



Preview of the FLAAR Report Series on Survival



Various brands of printers at the FLAAR evaluation facility at BGSU (Mimaki JV-4, Iris 3047G-Ixia, ColorSpan Mach 12, Epson, HP, and now Canon) provide the experience so Nicholas Hellmuth can help you learn the pros and cons of each brand

Previews for the FLAAR Report Series on Survival

Seriously, how do you intend to survive against competition in the year 2004.

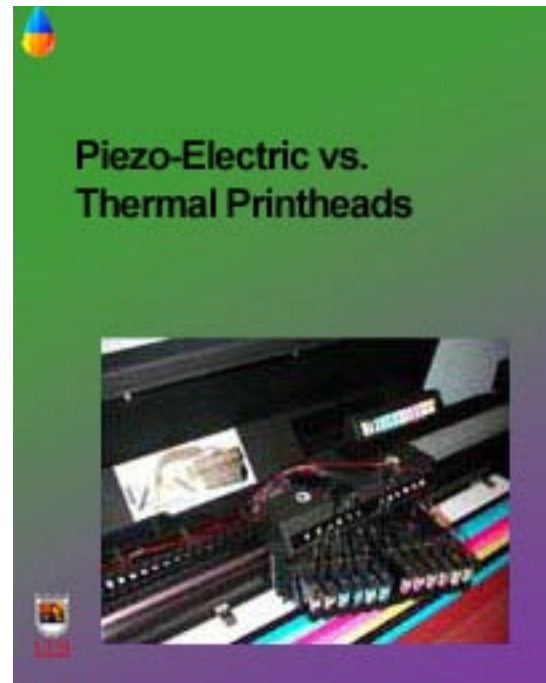
In today's economy, it's not about how much profit, but how long your business can survive at all. Hence we have written this series on survival. Obviously we cannot guarantee you will survive even if you read our reports (that's because we are affiliated with a university and not some late-night TV infomercial offering you instant riches for work-at-home jobs). But our reports are factual; our staff work hard to help you learn about wide format inkjet printing. More importantly we wish that you survive and prosper once you have your new wide format inkjet printer installed and ready to print.

"Piezo-electric printheads vs thermal printheads: fact vs fiction" Most recently updated April 2004.

This pithy report deflates exaggerated claims and hype on both sides, discusses the advantages and notable disadvantages of both printhead designs. This report exposes lots of misinformation. You will be happy to learn, however, that piezo printheads do many things with outstanding quality, and that thermal printheads can also match, or exceed that quality. When it comes to choosing what printer to select, knowing about the printhead system is only one factor, albeit very crucial.

Shortly we will be updating this report with new information about the breakthrough printheads of Canon. We just received our first Canon imagePROGRAF; its printhead is very impressive. No wonder people selling piezo printhead printers worry about the advantages of thermal printheads.

That's why you, the buyer, get smothered with hype about piezo vs thermal. The FLAAR Reports are among the only available that cut through misleading claims to document what each printhead technology can achieve for your applications in your print shop, in your corporate office, or at home if you have a hobby, second-business, or retirement business.



Contents

How are evaluations accomplished by FLAAR?

Definitions

Piezo Technology

Thermal Technology

The Myths and Facts

Myth #1: Piezo Printheads are Permanent; Thermal Printheads are not

Myth #2: Thermal Printheads Clog More Often Than Piezo Printheads.

Myth #3: Piezo Printheads Are Faster Than Thermal Printheads.

