



Dedicated UV-cured Flatbed Printer



TX2512

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Dr. Nicholas Hellmuth inside (underneath) the iti printer in their demo room. The present evaluation was done during summer 2015.

Introduction

This evaluation is based on doing test prints in the iti demo room near the San Francisco airport. Previously I had seen this printer at ISA 2015 sign expo. I am familiar with the company which is distributing the printer and I have been at the factory in past years. FLAAR has been studying and evaluating UV-cured printers since DRUPA 2000 and Photokina 2000 (in that era Durst was at Photokina with its early UV-cured printers). There were UV-cured prototypes of other brands in the years leading up to 2000, but in those earlier years FLAAR was focused on fine art giclee and printers for photography, plus printers for CAD since my family background is architecture.

THE BASICS

1. Brand name, model?

iti TX2512

2. If there are two or three (or more) widths of this printer, what differences exist other than the width?

At present one standard size is available, 4x8'. But other sizes can be produced, including in metric sizes, if the market desires.

This printer is also available with roll-fed option across the front. This I would need to evaluate separately.

3. What is the nature of the company? Is this company the manufacturer, distributor, or rebranding a machine made by someone else?

Iti has been formed specifically to market this printer in the Americas, however this product is also potentially available worldwide. The demand for this printer will indeed develop once it is realized this system's potential for avoiding banding. Plus the color gamut is better than many other brands. And, there is less edge splatter than most other brands.

The factory for this printer is well known and has abundant experience in the manufacture of all sizes and shapes of UV-cured printers.



Ralph Johnson (iti) and Dr. Nicholas Hellmuth (FLAAR Reports) holding some samples printed on the iti TX2512 UV flatbed printer.

4. If this is rebranded, what about it is different other than brand and color?

Printer is manufactured to the specifications developed by the U.S management team of ITI.

5. What other printers of other brands are comparable?

Several useful comparisons would be with Mimaki flatbeds. These models in past years had quirks with curing issues, though current Mimaki models have improved noticeably. Oce Arizona printers have been very popular, as well as the nice Fujifilm Acuity branded versions. However the iti TX2512 has superior printheads, costs significantly less, and has better color gamut and less banding than the Oce. So for entry-level, the iti TX2512 has considerable potential in the world market. The other issue with the nice Oce Arizona printers is that their Toshiba Tec printheads are out of fashion already for many years.

6. When and where was this model first introduced?

ISA 2015.

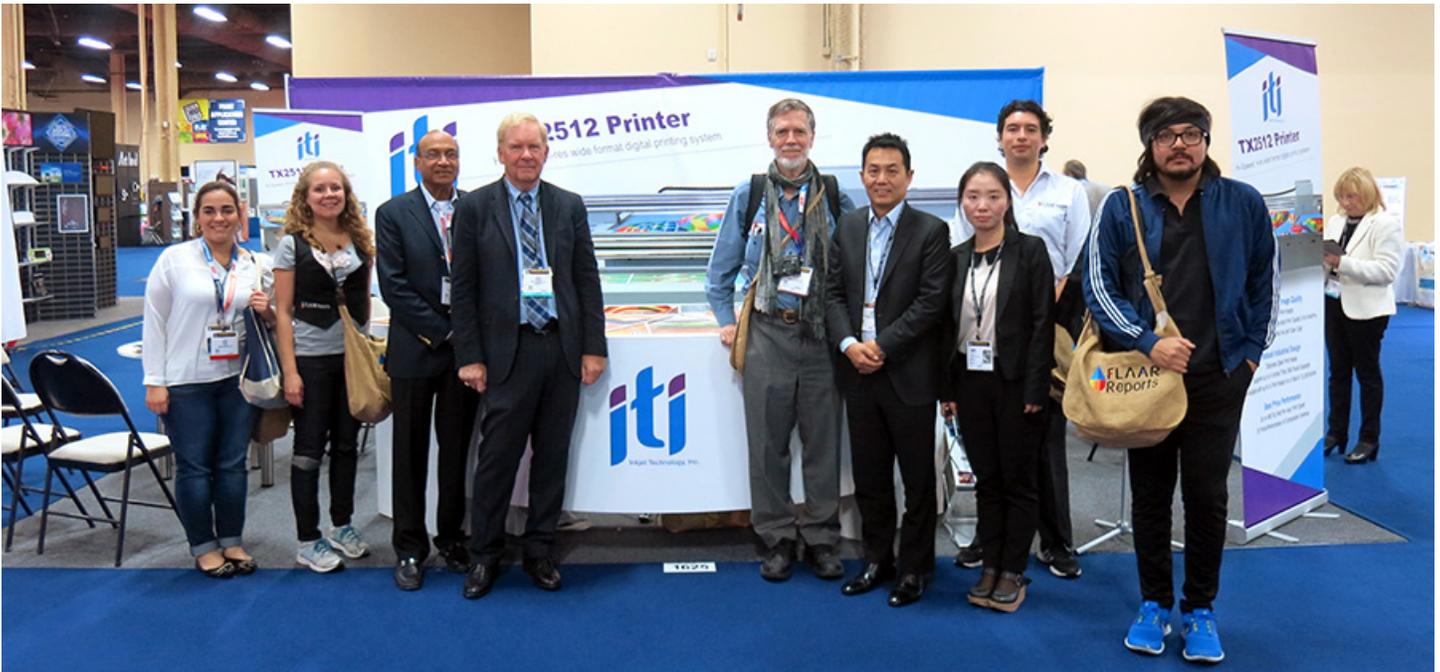
7. Is this printer mature or still in alpha-stage or beta-stage?

This is a mature model from an experienced manufacturer. As soon as there is an opportunity to visit the factory (again, as the last time I was at the factory was several years ago) I can update this FLAAR Report. This initial report is based on inspecting the printer at ISA 2015 and then an in-depth inspection in the demo room in San Francisco, in July, 2015. In the meantime, I know and respect the manufacturer as well as the distributor. Both have ample experience, including internationally.

I have also been to the demo room of the distributors in earlier years.



The printer was first introduced during ISA 2015.



iti and FLAAR staff at iti booth, during ISA 2015.

PURCHASING: COST

8. List price?

- With two printheads (CMYK), \$59,995
- With three printheads (CMYK plus White) \$64,995
- With eight printheads \$89,995

9. What other costs are involved?

Computer and monitor.

10. Is there enough new on this printer to make it worthwhile buying it if I already have another recent model?

If you are a distributor, or if you are rebranding printers from other factories, the primary advantage of interacting with iti is that you can enter a whole new world of entry-level UV-cured printer quality.

You need a printer at the price of an iti to compete with HP latex (especially since HP latex can't handle thick or flat materials, and when latex ink is able to handle thick or flat materials it will be a quarter-million dollar printer (or more actually).

11. Does a complete set of full-sized ink cartridges come with the new printer, or merely a "starter set" that is not as full as a regular set?

Yes, the printer comes with a full set of one liter per color inks

12. What other equipment is needed to operate this printer? For example, does this printer include its own power line conditioner?

In most cities in USA and Canada you would not necessarily need a power line conditioner, however even in USA there can be blackouts, and when the power goes back on there is a surge which can fry most anything plugged into the wall.

13. Do you need an uninterruptible power supply (UPS)?

We at FLAAR use UPS systems for all desktop computers, but a printer would need an industrial strength UPS or power line conditioner. Actually, even 90% of the UPS units sold on the Internet today are not adequate to protect hard drives and computers from being fried by an electrical surge (unless you have an industrial strength UPS model).

14. Do you need to provide air pressure for negative pressure for ink in printheads?

No

15. Is an air suction system needed to be installed as a separate item, or is all the vacuum table or other vacuum requirements already included in the printer itself?

A suction system is built in. The User's Manual mentions which aspect of the printer does need air pressure supplied by the print shop. Shop air is only needed to operate the alignment pins on the table and for the roll to roll option.

	Iti printer	Other brand you are considering	Other brand you are considering	Other brand you are considering
Base price, chassis and print engine	\$59,995.00			
RIP Software, lite	Included			
RIP, full version				
transportation	Distance dependent from San Francisco			
installation	Included			
training	Included			
ink	First Set Included			
warranty	12 months			
spare parts kit	Available			
computer	User Supplied			
Total cost	\$59,995.00 +computer			

16. How does the total cost compare with other UV printers?

Printers manufactured in Japan and Canada are more expensive.

Printers which are cheaper lack sophistication. Not many other factories in China have the experience as does the factory which makes the iti printer.

	Base price	More printheads	Most printheads
iti	\$59,995.00	\$64,495.00	\$77,995.00
CET (Handtop)			
Oce Arizona			
JETRIX			
HP Scitex FB550			
Note: this is not a dedicated flatbed, but a combo belt system)			

WARRANTY

17. Who provides warranty?

Dealer provides warranty service. ITI provides parts to the dealer and back up support.

18. How long is the initial warranty?

12 Months

19. What is covered by the initial warranty?

All parts and labor except consumables and print heads

20. What does the client have to pay even with the warranty?

Consumables, Print Heads damaged due to operational aspects

21. What extended warranty is available, and for what cost?

Prices established by the dealer – estimated to be \$700 per month. This is now a relatively standard industry price: 10% of the purchase price is what the normal warranty costs.

22. What does the client have to pay even with the extended warranty?

Consumables, parts, and print heads.

