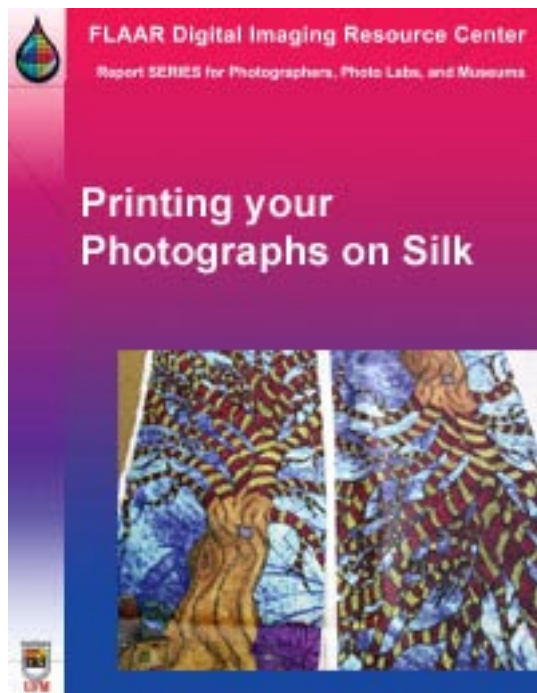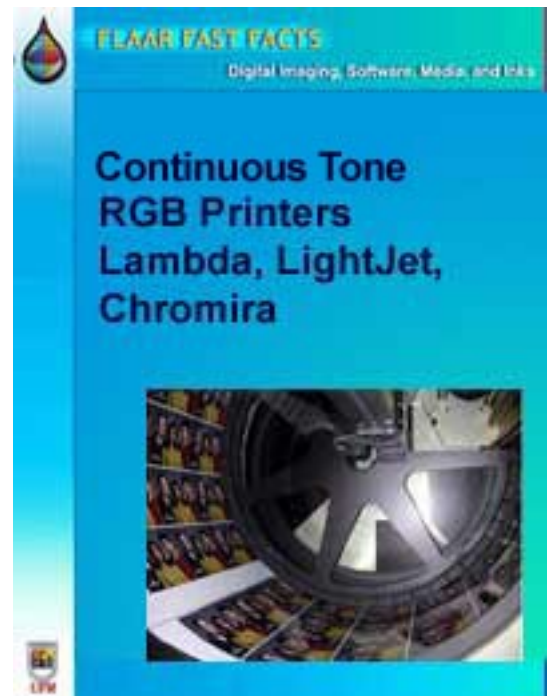
Printing your Photographs on Silk.

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 Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

**Print Resolution
for Wide Format
Printers**
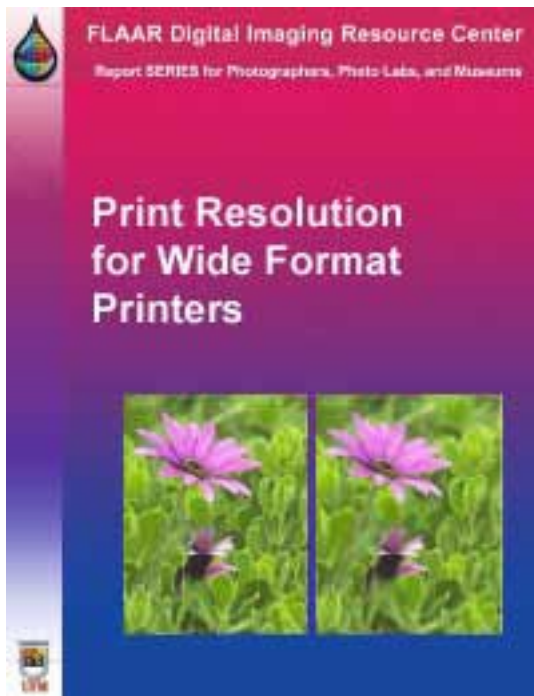
***Resolution: How much DPI do you need for Inkjet Printing?* New, May 2003.**

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.