Myth #4: You Get Better Quality with One Head over the Other

Myth #5: Epson Printers Produce Output as Good as that of a LightJet from Cymbolic Sciences

Myth #6, that somehow Piezo printheads are more sophisticated

- How to avoid banding*

- Fine Art Giclee Printing: Piezo or Thermal*

Myth # 7: Ink choices: a supposed Benefit of Piezo Printheads

- Solvent Inks*

- Dye Sub Inks*

- Textile Inks*

- Summary on inks: Piezo vs. Thermal*

Myth #8: "thermal printheads are old-fashioned... piezo printheads represent the future"

Color Limitations

Lack of Color Consistency

Metamerism

Weak Black

Bronzing

Backlit Transparencies

Redundant Nozzles; a pro of thermal printheads

Other Inkjet Printhead Technology

Conclusions

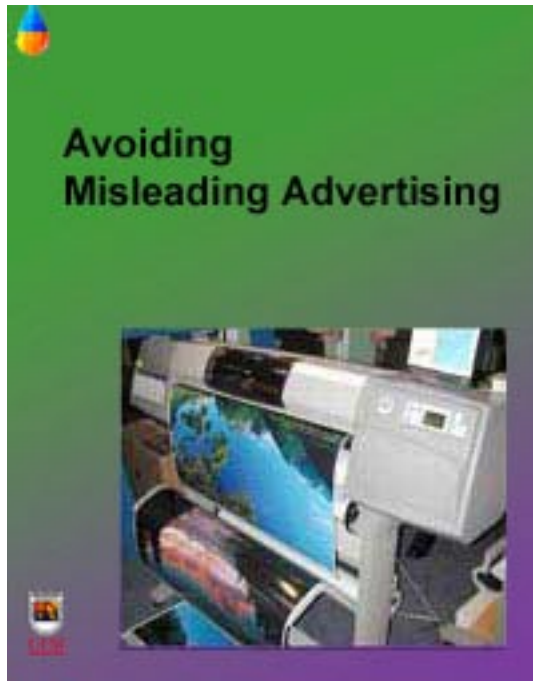
Sources of further Assistance

Other Pertinent FLAAR Reports

Glossary of Terms

Bibliography

“What to watch out for when the sales rep is moving in to close the sale... how to avoid misleading advertising and hype.”



This pithy Survival Guide cuts to the heart of the matter and exposes some of the basic bait and switch tactics and other favored ploys of over-eager advertising claims.

Epson claims 200 years for archival inks... Then the claim for their new Ultrachrome inks dropped to 100 years. It is noteworthy that 3M warranties Epson inks indoors for 5 years ! Outdoors for 2 years. So far we have not seen 3M warranty for Ultrachrome inks at all. But it sure looks nice coming out of the printer.

I was never good a math in the university, but 5 years does not seem the same as 100 years.

So perhaps a discussion of the mumbo-jumbo here is in order. Now you can see why we title this the “Survival Series.” You won’t survive in business if you swallow the 100 year claim and a client brings the image back in 6 years and says, “why did my image fade?”

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Do you need to print on transparent media?

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figure the image

“Our printer works successfully on all
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ICC Color Profiles

Color Gamut

Cost of ownership figures

The lure: “You will make a profit everyday if
you buy our printer.”

House Brands vs. International Brands

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What to look out for in your sample prints

Printers sold as “new” actually turn out to
be used or demos.

Black and White (Grayscale) Printing

Final observations

Pay with a credit card

Where to get the most reliable Information

Some reliable sources for hardware and
software

Other resources

Source of our information

Bibliography

If you want to meet Dr. Nicholas Hellmuth
in person

Feedback

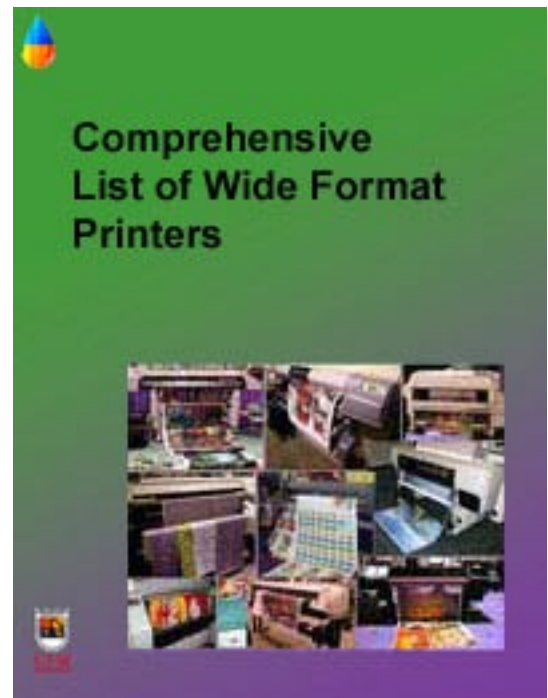
Advisory

Acknowledgements

“FLAAR Comprehensive List of All Large Format Printers, Makes and Models”