STRUCTURE OF THE PRINTER: Media Transport Mechanism & Media Path

23. What kind of UV printer is this? Dedicated flatbed; flatbed+roll-to-roll on side; combo transport belt; hybrid; dedicated roll-to-roll.

The iti model we inspected was a dedicated flatbed. There is also a model with a roll-fed accessory across the front. This we would need to inspect separately, since the dedicated flatbed was the model we are studying first.



FLATBED ASPECTS (for dedicated flatbeds)

24. Is the dedicated flatbed printing across long axis (faster) or across short axis (slower)?

Printing is across the wide axis. This makes it faster than printing across a short axis. A short axis printer is cheaper, since the gantry is shorter. But for serious printing, a wide-axis is best.

25. Are there alignment pins? How many pins? What is their position(s)?

There are alignment pins at the right side.

Across the front there are tabs that can be raised up. These tabs have a flat front surface so are easier to use for alignment than a pin.

26. Is there a metric "yardstick" across the front, or along the side (or both)?

It helps to have an incised yardstick (in feet and inches for US market; in meters and centimeters for international market, EU, etc). This iti printer has a metric band across the entire front.



The iti TX2512 printer has a metric band across the entire front.



The table itself is stationary. What moves is the gantry (on which the printhead carriage rides).

27. What moves the table? Lead screws?

The table itself is stationary. What moves is the gantry (on which the printhead carriage rides).

28. If a dedicated flatbed, do the edges (joins) of the sections of the table cause a noticeable imprint on thin material?

The entire table is one single piece, so there are no join areas to get out of alignment.

29. How much weight can the table hold?

880 pounds; 400 kilos. So it is unlikely you will have anywhere near this much weight on this table, unless you and your entire team gets on top to dance the Salsa.

30. What are the pros and cons of a dedicated flatbed compared with a combo printer (with moving transport belt) or hybrid printer (with platen)?

A dedicated flatbed table will not skew (since it is stationary). The gantry can skew if the motor on one side is not in synch with the motor on the other side (and I have seen other brands of Chinese printers which specifically had that issue). So if you print only thick material a dedicated flatbed has advantages.

A combo transport belt makes it easier for in-line printing. Plus of course you can print roll-fed material on a transport belt (Durst, efi VUTEK are examples). Every kind of printer has advantages and disadvantages. Most Chinese factories have focused on dedicated flatbeds or dedicated roll-to-roll printers.

CONSTRUCTION (BUILD QUALITY)**31. What parts of the printer look good and strong**

This printer (cleverly) does not feature frills (stupid design features); this printer does not show cheap plastic façade. In other words, it helps to have a printer (like this one) which makes a good first impression.

32. What parts of the printer look a tad flimsy?

So far I have not found any exterior part which is easily damaged or broken. This question is best asked of a printer operator after he has used a brand of printer for six months.

STRUCTURE: Miscellaneous**33. Does the printer have levels built into the structure of the printer?**

There are no bubble levels built into the most printers. The only entry-level or mid-range hybrid or combo printer where I have noticed levels actually incorporated into the structure of the printer are the UV-curable printers of Dilli.

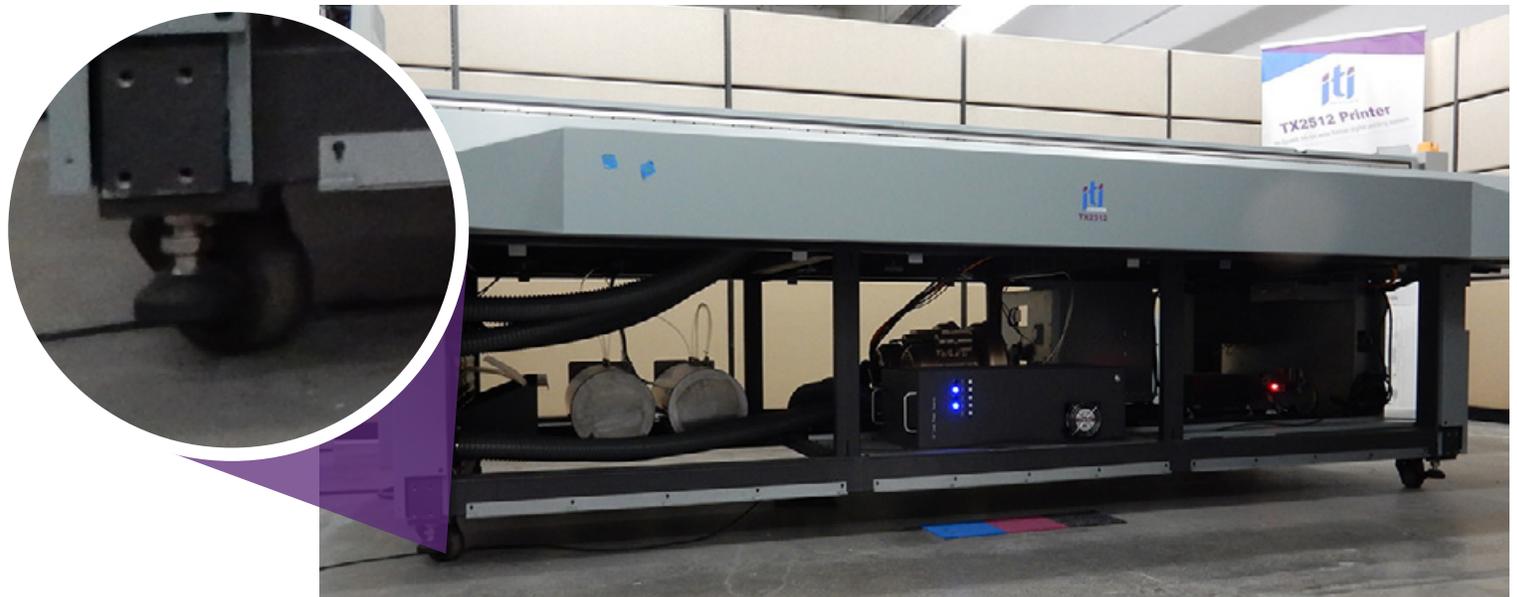
34. Does the printer have supports? How many, and how strong?

This printer has four leveling supports. This particular printer has been on its wheels since it just came back from ISA sign trade show. So I can judge the wheel capability as acceptable since it has been on these wheels during many moves between locations.

Leveling any UV printer is crucial. Indeed at the NUR factory, once the structure is leveled in the assembly room, rather than roll it from stage to stage, all construction stages take place with the printer not moving from stall to stall.

35. Does the printer have wheels? How many, and how strong?

The larger the printer, the more wheels it needs. Four wheels is a common number for an entry-level printer; larger machines may have eight wheels. For a 4x8' printer, four wheels (and four leveling supports) is the usual number.



This printer has four wheels and four leveling supports. Leveling any UV printer is crucial step.

AESTHETICS (Appearance)**36. How would you describe the design of the printer?**

It helps to have a color which is internationally acceptable. Cute pastels are the style in many countries for many valid historical reasons. But a high-end print shop in Germany will tend to prefer a less “cute” color.

A printer which looks like a jukebox at a 1960’s restaurant, may also be cute at the high end, and a German company may accept a quarter-million dollar jukebox styled flatbed printer. But (unless I want my print shop customers to think they are in a Steak & Shake or comparable 1960’s restaurant), I tend to prefer a more internationally acceptable color, as iti intelligently opted for. Naturally if you rebrand this printer, you can have it painted any other color that you wish.

Color is the first impression, so the iti color is fine.

It also helps to avoid fads. You do not need your printer to have a Transformer as a logo or as a representative (as did the quarter-million dollar AEG printers at FESPA 2015 in Cologne a few months ago).

Another significant feature is that you do not have to look at cheap, out-dated Epson style ink cartridges sticking up. You see these on Mimaki, Mutoh, and Roland printers (even when they too have abandoned Epson printheads). To see an awkward Epson ink cartridge sticking out, or worse, sticking up, is the immediate logo of a cheap entry level printer.

So the appearance is good: not junky, not silly.

37. Can you easily distinguish which is the “front” and which is the “back”?

It is usually easier to recognize the front of a flatbed than a combo belt or roll-fed printer. So yes, you know instinctively which is the front and which is the back of this iti printer.



The high quality design helps to instinctively identify which is the front and which is the back of this iti printer.

FEATURES OF THE PRINTER: Vacuum

38. Is there a vacuum function?

A vacuum of some sort is required to hold down the material. On the iti there are two vacuum pumps capable of handling four zones.

39. Is the vacuum created by simple fans, or by an air pump?

Low-bid printers have simple fans; better systems use an air pump. Nonetheless, many vacuum systems have some good features and a few weak aspects (some make too much noise, especially when the vacuum pumps are outside the printer).

This printer uses two vacuum pumps, since this is better and more industrial level than a simple suction fan.