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

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.
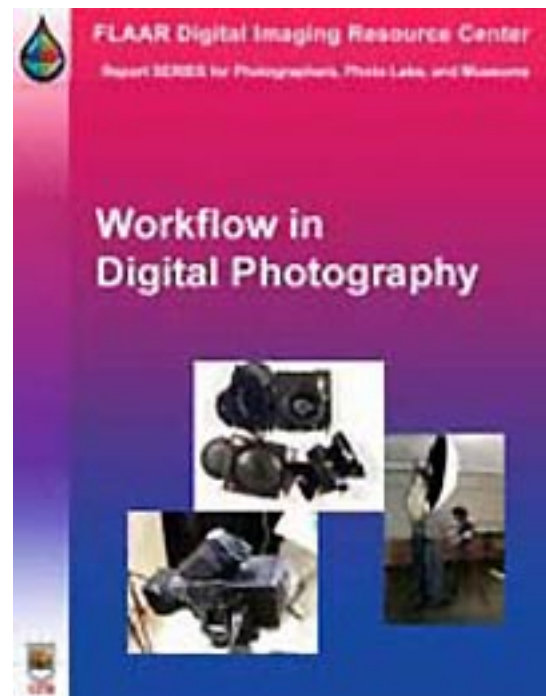
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Introduction

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

     Appendix A: Raw Image File Format

Sources and Resources on the Internet

First Look at New Generation Photo-Quality Printers: HP DesignJet 30 and HP DesignJet 130

The HP DesignJet 30 and HP DesignJet 130 were shown to the public for the first time at PMA trade show. FLAAR was in the HP booth as well as gathering information from our extensive network of sources for learning more than is in the basic specs. It will be a while until production models are available to test. But common sense and a practiced eye allow us to dissect every word of the PR release, advertising, and specs. We have become adept at this kind of analysis of Epson printers and in fairness to all brands we need to apply the same scrutiny to HP printers too.

Contents

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

Help, tips, ratings, comparative reviews, comments on wide format printers for portrait photography, product photography, architectural photography, industrial photography, and other commercial photography.
New January 2004.
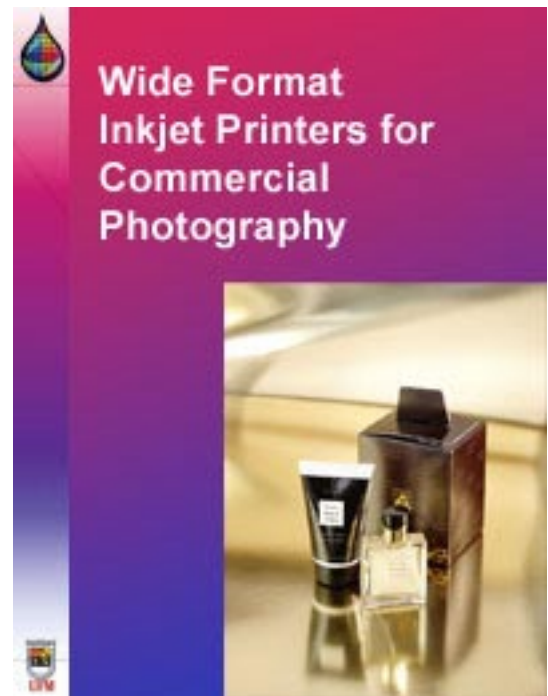
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Aerial photography

Architectural photography

Commercial photography

Nature photography

Inkjet printers for portrait photography

Scientific and medical photography

Travel photography

Summary

For further information

FLAAR Digital Imaging Resource Center
Report SERIES for Photographers, Photo Labs, and Museums

**Comments on
Digital Cameras
Exhibited at PMA 2004**

FUJIFILM
FinePix
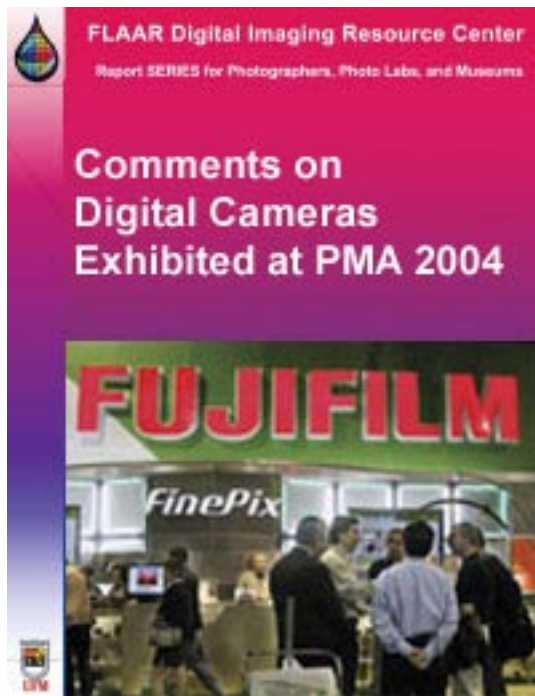
Digital Cameras Exhibited at PMA 2004.