This list is more complete than we have found in any trade magazine, plus this report provides tips on infamous weak points of pertinent printers. Before you buy your next printer, you might like to know all the options available from other brands. A different printer may be better for you?

During August and September 2003 this entire report was substantially updated. This is now an impressively comprehensive list of printer manufacturers and models of printers, from circa 1996 through 2004. Last updated April 2004.





Is it advisable to buy a used Large Format Printer?

Every month we receive e-mails from people who already have, or are about to, buy a used printer at such a low price that it tempts them to skip common sense. The purpose of this e-mail is to do our best to bring up some aspects of reality that come along with the “good deal.”

“After the introduction of one early solvent-system piezo inkjet model, it was discovered that the ink corroded the supply lines to the printhead, creating metal fragments that chewed up the printheads when they got there. This was an expensive lesson for both the manufacturer and its customers.” (Sean O’Leary, ScreenWeb)

Now you know why this model is so cheap on eBay!

Learn what models of used Encad printers to avoid, and why? Yet some models are okay.

Learn the two foibles of HP DesignJet series 2000 and

3000, and how to overcome them.

Learn which models of used Epson printers were a disaster for people who initially bought them. So of course they are plentiful and cheap on eBay. Yet two models of Epson get our acceptance. Information is in the FLAAR Reports.

Three printers by major brand names produced such mediocre output they earned the FLAAR “worst in show” distinction. Hundreds of these printers are available on the used-printer market. But if no one warns you, you might buy one by mistake.

Are you aware of which printers tend to have banding defects? Surprise, it’s the printer that advertises its super quality.

Do you know which printers’s inks can’t reproduce cyan or red well? Surprise, it’s the printer that advertises its capabilities to print blue and red. Two resellers of this printer brand stated publically it had trouble with cyan and sunset red.

This same printer is very slow. Yet its ads claim it prints at blazing speed.

Contents

Introduction	Used Printers which claim “lite solvent” or “eco-solvent”
Used desktop printers	General considerations
Used large format printers that are okay	Appendix A
Used Printers to avoid	Feedback
Avoid outdated HP printers due to lack of spare parts	Sources and Resources on the Internet
Used Epson Printers	
Used Solvent Ink Printers	

***Inspiration with Inkjet Printers:
New Wide Format Printer Applications so you can sell
into New Markets:
Tips, Help, Suggestions,
for all the uses that you can apply your wide format
inkjet printer
to accomplish***

This is a comprehensive updating and expansion of several original FLAAR reports. If you wish to learn how to earn money with your wide format printer, this is the report to get you started.

You can survive your mistakes a lot longer if you have enough income from your successes. The FLAAR Report on applications provides the clever tips on all the things you can print to earn money.