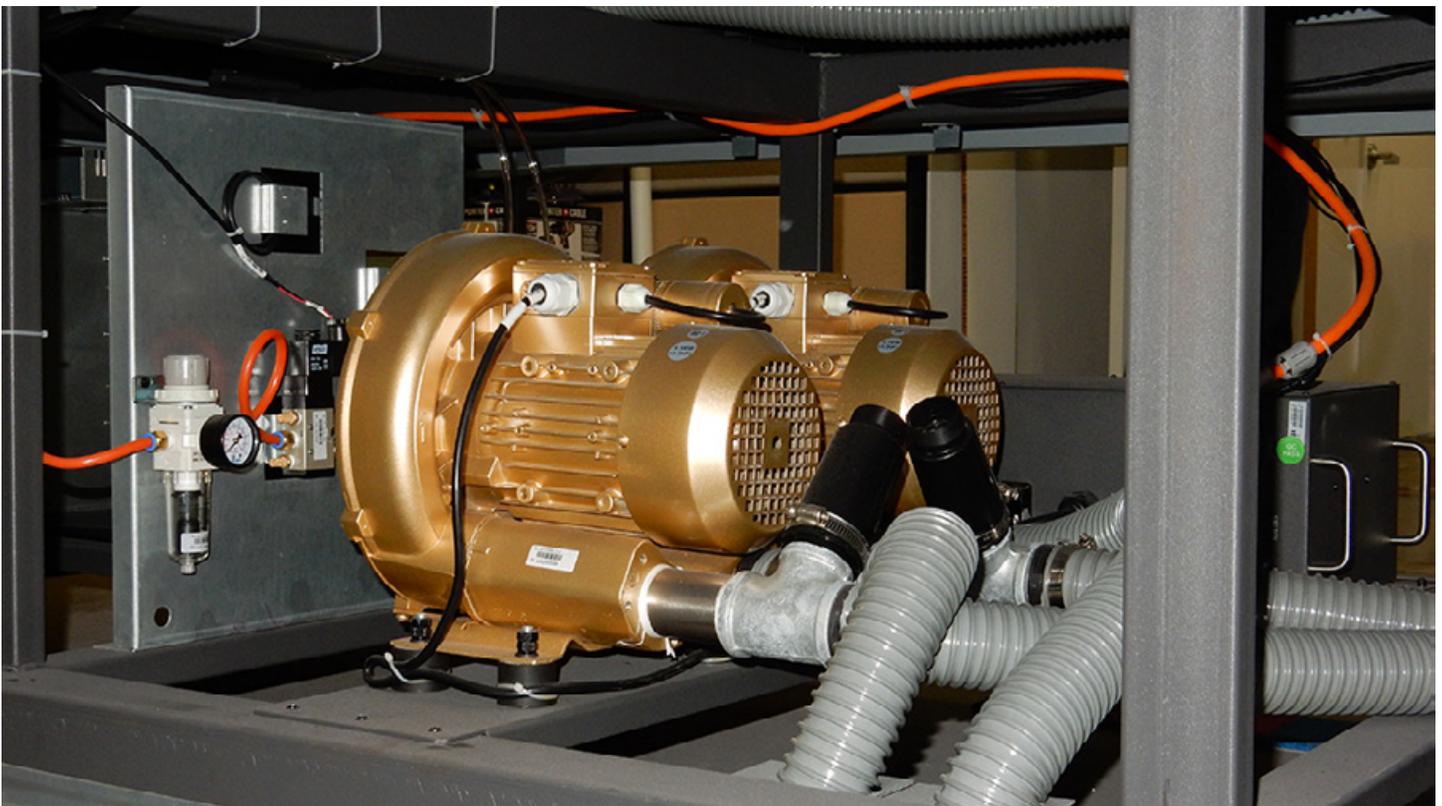
40. In how many sections?

Cheap printers have the vacuum in one section all the way across. Better printers have the vacuum in user-definable sections. The iti has four fixed zones.

If the vacuum is in one long section (without divisions), then if your material is small, your vacuum is sucking against nothing, and wasting its sucking power. In this case you have to put some other material to cover over the unused section of the vacuum, so that the sucking power can be available on the smaller piece of material you are trying to print on.

41. Are the vacuum areas (size and position) user definable?

In some high end printers, the user can define the size and position of the vacuum area. In printers which cost less than a quarter million dollars, vacuum areas are of fixed position and size.



This printer uses a vacuum pump, since this is better and more industrial level than a simple suction fan.

42. Can you turn one or the other section(s) off and on?

If there are sections, usually you can turn them off or on. Otherwise having sections does not provide much of an advantage. Each section has a manual OFF/On control, at the lower end side of the printer (at the right side of this end of the printer).

43. Just Off and On? Or variable?

Off and On capability is adequate for entry-level printer. A good mid-range and all high end machines you should expect to have the capability of variable power for your vacuum. To maintain a reasonable price, this printer has OFF and On system.

44. Does setting a substrate profile activate a higher or lower vacuum automatically?

It naturally helps if the printer, on its own, already knows what setting of vacuum sucking power to set, based on the kind of material, and its size. However this printer has one setting, OFF and ON. However if you use a board to cover over some of the vacuum holes, this may increase the vacuum of the other holes in that segment.

45. Can the vacuum be too strong for thin materials, and cause them to deform?

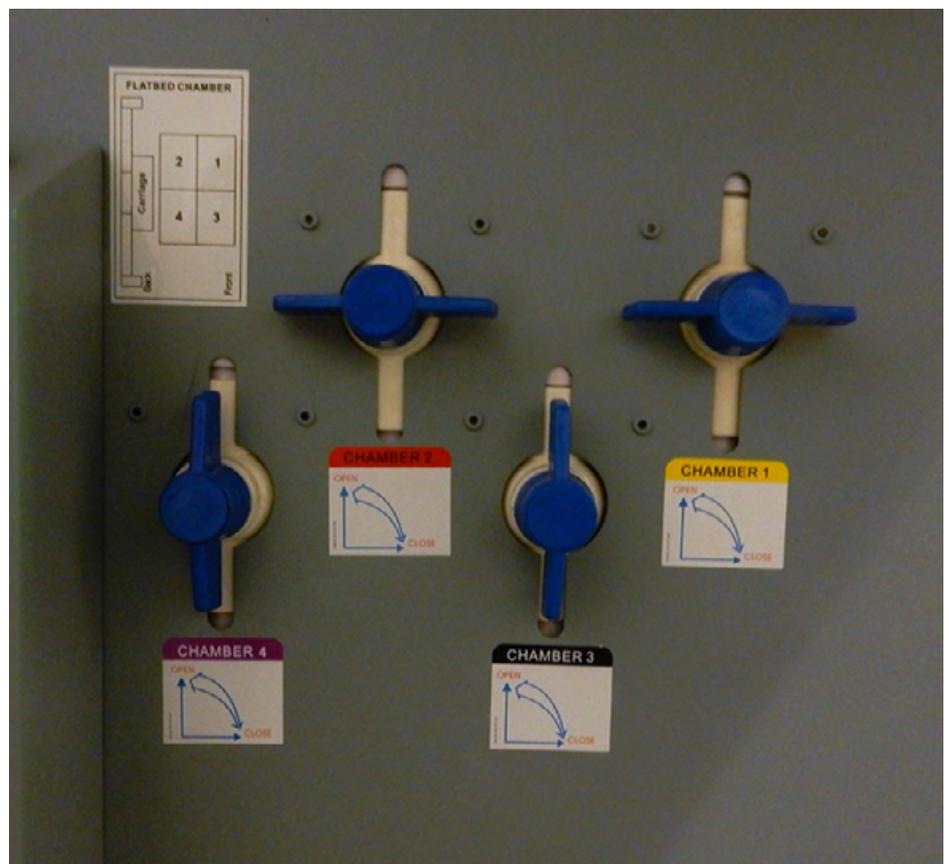
Yes, this is an issue on some vacuum systems; this is the sort of issue you will find out only after you have used the printer for a few months. So if you use atypical or unusual materials, be sure to test them. Otherwise, with normal signage materials, issues with too strong a vacuum on thin materials has not yet been documented.

46. Is the vacuum too weak for some materials? Does this mean you have to waste your time and tape materials down to the top of the flatbed table?

Almost every time I see the Mimaki JF-1631 UV flatbed in operation, the operator has to waste his time to tape down the material, sometimes on all four sides. This is inexcusable. On the iti, the material printed on was light-weight and not thick. Yet it did not have to be taped down all along all four sides.

47. Do you need compressed air for any other aspect of the printer?

It is normal to need an air system from your printshop. For the iti you need air for media alignment pins.



Each section has a manual OFF/On control, at the lower end side of the printer (at the right side of this end of the printer).

SAFETY & HEALTH CONCERNS

48. Are there mercury arc lamps or LED curing?

Presently the lamps are mercury arc. In the future LED lamps could be available.

As with any printer, if you are seated at a desk, the shields on the mercury lamps do not protect your eyes at this lower level.



PRINTHEAD TECHNOLOGY

49. Which brand and model printhead is used? What is the drop size in picoliters?

The present model of iti has Ricoh Gen5 printheads. Picoliter count is 7, 14, and 21 pl.

50. What are the benefits of this printhead?

Previous models used Gen4 or Konica Minolta printheads. HP has used the ancient Gen3 forever. Benefits of Ricoh Gen5 in general is that the nozzle plate is robust. Plus the head has a good nozzle quantity: 1280 nozzles. This means you can have two colors in a single head (or you can have all the nozzles for just one color, and get more speed).

51. What are the downsides of this printhead?

Finding downsides of a Ricoh Gen5 head would be a good assignment. Nothing is perfect, but Ricoh heads are definitely more impressive than Toshiba Tec (we get more complaints on this head in Océ printers than on any other head in the world) or Epson (clogging).