PMA is the largest photography trade show in North America. PMA is about three times larger than Photo-Plus 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

Conclusions: Why this Series of Reports is a Savior to Satisfy your Needs

The reason you can learn from FLAAR reports is because every statement in Nicholas Hellmuth's report on Photokina, PMA, and on PhotoPlus Expo tradeshows is based on a wide range of experience with large format inkjet printers to achieve exhibit quality.
- What class of camera is optimal for the kind of photography I do:
  - o Zoom-lens camera, 3 to 8 megapixels
  - o 35mm SLR, 6 to 13 megapixels
  - o medium format, 6 to 22 megapixels
  - o large format, individual photos up to 450 MB, or larger in pano mode.
  - o or do I need more than one format (we actually use all three).
- What lens, back, filter, tripod, or accessory is
  - o The most practical
  - o The best designed and constructed for ease of use
  - o Is a good value for its price
  - o Will last for years and then still have resale value
  - o Will do its job effectively and allow me to concentrate on the shoot.
- Which lighting that I am already used to from traditional photography
  - o Still works with digital cameras
  - o Does not function whatsoever with tri-linear scan backs
  - o Would be a disaster with film but is surprisingly the best choice for digital
  - o I never heard about HQI and HDI lighting before? Why is this turning out to be the certified kinds of lighting that some museums and libraries will accept?

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.

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.

Even though we are a photography-oriented institute, we do not have a LightJet, Lambda, nor a ZBE Chromira wide format digital photo printer. But we do have 18 inkjet printers, so this suggests there is something about these printers that is advantageous? Our reports transmit all this information, all the tips, all the help, to you.

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.

IF YOU WISH TO ACQUIRE THIS SERIES GO TO THIS LINK

www.wide-format-printers.org	www.fineartgicleeprinters.org	**CLICK HERE TO VIEW EACH FLAAR NETWORK SITE**
www.digital-photography.org	www.flatbed-scanner-review.org	
www.laser-printer-reviews.org	www.cameras-scanners-flaar.org	www.large-format-printers.org
www.FLAAR.org	www.ctpid.ufm.edu.gt	www.wide-format-printers.NET

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PDF files are intended to be read on your computer monitor. Naturally you can print them if you wish, but if the photographic images within the reports were high enough dpi □
naturally in full color. FLAAR itself makes the files available only in PDF format because that is the international standard. We have no mechanism to print them out and mail them.
Obviously if you have d□
handle a basic PDF file.

Learn Digital Photography Online

Registration now being accepted for Dr. Nicholas Hellmuth's next online digital photography course, Autumn 2004

Take either of the following courses without ever setting foot inside a classroom.

• DP 101 - Achieving Quality in Digital Photography
This course will develop your creativity and show you how to use digital imaging to produce astonishing images.

• DP 201 - Taking Digital Photography to the Next Level
This is a production-oriented course that will teach you to produce digital images that will help you win exhibits, earn a living as a professional, and in general, create images that make an impact.

Request more information

Name: _____

Soc Sec No. _____   Date of birth _____
(or passport number if outside USA)*

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Organization _____

Business Address _____   City _____

State _____   Zip_____ Country _____

Business phone _____   Fax_____

Home phone _____   Email _____

Registration:

☐   **DP 101 Achieving Quality in Digital Photography**   **$695.00**
        Session 1: Sept 1 - Oct 8, 2004

☐   **DP 201 Taking Digital Photography to the Next Level**   **$795.00**
        Session 1: Oct 18 - Dec 3, 2004

☐   Both Courses (Save $295 when you enroll now!)   **$1195.00**

☐   Send me information on future classes

Method of Payment:

☐   Check (payable to BGSU)

☐   Purchase Order #_____

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☐ VISA   ☐ MasterCard   ☐ Discover

Card No. _____   Exp. Date _____

Refunds are subject to BGSU cancellation polices.

Easy Ways to Register for the On-Line Course

Call: 419-372-8181
     or toll-free 877-650-8156

Fax: 419-372-8667

Mail: Continuing Education,
     International & Summer
     Programs
     40 College Park
     Bowling Green State University
     Bowling Green, OH 43403 USA

You can register at any time but once class is filled we can accept no more registrations, so it helps to register today.

• To comply with the Hope Scholarship and Lifelong Learning Tax Credit legislation, BGSU now requires all credit and noncredit students from the USA to supply their Social Security number when registering for classes. A Social Security number is not required for students residing outside the USA. These students should substitute a passport or equivalent number.

Bowling Green State University is on EO/AA employer and educator.