This helpful report by Nicholas Hellmuth lists

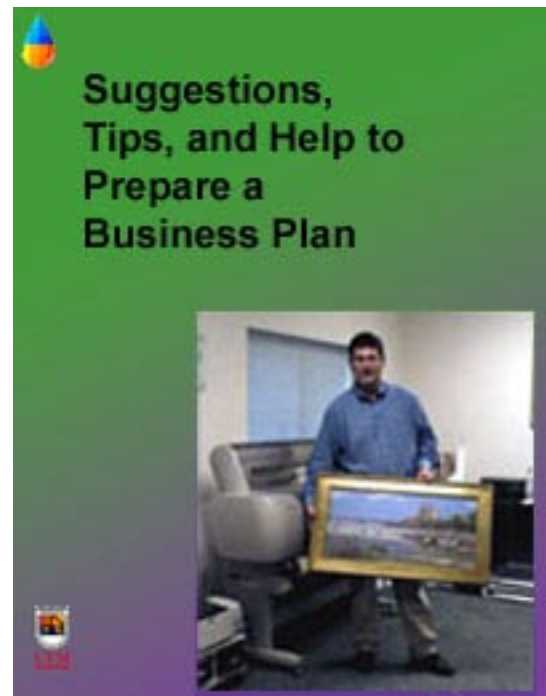
- **Sources of Profit** (if you intend to use your inkjet printer commercially).
- And also **Sources of Enjoyment** (if you intend to use your printer for home, hobby or a second part-time business)

Just realize that no one, neither our reports, nor ads which promise you profit from merely producing a few prints a day (very risky claim by Encad for their NovaJet 736) will actually result in earning a penny (much less a profit) unless you understand all the variables. The Survival Series is the starter series. The separate RIP, media and separate Color Management series round out the complete palette of information that a start-up shop needs.

If you are a screen printer moving into digital wide format, or an individual at home, or a corporate in-house or in-plant print facility, museum or university, these series are intended to provide the beginning of a fuller understanding of what is really involved if you aspire to move forward in wide format digital imaging.

Suggestions, Tips, Help towards preparing a BUSINESS PLAN setting up a wide format printing service.

If you need to prepare a business plan, the documentation by Professor Nicholas Hellmuth is a god-send. His six years of experience is concentrated in this new title (new for 2003).



Contents

Abstract

Comment for wide format printers for corporate in-house use

Introduction

Physical facilities: How much space will you need

Space considerations for using your printer at home or in a small office

Temperature control

Humidity control

Dust control

Controlling emissions and odors

Electrical Considerations

Staff required

Profitability Projections

What you can charge

Help figuring out which printer is best for your

specific needs

Help understanding what is a RIP and why you want it

Color Management Costs for a commercial print business

Color management for corporate in-house

Color management for home, hobby, or second business

Media costs

Inks and Colorants

Ink costs

INPUT

Scanning vs direct digital photography

After you have your printer, you might like help on Training

Help on finishing: trimming and laminating

Space needs for storage

Considerations on packing and shipping

Prepare your clients

Help your clients learn how to send files

Preventative Maintenance of your clients

Frequent Causes for having to Eat what you

just printed

Pricing your product

Pricing your giclée prints

Marketing

Doing your own Research

What kinds of things can you print in order to generate income, and profit?

Lenticular prints

Total Cost of Ownership

Questions to Ask Before you Buy your next Wide Format Printer, RIP, or Ink. This remarkable report provides a list of questions to ask before you buy any printer. Our list is unique (no one else would dare to provide so many pertinent, penetrating questions). This list is based on many years of experience with wide format inkjet printers. Exaggerated claims in printer ads are usually smoke and mirrors to distract you from finding out all the other things the printer is bad at, or sometimes things it is totally incapable of (such as printing economically enough so you can afford the inks and media).

Every printer brand has its supporters. If you like that brand, don't let us distract you by a list of what that printer is poor at accomplishing. What counts is that it can at least do what you need it for.

But if you are about to purchase your first printer, or even a second printer, the FAQ from FLAAR will make it easier for you to uncover the true pros and cons of each model.

This report contains the questions; with them alone you can initiate your search for the best brand and model. If you also need all the documentation for answers to the questions, that abundant factual material is contained in the various FLAAR SERIES. SERIES of reports are groups of reports, by theme, which are pictured on www.wide-format-printers.NET.

The "Questions to Ask" report is new for February 2003 and was most recently updated on April 2004.



FLAAR Standards for Evaluating Wide Format Inkjet Printers, new June 2003

This important opus describes how Nicholas Hellmuth evaluates each printer model. The Standards are the original document on which the FAQs are based. The tips and help within these report are based on Dr Hellmuth's years of experiences with nineteen wide format printers at the two university testing labs as well as site-visit case studies of sign shops, giclee and photo studios, individuals printing at home, and in-house corporate use of inkjet printers.