52. How many printheads per color?

Two colors per head, when desired. Or, one complete printhead for one color (or with 8 heads: two heads for each color of CMYK). Or you can have different ink color options, per your specific personal needs.

53. How many total number of printheads?

Basic model has two printheads (half a head for each color, CMYK).
The test printer had three printheads (so had a dedicated white head)
You can request up to eight printheads.

54. Are there two printheads for white, and are they separated so one can print before, and the other after the regular colors have been printed? What is the position of the white printheads relative to the rest?

Yes you can have double the number of nozzles for white ink, than for CMYK.

Yes, the printhead for white is intelligently placed in a clever position so that you can print white before, or after, you have printed the CMYK by printing while the gantry is moving front to back or back to front.

WHITE Ink & Varnish**55. Is white ink available?**

Yes, white ink is available, and you can assign an entire printhead to white ink.

56. Is the white ink placed in a position to make its use quick and easy?

Yes, the printheads for white ink are offset, so that depending on whether you wish to print white first, or white last, this can be achieved (in the settings in your RIP and firmware).

So clearly this printer is designed and manufactured by engineers who have experience (as they should, since the same factory makes printers for leading brands).

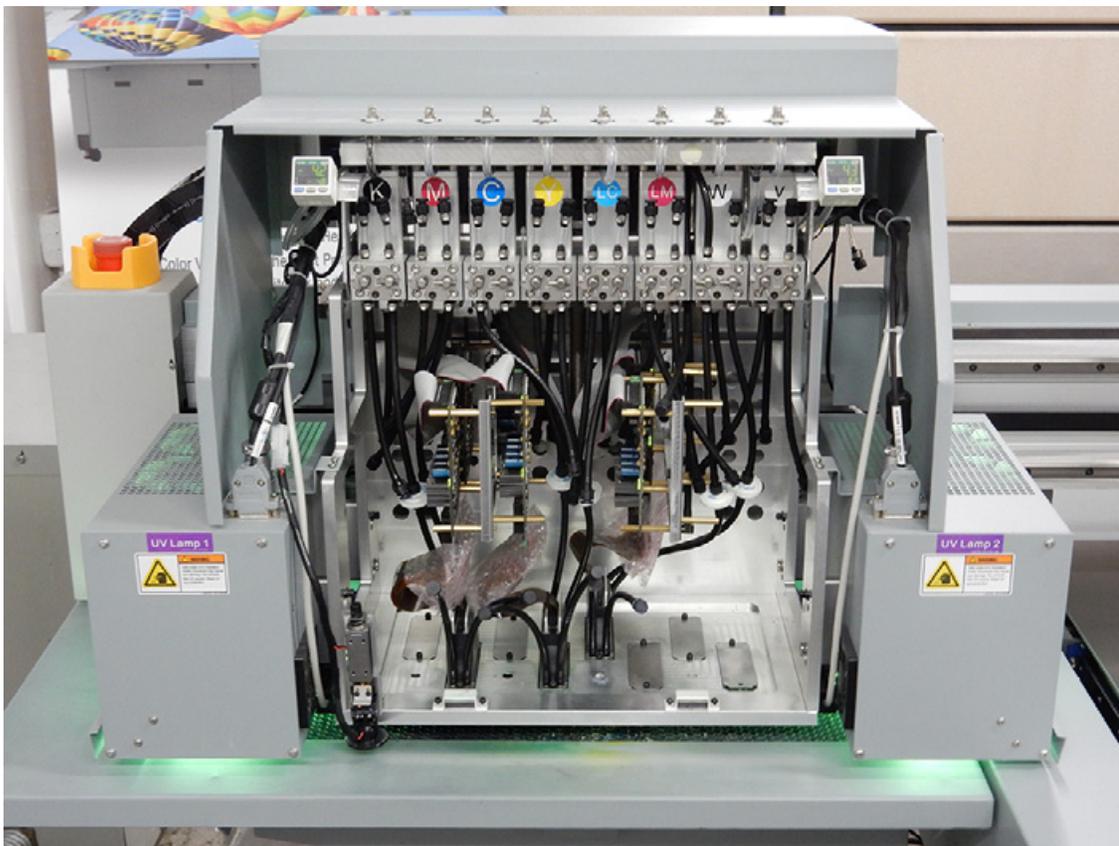
57. What kinds of white ink printing can be accomplished?

The system offers eight applications of white ink:

- Base Color,
- Overcoat Color,
- Fill Color,
- Underspot Color,
- Overspot Color,
- Spot Color,
- Three layers,
- and Spot Three Layers.

58. Is varnish available?

Varnish is available but was not on the printer model in this demo room.



INK Cost

59. What kind of ink is used?

There are many different kinds of UV-cured ink, depending in large part on what you will be printing on: ink only for rigid material; ink only for roll-fed material; ink which is usable both on rigid and roll-fed; and ink for thermoforming. The present model of iti printer uses a general purpose ink which works for both roll-fed and for flat material.

60. What size containers for new ink? What is cost per container?

You buy ink in one liter containers.

61. What is cost of ink per liter?

Retail cost is \$100 per liter. Most ink for Korean and Japanese printers is \$200 per liter. So with this printer, in effect, you are getting a 50% discount on the ink.

62. What is cost of ink per square meter?

15 cents to 25 cents depending on coverage

63. How much ink does the printer hold?

Three liters per color. Plus, you can add ink while printer is printing.

INK Color Gamut

64. Which colors print best?

Since no colors printed awful, it is a challenge to list all the colors that printed well. But the flowers and plants looked beautiful.

65. Which colors print iffy?

75% of UV inks are poor on reds (most UV inks are awful on red). The flowers we had as test prints included red colors which were acceptably produced. So the reds from the ink used in this printer are better than most brands. I would want to print a MacBeth color chart, and even more red flowers to check on other kinds of reds.

Most major brand UV-cured inks are not able to print green adequately (has too much yellow). This iti printed the green leaves handsomely.

Most major brands of UV inks are not able to print yellow attractively; they produce either a yellow with too much green, or they produce a dirty yellow. I did not notice any of these issues but I would want to add more yellow flowers to the test to double-check. But from all the colors that I tried, the results were better than other brands of printers costing tons of money more than this iti brand.

66. Which colors print poorly or not at all?

I have not yet found a color that was awful with this ink, though no UV-cured ink has a perfect color gamut. But for my own color needs, I sure would prefer this ink than ink used by lots of other printers.

THE UV CURING LAMPS



You almost always have light in your eyes if you are sitting in a chair at a desk. For normal light leak for an operator who is standing or walking at normal height, the mercury lamps are well shielded.

67. What brand of UV lamp is used?

A local brand made in China.

68. Who makes the reflector?

A local brand made in China.

69. What about light leak?

You almost always have light in your eyes if you are sitting in a chair at a desk. I am not sure whether any brand addresses this aspect. But for normal light leak (for an operator who is standing or walking at normal height), the mercury lamps are well shielded.

Clearly this model is made for international level, since the light leak when your eyes are at the height of you standing is clearly addressed.

For year after year Océ claimed that their light leak met EU regulations, but FLAAR Reports repeatedly stated that they had far too much light leak (almost more than of any printer made outside China). Finally someone at Océ realized their light leak was indeed a detriment, and they fixed this issue.

The iti is designed by people who are aware of what print shops in USA and Europe will expect. Plus the factory has experience worldwide. If I had felt there was excessive light leak (or excessive odor as on many HP printers several years ago), we would have clearly mentioned these issues.

CLEANING & MAINTENANCE NEEDS

70. Are there wipers?

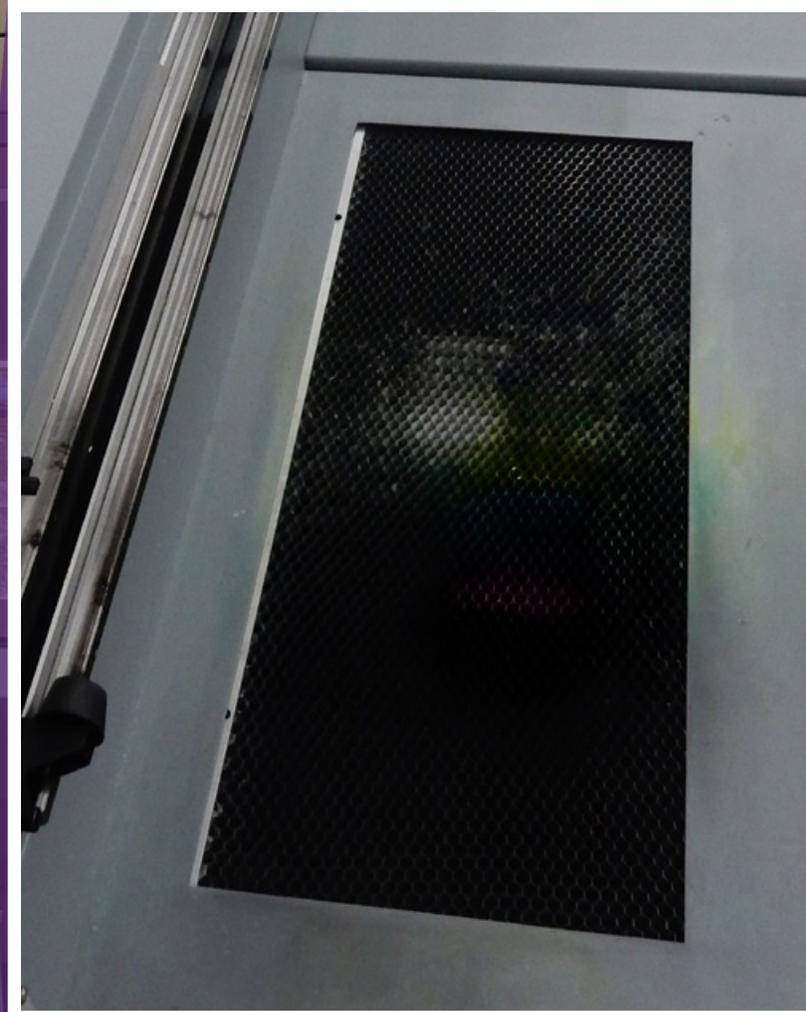
The era of wipers did not last long. Wipers often caused more problems than they cured. So this printer does not have mechanical wipers. Instead you use a lint free material and clean the printheads manually.