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Photography Series

- Continous tone pri...
- Comments on Pho... trad...
- Scanning medium form... tran... for...
- B&W quadtone pho...
- PMA 03 ca... eq...
- Large format prin... mu... pho... qua...
- PMA 03: wide format inkjet printers
- Photokina part I can...
- Photokina part II wid... pri...
- Cameras, PM... 200...
- Workflow in d... pho...
- Print resolution for... prin...
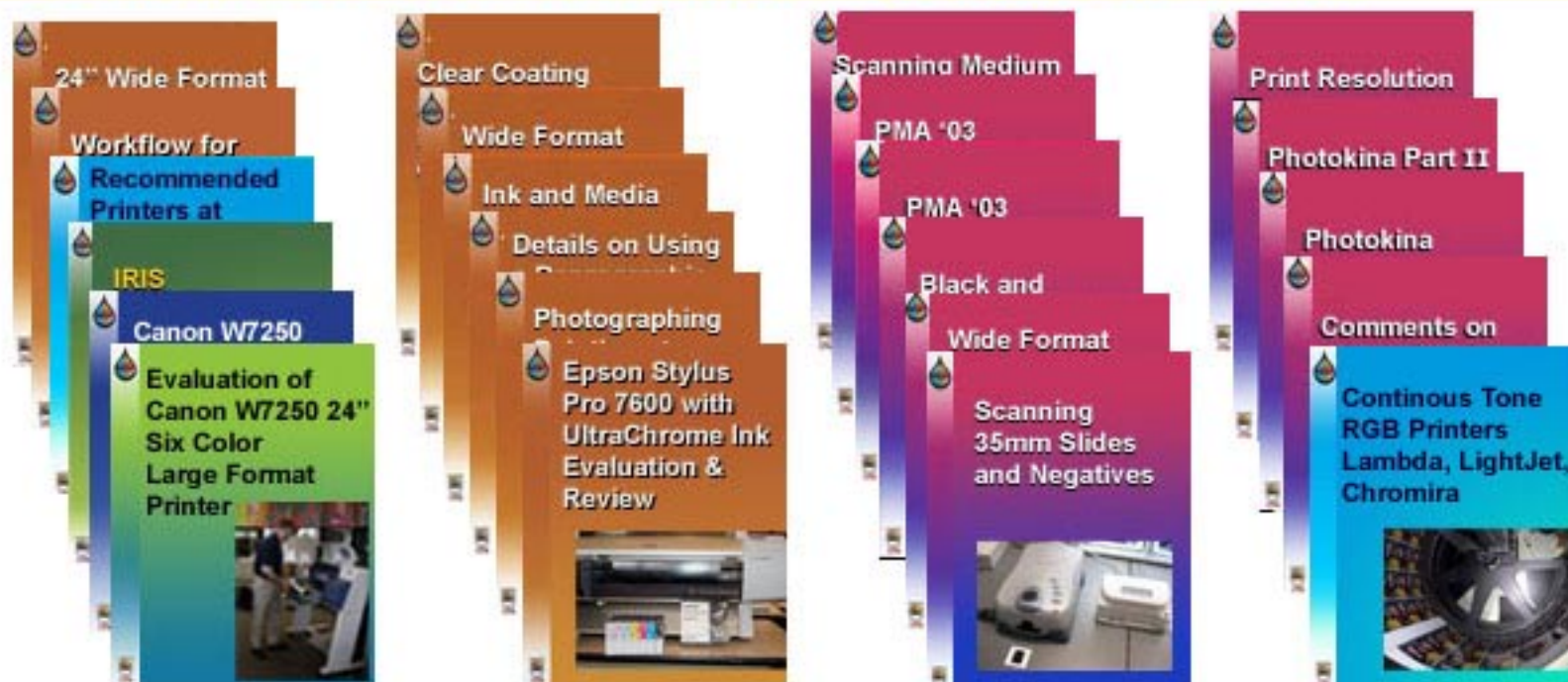- Wide format prin... pho... qua...
- Scanning 35mm slides and negatives

Fine Art Series

- IRIS Recommended
- Which Scanner
- Ink and Media
- 24" Wide Format
- Details on Using
- Clear Coating
- Wide Format
- Photographing
- Epson Stylus
- Glossary of Fine Art Giclee Terms
- Workflow for Fine Art Giclee Pr...
- Business Plan for Fine Art Giclee Printing Services

Combined Set for Giclee, Photography, and Decor

- 24" Wide Format
- Workflow for Recommended Printers at
- IRIS
- Canon W7250
- Evaluation of Canon W7250 24" Six Color Large Format Printer

- Clear Coating
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- Ink and Media
- Details on Using
- Photographing
- Epson Stylus Pro 7600 with UltraChrome Ink Evaluation & Review

- Scanning Medium
- PMA '03
- PMA '03
- Black and
- Wide Format
- Scanning 35mm Slides and Negatives

- Print Resolution
- Photokina Part II
- Photokina
- Comments on
- Continous Tone RGB Printers Lambda, LightJet, Chromira

These reports are grouped in these series, and can be ordered on www.wide-format-printers.NET