Contents

- Introduction
- Evaluation Form
- Specifications - Printhead
- Specifications - Printhead; Testable aspects
- Specifications: Set-up of the Printer;
- Tech Support
- Specifications - RIP
- Specifications: Ink
- Specifications - Media
- Specifications: Machine Build and Mechanics
- Assessment of Advertising Claims
- Pertinent Question in Certain Instances

Common Sense On Longevity and Archival Claims, new January 2004

The FLAAR editor, Nicholas Hellmuth, is not paid by anyone to produce claims on inkjet print longevity which can be used to sell one brand or another of anything (neither ink, nor media, nor printers). In distinction, Dr Hellmuth is an experienced photographer at art museums throughout Europe, Japan, across the USA, Canada, and in Latin America. As an archaeologist, Professor Hellmuth knows a bit about longevity of color.

We review inkjet longevity claims in our “Survival” series, since you won’t survive in business long if your clients demand you reprint their images which faded “prematurely.”

So if you quote 200 year, or 100 year longevity claims on your website, or if you believe in the tooth fairy or Santa Claus then you might wish to invest in a reality check, available from FLAAR (our Survival series of reports), based on our experience (plus common sense).



Contents

Introduction
Fade Tests and Reality
Some Comments on Dye Inks
Laminating Myths
Summary



Price Revelations for Wide Format Inkjet Printer Inks, new March 2004.

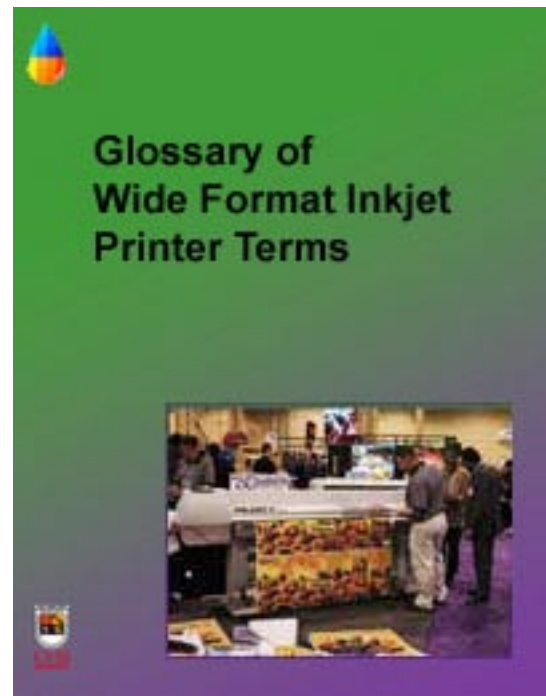
At last, a useful **price watch for inkjet inks**, helpfully organized by printer brand, type of ink (dye, pigmented, or eco-solvent). Easy to use because ink costs are cross-listed by cartridge or container size, by milliliter unit, and by liter unit. All inks are listed for all sizes so you really know, once and for all, the true cost of inks. Also includes tips from Dr Hellmuth on his experiences in which printers drain your pocket book, and which inks help your print shop survive.

Glossary of Terms related to wide format inkjet printers. New for June 2003

This glossary is written to help newbies through intermediate users of inkjet printers learn the jargon of wide format inkjet printers. This glossary is based on the years of experience of Professor Hellmuth.

If you are about to buy your first wide format printer, or an 13 x 19 desktop size, or even if you already have some experience but want more, this glossary was written for your needs.

You can survive a lot better in the world of inkjet printing and digital imaging if you know the arcane jargon that some people hide behind. This glossary offers you a head start to cut through the verbiage and get to the true facts about inkjet printing.