71. Is there a vacuum suck cleaning system, like a traditional vacuum cleaner?

You can always tell a printer is cheap and low bid when someone in the booth uses a vacuum cleaner to suck the printhead plates. So there is no vacuum cleaner prescribed for this printer (these are Ricoh printheads, not entry-level Epson DX5 printheads).

72. Where is parking area? Where is service area? Is the service area the same as the parking area?

Parking area and service area is the same area: at the left.



Parking area and service area is the same area: at the left.

PRINTHEAD CARRIAGE and GANTRY



Carriage is constructed from precision machined parts and holds the print heads, print head driver electronics, small ink tanks.

73. Describe the design and construction of the carriage area? Size, shape? What is contained, and where?

Carriage is constructed from precision machined parts and holds the print heads, print head driver electronics, small ink tanks.

74. Does the printer use a real Igus or a clone?

Local version is used.

75. Is the motor a linear motor or a stepper motor?

Stepper motor; best discussed with an engineer if you need more info.

76. Is the carriage moved by a magnetic field or a motor?

Magnetic technology is used mostly in printers costing over a quarter of a million dollars.

77. If the objects you are printing are not as wide as the full width of the printer, does the printing carriage still have to cross the entire space, or can the printing assembly hover just over the area of what has to be printed (and thereby be a bit faster?).

The firmware can intelligently have the carriage return after finishing the selected print area. This printer is based on many years of experience.

MOTORS: Stepper, Linear, Magnetic?

78. Describe the motor and drive system that moves the flatbed (if the bed moves)? If a screw-drive, is it Teflon coated or is it lubricated.

Table is fixed – it does not move

79. Is there a motor on each side of the flatbed (to move the gantry)?

Yes there is a lead screw and motor for each side

80. Describe the motor and the system that moves the printhead carriage? Is the motor for the carriage a linear servo motor or a stepper motor?

Both

ELECTRONICS & FIRMWARE (Software)

81. Where are the electronics made (circuit boards that control various functions)? Japan, Korea, Taiwan, Mainland China, Europe, or USA?

Mostly in China

82. Where is the firmware developed (the software that controls the printer)? Japan, Korea, Taiwan, Mainland China, Europe, or USA? Or in-house by own engineers?

In house engineers

83. Is the dot pattern affected by the brand of circuit board or firmware that is used in this printer?

No

RIP SOFTWARE & Printer Software

84. Which RIPs are featured?

PhotoPrint ver 10.5 is included with the purchase.

Caldera RIP is available at extra cost.

85. Who makes the firmware? Same company as printheads?

Printer manufacturer

86. General comments on software (firmware and RIP).

By selecting the appropriate curing mode, you can make the overall image more glossy, yet without it being overly glossy. I tend to prefer a satin appearance, since most matte surfaces are too dim and too dull for signage.

This is a positive feature since there are a few UV-cured printers which can't produce a glossy output. These other brands produce a dull uninspiring image.

The iti can produce an attractive satin or an even more noticeable semi-gloss.

UPGRADES, Future Improvements?

87. What features have been added, or changed since the printer first appeared?

Most printers don't add or drop a feature at all. They are frozen the way they are first produced. Canon, Epson, Encad, HP Designjet are were like this: no intermediate changes, unless you call the HP 5500 an intermediate change from the 5000.

But other printers have changed as it evolved through beta stage over an entire year. The down side of having lots of changes is that this means the original printer had inadequate parts.

Since the present printer is based on many years experience, it is mature, so does not need quick or quirky upgrades. But if you want high speed mode, you can upgrade to two full heads per color.

88. What features have been added in the last six months?

Ricoh Gen 5 Print heads

89. What features are being added, or changed in the next month or so?

A more User Friendly and Intuitive User Interface

90. What features are being added, or changed, further out in time?

LED curing can be considered, as soon as the cost comes down.

91. Are upgrades modular, or are you stuck buying a completely separate new printer?

With early L&P Virtu printers, and with some Gandinnovations UV printers, upgrades are modular. But with most other systems, once the company develops a better, or cheaper, way to do things, they tend to come out with a different model and expect you to buy an entirely new model.

92. What firmware upgrades have been made available?

It is usual to have firmware upgrades. They may take hours to download off the Internet. I always find it easier to ask for the upgrades on a CD.

New firmware software can often significantly overcome earlier problems. Most firmware updates come during the first six months after the printer is introduced.

93. What new firmware upgrades are likely in the future?

Changes to User Interface

OPERATING THE PRINTER

94. Can the operator manage print jobs via the Internet with this printer?

Obviously you don't want to have a UV-lamp running in your shop while you are guiding the printer via the Internet from home. But it does help if people elsewhere in your office can keep track of the printer from their desks. Whether or not you can check the printer from a remote location has to do with the printer firmware and in some instances which RIP software you use. Normally such options are available on quarter-million dollar printers (such as Durst). So you would not expect this cost with this printer.

95. What is the level of ease of use? Can anyone use this printer or do they have to be trained and certified? What about daily and periodical routine maintenance?

Using a printer and doing maintenance on a printer are two completely different aspects for the printer operator to handle. The Zund 215 was probably not inherently more difficult to "use," but I would not want a minimum-wage employee to try to do maintenance on this machine without serious training, experience, extreme patience, and dedication.

Training for the iti will be appreciably easier than training for an atypical construction such as the Zund 215 of ten years ago!. Four hours would be normal training if the operator knows the jargon already.

96. Is the printer user friendly?

Yes.

97. What sensors does the printer have?

I have not yet seen a spec sheet, or really even a user manual, that specifically lists all the sensors on any printer.

The more things you have to do by hand, the more time you waste.

The more sensors the printer has, the more costly the machine will be.

The iti has common sense sensors, to detect media height, and a bumper sensor to detect obstacles (such as your hand) to stop the carriage. This collision bumper is well conceived because after it stops the carriage, you can restart without losing that print job.

98. Which materials are pre-established in the software, or do you have to create the settings for each class of material yourself?

RIP software allows you to store color profiles for various media

99. In the main area for operation, is the machine software based (touch screen), or with physical control buttons? Or both?

Every manufacturer has their preferences. Most Japanese printers have backward old-fashioned system (such as the early Mimaki JF-1631 flatbed): only a tiny rudimentary LCD screen a few inches high.

A UV-cured printer needs a computer monitor for handling the options. An entry-level solvent printer can make do with an old-fashioned miniature LCD screen stuck on the front of the machine.

100. Do you get an LCD screen in the printer or a real computer monitor? How big is the screen or monitor?

Intelligently there is no silly screen stuck on the printer. You have two meters on the printhead carriage, but they are for their own special purpose (to show vacuum level).

The entire system is controlled by your own computer, on which you add the RIP software.

101. Is the position of the LCD screen or monitor user-adaptable?

Since you are not stuck with an LCD screen on the printer, you can place your computer monitor anywhere you wish.

102. Where does the computer keyboard sit?

You will tend to put your own computer on its own (moveable table) so the keyboard sits in front of your monitor.

103. Can the keyboard be moved or is it fixed into the structure of the printer?

Perhaps 30% of the keyboards are movable, but generally the ledge or work area is too small to really allow a keyboard to be moved around much. All this silliness is avoided with this iti model.

104. Is there a drawer under where the computer keyboard is (a drawer for storing odds and ends)?

A drawer or even an open cupboard is a nice touch. Since you are making your own computer table, you can have whatever size or shape that you wish.

105. Where does the operator stand or sit?

Ideal are the few systems where the work area (namely the computer with its LCD monitor) is on a small table with wheels. This way you can move to wherever you have space in your shop and wherever you find is best for your personal preferences.