A0

A3

A4 is letter size in Europe.

accessories:

acid dye ink

addressable dpi

Agfa.

airbrush

air entrapment

American Ink Jet

apparent resolution

Aprion

aqueous ink

Arizona

Avecia

CeBIT

bi-directional printing

binary, as opposed to **greyscale**.

borderless printing

Brother piezo printheads

bubble-jet

bulk ink, as opposed to ink in **cartridges**.

Canon

capping

carriage

cartridge

chamber

chips

CIS

cogation

color management

connectivity

consumables means **ink** and **media**

continuous inkjet

continuous tone

contone

dark fading

decap a printhead

deprived

desktop sized printer

DOD, drop on demand

disperse dye ink

draft mode

drivers

drop on demand

drying

DuPont

DuraBrite

Double Drop technology

drop volume, droplet size

drum

DuraBrite inks

duty cycle

dye sublimation

dynamic contone

edge shooter printhead

electrophotography

electrostatic printers

EnduraChrome

e-stat, abbreviation for electrostatic printer see **electrostatic**.

face shooter printhead.

flatbed printer

faster than any printer in its class, is hype

FireWire, see also **IEEE 1394**, **parallel**, **SCSI**, **serial**, **USB**.

flushing

Formulabs

full bleed, see also **borderless**

GO ink

Gretag Professional Imaging

GretagMacbeth

greyscale

greyscale technology more attractive looking than output from Xaar heads?

hard copy

head strike
Hertz technology
Hexachrome, CMYKOG, CMYK+orange and green.
Hilord Chemical, ink company.
Hitachi Koki
hot melt is not a sandwich
hype
impulse
IEEE 1394, the same as FireWire
Inca
industrial inkjet
ink
ink lines
Inkset
input
interface
integrator
interweaving
Iris giclée printer
ISA
Ixia
kogation
Konica
language
LightJet
lux
M.A.G.I.C.
MEMS technology
Microburst
Micro Encapsulation
micron
nanometer
network ready
non-impact printing
nozzle
nozzles per color
nozzle density
Oce
OEM, Original Equipment Manufacturer.
optimized
oriface
page array
paper path
parallel
pass
pen plotter, same as **plotter**
PermaChrome
permanent printhead
phase change ink, see also **solid ink**.
photoinitiator
photo realistic
PicoJet
picoliter
Pictrography
piezo-electric
piezo materials, PZT
pigmented black
pigmented ink
plotter or **pen plotter** (same thing)
P-POP
PressVu, a VUTEk printer
priming
print and cut
print engine
print for pay
printheads
print server
productivity
print mode(s)
print quality
print speed
proof
proofer
purge
RasterGraphics
reactive dye ink
reel to reel
repro house
resolution
Sartomer
satellite drops
SCSI, see also **FireWire**, **IEEE1394**, **parallel**, **serial**, **USB**.
separate ink tanks
serial
Sericol
service bureau
service station
shear mode
sheet fed
SII, Seiko Instruments Inc.
soft copy
SOHO
solid ink
solvent ink
SolventJet
Spectra
speed, see **print speed**
spitting ink
spot color
steamer
sublimate
Sun
target
textile steamer
thermal printhead
thermal transfer dye diffusion
thermal transfer ribbon
Tiara Systems, Ltd.
tricolor ink tanks
UltraChrome
uni-directional printing
USB
USB-2
UV curable (ink)
UV inks
VanSon
variable droplet
vinyl cutter
viscosity
water based
waveforms
Web access
white ink
wipping off
workflow
Xaar
Xennia Technology

If you recognize, and can describe, all the above terms, then you don't need to buy the Survival Series. But if you wish to survive, it sure helps to know the jargon, especially in the advertising claims.

The fact that so far over three million people have read Nicholas's website and that over 26,000 of these readers have sent him an e-mail asking for material in PDF format suggests that there is a need for the FLAAR reports. Nicholas works with his editors to provide a complete suite of learning tools to assist individuals and companies of all backgrounds, from beginners, newbies through intermediate to advanced.

FLAAR Reports by Nicholas Hellmuth are available for every need	
Applications, uses, print needs	What kind of business are you in
3D renderings	Advertising, marketing, graphic design
Backdrops, theater, TV	architects
Backlit displays	Décor (office, home, hotel, etc)
Banners	entertainment
Billboards, outdoor signage	giclee
Book covers, CD, video cassette covers	Government, federal, state, country, local
CAD, architectural drawings	Hotels, restaurants, casinos, cruise ships
CAD, electrical, mechanical	Individual, hobby, retirement business
GIS, aerial photos, maps	Legal graphics, courtroom graphics
Decals, labels, stickers	Medical, health facility, hospital, etc
Fine art, giclee,	Military, police, fire, intelligence agencies
Greeting cards, post cards	Museum, zoo, botanical garden, library
Lenticular prints	Non-profits, organizations, church, charities
Packaging, including prototyping	Photo lab, photo finisher, photo studio
Photos, on regular photographic paper	Prepress, service bureau
Photos, on canvas or watercolor paper	publishing
proofing	Quick print, copy shop, commercial printer
Screen printing, positives	Sign shop
Signs, posters, point of purchase, etc	Sports, events
Tradeshows graphics	reprographic
Vehicle graphics	Retail, wholesale, distributor
Wall coverings, wallpaper	University, college, training schools
Other, add your own specialized applications here. We welcome inquiries about any use of wide format inkjet printers, dye sublimation, thermal transfer, electrostatic, or other digital printers over 24" in size, or desktop units for 11 x 17 and 13 x 19 inches.	Other, we get inquiries from every imaginable kind of business. We especially welcome people from corporate in-house (departments or work groups) or in-plant print shops. Yet you do not have to be a company to obtain reports from FLAAR. A substantial percentage of our readership are individuals.
If your business is any of the above, then you can utilize the FLAAR reports to provide you the truth about the printers, RIPs, inks, media, accessories, scanners, digital cameras, color management, and associated software.	
We welcome inquiries from any country, in Spanish, German, Italian, Portuguese, French or English. All reports are in English, but our staff are multi-lingual.	

Additional FLAAR Report Series

Our two print shops must survive too. We print at two universities; in effect FLAAR functions as the in-house corporate reprographic shop at each university where we are situated. We arranged to serve as a print shop deliberately: this is a practical way for us to learn what it's like in any real quick-print shop, sign shop, photo lab, or fine art giclée studio. Even though our print shops are subsidized (to allow us to keep our prices to the university community low), we still do our best to learn how to cover our expenses.

FLAAR can speak the language of sign shops because we print most of the signs for a giant state university (19,000 students). We print signs for the sports stadium, event signs, signs to announce music concerts, signs for all kinds of needs.

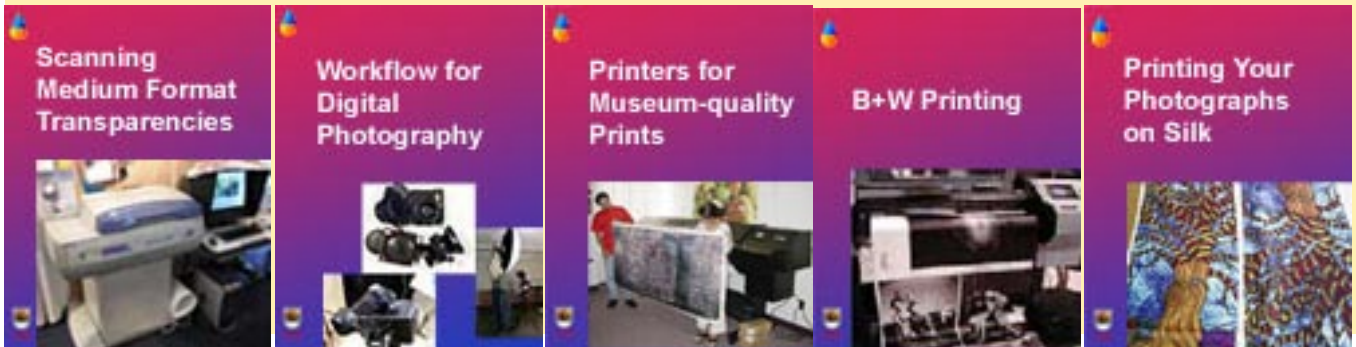


If you need help entering the décor or giclée market (or both), FLAAR prints for the art department faculty and art students on campus. The art department is next door. We also print for local artists who find that we spend more time and effort to produce color balanced images. Most local copy shops are not familiar with the needs of artists nor with giclée.