106. What aspects of the printer can you operate from behind (the loading area)?

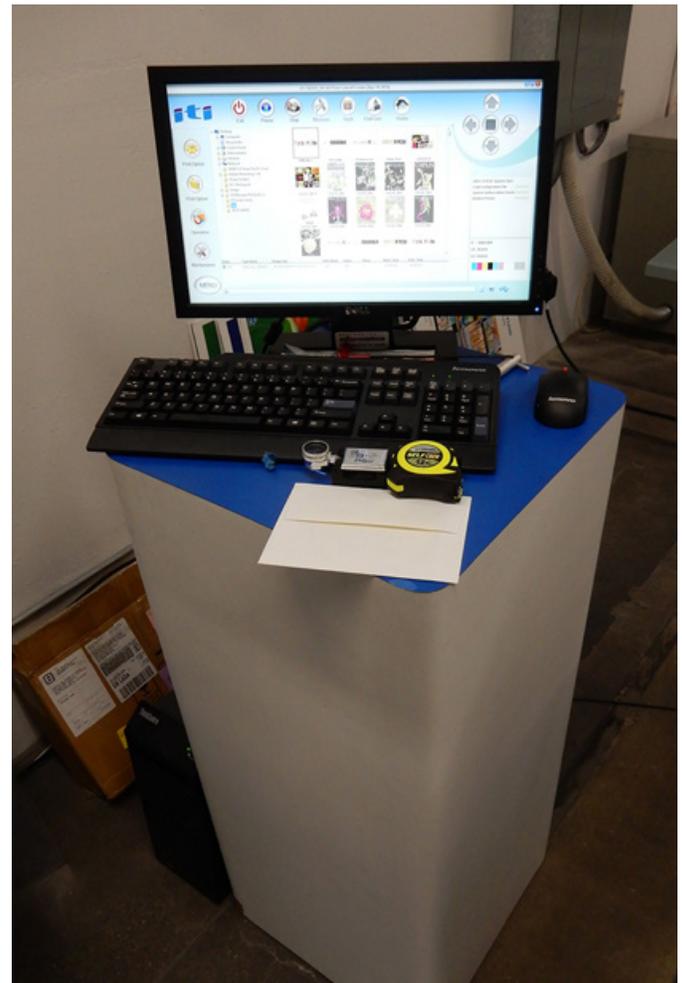
Some printers have almost no controls at the "back" (loading area). Other printers have some controls. Some large sophisticated printers have key controls duplicated, so you can activate a feature whether you prefer doing that act from one side or another.

107. What controls are on either end?

It is rare to have any controls at the end of a printer other than the entry point of the power cord (which here is at the right end).

108. Is a foot pedal included (for operating aspects of the printer)?

Perhaps 10% of the printers have a foot pedal. This printer has no foot pedal.



You will tend to put your own computer on its own moveable table so the keyboard sits in front of your monitor.

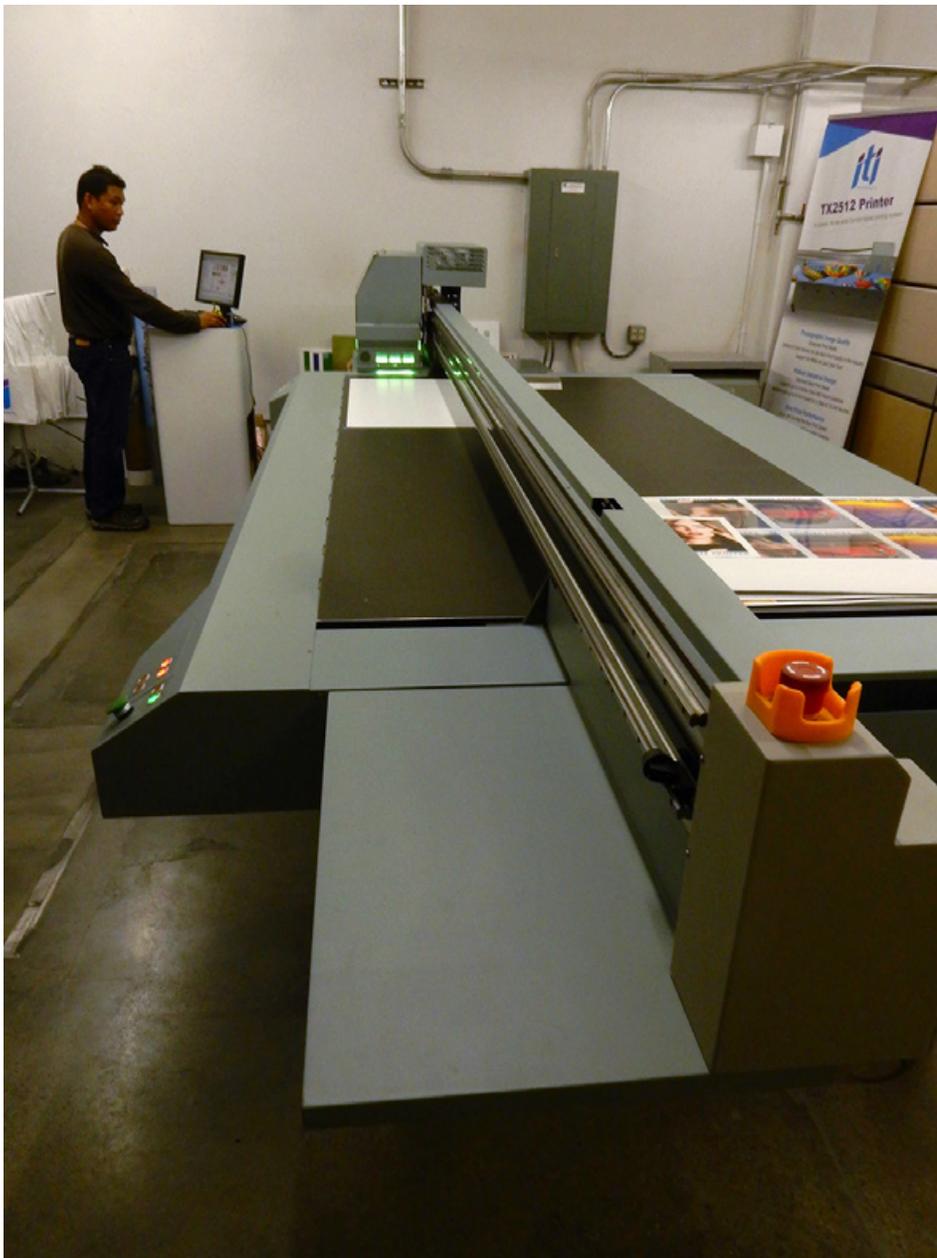
109. Can you do unattended printing? For how long? How about overnight?

Most print shops would not recommend doing unattended printing when UV lamps are involved, due to fire hazard, or melting some unpleasant material if it got caught under the lamp. Also, unless you have an auto-feeder and auto-stacker at the other end, you could not handle unattended printing of flat rigid material.

But for printing during the day, while the crew has a coffee break or even a lunch break, most places would keep their printer running. However in theory, it is best that someone is keeping an eye on the printer the entire time.

110. How many operators or operator assistants does this printer require?

The Luscher was too large to load and unload by one person. The Luscher had mechanical and other issues as well, and was withdrawn (after about a dozen people got stuck with this half-million dollar machine).



For a printer of 4x8' size, one person can load most materials.

111. What can you control, as operator?

Some things the printer firmware controls; other aspects the RIP software handles. But you, as operator, need to be in control (unless you prefer the more expensive printers which do most of the thinking for you).

112. Is there a pole with beacon lights?

Dilli was among the first to use a vertical pole with beacon lights. Most other printers do not have such a beacon. Presence of a beacon is not a major plus point; absence of a beacon is not a significant minus point.

For a printer of 4x8' size, one person can load most materials. Ideal are the few systems where the work area is on a small table with wheels. This way you can move to wherever you have space in your shop and wherever you find is best for your personal preferences.

USER MANUAL:**113. How many manuals are there? User Manual? Service Manual?**

There is one big combined manual which covers both, User Functions and Service Functions, plus in the same manual the Installation information.

114. The User Manual, is it Good, bad, or awful?

Good – it is being updated by U.S. Based Technical Writers. I have seen the initial version; I will inspect the final version when it is finished. In other words, this is not a crude translation; it is written by internationally experienced authors, in the USA.

115. What about illustrations in the User's Manual?

Lots of very good images

116. Is there a glossary?

The Diagram of the entire front of the printer is both a professional illustration as well as a helpful glossary. It is clever to have a glossary within an illustration of everything.

117. Is the English Good, bad, or ridiculous?

About half the manuals I have read from Japanese brands of printers are most politely described as “informal translations.” In other words, not really English.

In distinction, this manual for iti has been developed in the U.S.

ADVERTISING CLAIMS:**118. What are the advertising claims in the brochure?**

Excellent Image Quality and Price Performance. I saw these aspects when doing the print samples.

Too many printers claim their printers can print on glass, ceramics, metal, and leather. But none of these claims admit the need for pre-coating, priming, etc.

119. What are the advertising claims of the sales rep or booth person?

Be realistic when speaking with sales rep of any and every company, even of a Fortune 500 manufacturer which claims its model 700 UV machine is an “industrial printer.” This is not a fair claim, since it is a mid-range printer. An okay printer, but outsold by most other brands (even outsold by Chinese brands).

COMPARISONS WITH OTHER PRINTERS**120. When people are considering buying this printer, what other printer(s) are they also looking at?**

A print shop may be looking at a Mimaki flatbed or popular Océ Arizona. However the ink used by the iti gives potentially better color gamut. Plus the iti is appreciably lower cost.

For a distributor, the iti has the benefits of flexibility because additional models can be created.

121. What features on the other printers may be issues?

Poor color gamut and banding is an immediate issue.

The Toshiba Tec printheads get more complaints than most other brands and models, for any situation with dust or whatever. I would myself always prefer and recommend a printer with Konica or with Ricoh printheads.

122. What aspects of the selected printer help decide in its favor?

Print quality will make the first step of the decision in favor of the iti: no banding, no splotches at the edge of color. This makes the iti better than countless brands sold directly.