If you are a sign shop or quick print place who wants to do giclée on the side, then our "Giclee Series" is a good place to start.

FLAAR has 30 years experience in professional photography. Nicholas Hellmuth is beta tester and does evaluations for many camera and scanner companies. So if you are a photographer you can count on FLAAR understanding what you want, and how to achieve it. But first you have to survive the selection, purchase, and initial learning curve of your inkjet printer. That's what a university is good at: providing public education.



If your boss instructed you to research and gather information on what printer to buy, then you too can protect yourself by acquiring the pertinent FLAAR series of Reports (and make your boss impressed at all the documentation you found).



But in addition to the specific Series-by-subject, be sure to ask for the Series on Survival. Based on the problems that end-users report to us when they send in their Inquiry-Survey form, people about to buy a wide format printer appear to need all the help we can get to survive nowadays.

**IF YOU WISH
TO ACQUIRE THIS SERIES
GO TO **THIS LINK****

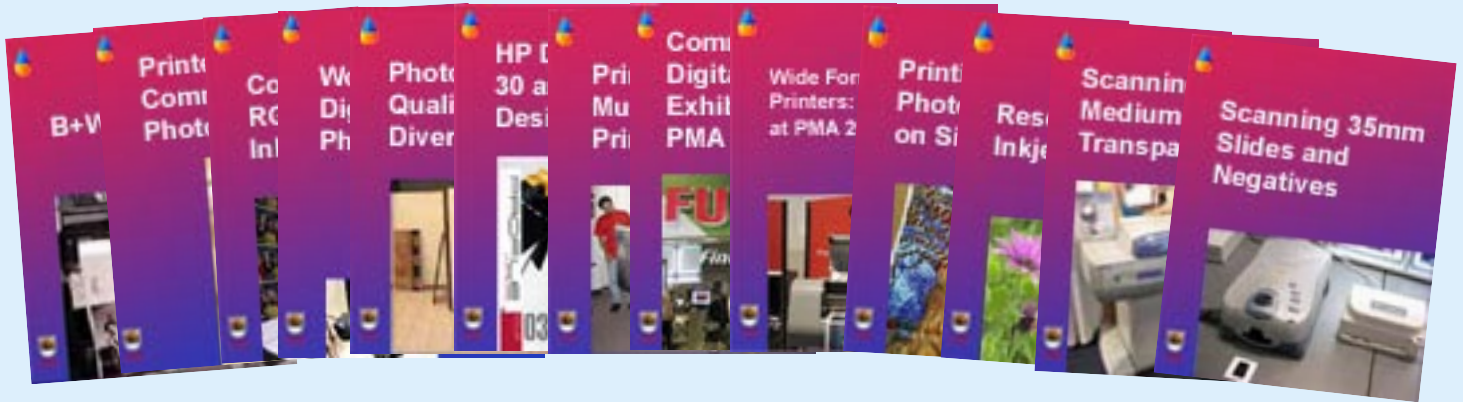
www.wide-format-printers.org	www.fineartgicleeprinters.org	CLICK HERE TO VIEW EACH FLAAR NETWORK SITE
www.digital-photography.org	www.flatbed-scanner-review.org	
www.laser-printer-reviews.org	www.cameras-scanners-flaar.org	www.large-format-printers.org
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Acquire these reports at:

www.wide-format-printers.net

Wide Format Printers for Photo Exhibit Quality Series



UV - Curable Flatbed Inkjet Printers Series



Wide Format Printers for Signs Series