SUMMARY: Image Quality Issues: Banding

123. Is there banding in areas of solid dark colors?

I was not able to find banding in areas of dark colors, not in areas of light colors.

124. What causes banding in this particular system?

Some printers have curing banding; other printers have banding resulting from inaccurate feeding. This iti printer had no banding.



I was not able to find banding in areas of dark colors, nor in areas of light colors.



Nicholas Hellmuth (FLAAR Reports), Rak Kumar (iti), Ralph Johnson (iti) holding iti TX2512 printing samples.

SUMMARY: Image Quality Issues: General

125. Is text sharp or fuzzy? What is the smallest text that you can easily read?

I have not yet been able to find fuzzy text. Dozens of brands and scores of UV-cured printer models have splatter at the edge of color areas. You often get splatter on text as well.

This iti had no splatter on the edge of any color that I have yet been able to notice.

How the mechanics and firmware do this is frankly impressive. There are printers of international Fortune 500 brand names which still have splatter.



CONCLUSIONS:**Pros**

Significantly less cost than Mimaki or Oce. I believe is also less cost than Handtop (CET in USA; will have to double-check).

The manufacturing company has a well-known and respected owner, capable management, plus equally friendly and hospitable managers in the company booth at trade shows. It is rare to mention the personality of the owner in a printer product review, but we do so since with 15 years experience we have learned that if the owner or CEO has issues within the industry, this causes the corporate product to fail in the marketplace and especially to have little resale value as a used printer.

The manufacturing company has international connections and alliances already, and these connections and alliances have lasted years are still in full function. Again, this is crucial to mention since other factory brands' relationships have failed, their distributors have dropped those other brands, and rebranders have stopped rebranding several other of those brands.

Cheap low-end printers have their vacuum pumps scattered around exhibitor booths. These vacuum pumps make screechingly loud noise. It looks so inadequate to have the pumps so informally placed. In distinction, the iti has their vacuum pumps neatly situated inside the printer structure.

Cons

I will need to do a lot of work to figure out something wrong with this printer. No printer is perfect, so sooner or later a fault will be discovered. But this is an umpteenth generation model from a factory which has had USA partners for years and years. These USA partners have taught the factory what is expected by print shops in the North American market.

When we visited print shops nine years ago, we saw literally cheap junk being sold by US dealers. These printers (another brand, and not the factory that makes iti), were what set the sad public opinion all these years. Then other brands tried their tricks. Brand by brand they soon revealed their weak points, and distributors dumped them after print shops complained about the junky components. So today, in 2015, there is a new understanding in China. A new style: that the path to success is to have international partners so that a model can provide the ability and features and durability that is expected across North America (and Western Europe and many other parts of the world).

It would help to visit print shops using the flatbed printers from the factory to learn about their durability over time. The printer is sturdy, the quality is frankly better than some brands made in the Americas, but it would help to inspect a product in use six months, etc.

Things to check before you make your decision

We always recommend speaking with an end-user who has experience with the printer outside a demo-room.

What would FLAAR suggest as potential add-ons in the future?

I would like to see an ink dedicated to thick and rigid materials to be available for those clients which may prefer this over a generalized ink (which is in the printer currently).

I would like to see the ability to use an iPad to control the printer, and the ability to check on the status of the printer from any computer in my office (or from my home, not to run print jobs, but to check what it was up to at that moment).

Comments & Suggestions

I entered the test room with mixed feelings, since fifteen years experience with UV-cured printers around the world has provided an often cynical view to some aspiring brands. I have watched Grapo's potential fail after re-branding as SigmaJet (they tried to compete with a Xaar-powered powerful printer in a market then dominated by Durst, efi VUTEK, NUR (via HP), Scitex Vision (also via HP), ColorSpan (also via HP).

I have also seen brand after brand from China fail to penetrate the world market because the owner switched to much focus to glass printing and ceramic tile printing (thus losing focus on the entry-level flatbed signage market).

I have seen many many brands fail because the distributors dumped the brand after it was not realistic to get factory tech support, and more usual, because the cheap low-bid components inside the printer fell apart, rendering the high quality Japanese printheads non-functional since the rest of the structure failed after a few weeks or months.

But I have noticed that several Chinese factories got the message and realize that merely being low price is not enough. The printer has to function full time the first six months for sure, and must continue to function year after year, with only realistic replacement of occasional parts that should be replaced even in a printer Made in Japan or Made in Korea.

Having lived in Beijing for six weeks and having worked in China as consultant to manufacturers of inks, media, and printers for over six years, I am aware that Chinese engineers are fully capable. But if owners, or supervisors, allow screws or bolts whose threads disintegrate from the normal vibration inside a printer, then all the good design fails (this was the problem with the first Chinese-made UV-cured printers sold in USA through Miami dealers about eight or nine years ago).

So it was very refreshing to see a professional product from an experienced factory. By partnering with international distributors, this will raise the quality level even further.

Frankly the printing quality of this iti printer is better than that of the HP Scitex FB500 or FB700, which are labeled as "Industrial Printers" (an over-enthusiastic wish). The modest upgrades of FB550 and FB750 has hopefully improved their print quality (HP, Scitex, Nur, and ColorSpan all had considerable international experience in making UV-cured printers). Yet the iti has Gen 5 heads; these HP printers have only Gen 3 heads (at least the previous models did).

And here is precisely the benefit of having FLAAR brought for an evaluation: we have umpteen years experience

literally around the world. We have seen the good and the bad, and impressive and the embarrassing. FLAAR is flown to factories to R&D labs, to demo rooms, to distributors, and to print shops in Africa, Asia, Latin America, Australia, Europe (both Western Europe and Eastern Europe).

Plus we have been in the factories of inks, media, color management, RIP software, and laminators. So frankly I was not expecting to see the quality that I saw, printed with my own photographic test prints.

The iti can produce both glossy and satin finish. There are competing brands whose output is dull and unenthusiastic. In each aspect, this printer beat all my expectations.

Seven years ago Xaar took me to several Chinese printer factories every year. Plus several printer factories have provided airplane tickets for me and an assistant to fly over to visit their factory. These factories like to hear my comments and suggestions about what is good about their printers, and most importantly, what could be improved. Because when their printers are improved, then they can get more distributors

And most importantly, a respected factory can find brands in USA and Europe who will want the factory to do contract manufacturing for them.

Little things; features that do indeed help

There is a saying, "it is the little things that count." There was a metric stick incised all the way across the front of the flatbed table (so you could measure position, etc).

There is even a sensor bumper on the front of the carriage.

So as a final observation, this is a printer with potential.

Reality Check

Being a university professor for many years does not mean we know everything. So, if in your years of wide format printing experience you have encountered results different than ours, please let us know at ReaderService "at" FLAAR.org. We do not mind eating crow, though so far it is primarily a different philosophy we practice, because since we are not dependent on sales commissions we can openly list the glitches and defects of those printers that have an occasional problem.

FLAAR and most universities have corporate sponsors but FLAAR web sites do not accept advertising, so we don't have to kowtow to resellers or manufacturers. We respect their experience and opinion, but we prefer to utilize our own common sense, our in-house experiences, the results from site-visit case studies, and comments from the more than 53,000 of our many readers who have shared their experiences with us via e-mail (the Survey Forms, in the years we had this system).

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Update Policy

FLAAR Reports on UV-curable roll-to-roll, flatbed, hybrid, and combo printers are updated when new information is available. We tend to update the reports on new printers, on printers that readers ask about the most, and on printers where access is facilitated (such as factory visits, demo-room visits, etc).

Reports on obsolete printers, discontinued printers, or printers that not enough people ask about, tend not to be updated.

Reports on inks, media, substrates, cutters, etc. tend not to be updated because we have so many new products to evaluate. It is not realistic, timewise, or costs involved, to update old reports (nor old web pages). But we do spend a lot of effort doing research at printer and signage expos around the world so that we can write new reports.

The present report is issued in October 2015 and is valid for one year.

Please Note

This report has been licensed to iti, but otherwise has not been licensed to any printer manufacturer, distributor, dealer, sales rep, RIP company, media, or ink company to distribute. So, if you obtained this from any company, you have a pirated copy.

If you have received a translation, this translation is not authorized unless posted on a FLAAR web site, and may be in violation of copyright (plus if we have not approved the translation it may make claims that were not our intention).

Also, since this report may be updated, if you got your version from somewhere else, it may be an obsolete edition. FLAAR reports are being updated when necessary, and our comment on that product may have been revised positively or negatively as we learned more about the product from end users.

To obtain a legitimate copy, which you know is the complete report with nothing erased or changed, and hence a report with all the original description of pros and cons, please obtain your original and full report straight from www.large-format-printers.org or other pertinent FLAAR web sites.

Your only assurance that you have a complete and authentic evaluation which describes all aspects of the product under consideration, benefits as well as deficiencies, is to obtain these reports directly from FLAAR, via any of the sites in our network, such as www.wide-format-printers.NET.

Citing and Crediting

A license from FLAAR is required to use any material whatsoever from our reports in any commercial advertisement or PR Release.

If you intend to quote any portion of a FLAAR review in a PowerPoint presentation, if this is in reference to any product that your company sells or promotes, then it would be appropriate to ask us first. FLAAR reports may be updated,

and our comment on that product may have been revised as we learned more about the product from end users. Also, we noticed that one company cited the single favorable comment we made on one nice aspect of their printer, but neglected to cite the rest of the review which pointed out the features of the printer which did not do so well. For them to correct this error after the fact is rather embarrassing. So it is safer to ask-before-you-quote a FLAAR review on your product.

The material in this report is not only copyright, it is also based on years of research. Therefore if you cite or quote a pertinent section, please provide a proper credit, which would be minimally "Nicholas Hellmuth, year, www.FLAAR-Reports.org." If the quote is more than a few words then academic tradition would expect that a footnote or entry in your bibliography would reference the complete title. Publisher would be www.FLAAR.org.

Legal notice

Inclusion in this study by itself in no way endorses any printer, media, ink, RIP or other digital imaging hardware or software. Equally, exclusion from this study in no way is intended to discredit any printer.

A printer may change components since we first reviewed it. A component may be defective in the specific machine you buy (which is obviously not the specific machine we evaluated). And in some factories they may have forgotten to screw a particular part in correctly. So that component may break or wear out, and cause downtime (or injury to the printer operator). There is no realistic way even an evaluation can offer protection from such normal issues with one manufacturing run.

An ink company may change components and sources of chemicals. So an evaluation we do in 2015 on an ink may apply only to the formula of the ink made that year. And almost every ink company in the world has an occasional bad batch. An ethical ink company refunds purchase price if the bad batch was the fault of the ink factory, however heat or humidity during shipping or even in your own print shop can cause issues as well (which are not the direct fault of the ink factory).

Advisory

We do our best to obtain information which we consider reliable. But with hundreds of makes and models of printers, inks, materials and other products, and sometimes when information about them is sparse, or conflicting, we can only

work with what we have available. Thus you should be sure to rely also on your own research, especially asking around. Find another trustworthy end-user of the same make and model you need to know about. Do not make a decision solely on the basis of a FLAAR report because your situation may be totally different than ours. Or we may not have known about, and hence not written about, one aspect or another which is crucial before you reach your decision.

The sources and resources we may list are those we happen to have read. There may be other web pages or resources that we missed. For those pages we do list, we have no realistic way to verify the veracity of all their content. Use your own common sense plus a grain of salt for those pages which are really just PR releases or outright ads.

We are quite content with the majority of the specific printers, RIPs, media, and inks which we select to evaluate. We would obviously never ask for hardware, software, or consumables that we knew in advance would not be good. However even for us, a product which looks good at a trade show, sounds good in the ad literature, and works fine inside a demo room, may subsequently turn out to be not quite as fully functional out in the real world.

Or the product may indeed have a glitch but one that is so benign for us, or maybe we have long ago gotten used to it and have a workaround. And not all glitches manifest themselves in all situations, so our evaluator may not have been sufficiently affected that he or she made an issue of any particular situation. Yet such a glitch that we don't emphasize may turn out to be adverse for your different or special application needs.

Equally often, what at first might be blamed on a bad product, often turns out to be a need of more operator experience and training. More often than not, after learning more about the product it becomes possible to produce what it was intended to produce. For this reason it is crucial for the FLAAR team to interact with the manufacturer's training center and technicians, so we know more about a hardware or software. Our evaluations go through a process of acquiring documentation from a wide range of resources and these naturally include the manufacturer itself. Obviously we take their viewpoints with a grain of salt but often we learn tips that are worthy of being passed along.

FLAAR has no way of testing 400+ specifications of any printer, much less the over 201 different UV printers from more than 100 manufacturers. Same with hundreds of solvent printers and dozens of water-based printers. We observe as best we can, but we cannot take each printer apart to inspect each feature. And for UV printers, these are too expensive to move into our own facilities for long-range test-

ing, so we do as best as is possible under the circumstances. And when a deficiency does become apparent, usually from word-of-mouth or from an end-user, it may take time to get this written up and issued in a new release.

Another reason why it is essential for you to ask other print-shop owners and printer operators about how Brand X and Y function in the real world is that issues may exist but it may take months for these issues to be well enough known for us to know the details. Although often we know of the issues early, and work to get this information into the PDFs, access to information varies depending on brand and model. Plus with over 300 publications, the waiting time to update a specific report may be several months. Plus, once a printer is considered obsolete, it is not realistic to update it due to the costs involved.

For these reasons, every FLAAR Report tries to have its publication date on the front outside cover (if we updated everything instantly the cost would be at commercial rates and it would not be possible to cover these expenses). At the end of most FLAAR Reports there is additionally a list of how many times that report has been updated. A report with lots of updates means that we are updating that subject based on availability of new information. If there is no update that is a pretty good indication that report has not been updated! With hundreds of models of UV printers, several hundred solvent printers, and scores of water-based printers, we tend to give priority to getting new reports out on printers about which not much info at all is available elsewhere. So we are pretty good about reporting on advances in LED curing. But glitches in a common water-based printer will take longer to work its way through our system into an update, especially if the glitch occurs only in certain circumstances, for example, on one type of media. With several hundred media types, we may not yet have utilized the problem media. While on the subject of doing your own research, be sure to ask both the printer operator and print-shop owner or manager: you will generally get two slightly different stories. A printer operator may be aware of more glitches of the printer than the owner.

If a printer is no longer a prime model then there is less interest in that printer, so unless a special budget were available to update old reports, it is not realistic to update old reports. As always, it is essential for you to visit printshops that have the printers on your short-list and see how they function in the real world.

But even when we like a product and recommend it, we still can't guarantee or certify any make or model nor its profitability in use because we don't know the conditions under which a printer system might be utilized in someone else's facility. For ink and media, especially after-market third-par-

ty ink and media, it is essential that you test it first, under your conditions. We have no way to assure that any ink or media will be acceptable for your specific needs in your specific print shop. As a result, products are described "as is" and without warranties as to performance or merchantability, or of fitness for a particular purpose. Any such statements in our reports or on our web sites or in discussions do not constitute warranties and shall not be relied on by the buyer in deciding whether to purchase and/or use products we discuss because of the diversity of conditions, materials and/or equipment under which these products may be used. Thus please recognize that no warranty of fitness or profitability for a particular purpose is offered.

The user is advised to test products thoroughly before relying on them. We do not have any special means of analyzing chemical contents or flammability of inks, media, or laminates, nor how these need to be controlled by local laws in your community. There may well be hazardous chemicals, or outgassing that we are not aware of. Be aware that some inks have severe health hazards associated with them. Some are hazardous to breathe; others are hazardous if you get them on your skin. For example, some chemicals such as cyclohexanone do not sound like chemicals you want to breathe every day. Be sure to obtain, read, and understand the MSDS and REACH sheets for the inks, media, and laminates that you intend to use. Both solvent, eco-solvent, and UV-curable inks are substances whose full range of health and environmental hazards are not yet fully revealed. It is essential you use common sense and in general be realistic about the hazards involved, especially those which are not listed or which have not yet been described. FLAAR is not able to list all hazards since we are not necessarily aware of the chemical components of the products we discuss. Our reports are on usability, not on health hazards.

Most inks are clearly not intended to be consumed. Obviously these tend to be solvent inks and UV-curable inks. Yet other inks are edible, seriously, they are printed on birthday cakes. Indeed Sensient is a leader in a new era of edible inks. Therefore the user must assume the entire risk of ascertaining information on the chemical contents and flammability regulations relative to inks, media or laminates as well as using any described hardware, software, accessory, service, technique or products.

We have no idea of your client's expectations. What students on our campus will accept may not be the same as your Fortune 500 clients. In many cases we have not ourselves used the products but are basing our discussion on having seen them at a trade show, during visiting a print shop, or having been informed about a product via e-mail or other communication.

Results you see at trade shows may not be realistic

Be aware that trade show results may not be realistic. Trade shows are idealized situations, with full-time tech support to keep things running. The images at a trade show may be tweaked. Other images may be “faked” in the sense of slyly putting on primer without telling the people who inspect the prints. Most UV inks don’t stick to all materials; many materials need to be treated.

Or the UV prints may be top-coated so that you can’t do a realistic scratch test.

There are a few instances when the sample prints at a trade show were printed back at the factory demo room: not at the expo itself.

Booth personnel have many standard tricks that they use to make their output look gorgeous. In about half the cases you will not likely obtain these results in real life: in most cases they are printing uni-directional, which may be twice as slow as bi-directional. The images printed at trade show in uni-directional mode do not allow you to recognize that the printer has bi-directional (curing) banding defects until you unpack it in your printshop. Bi-directional curing banding is also known as the lawnmower effect. Many printers have this defect; sometimes certain modes can get rid of it, but are so slow that they are not productive.

Trade show examples tend to be on the absolutely best media. When you attempt to save money and use economy media you will quickly notice that you do not get anywhere near the same results as you saw in the manufacturer’s trade show booth, or pictured in their glossy advertisement. Many years ago we noticed Epson was laminating prints to show glossy output because their pigmented inks could not print on actual glossy media. The same equipment, inks, media, and software may not work as well in your facility as we, or you, see it at a trade show. All the more reason to test before you buy; and keep testing before you make your final payment. Your ultimate protection is to use a gold American Express credit card so you can have leverage when you ask for your money back if the product fails.

You absolutely need to do print samples with your own images and the kind provided by your clients. Do not rely on the stock photos provided by the printer, ink, media, or RIP manufacturer or reseller. They may be using special images which they know in advance will look fabulous on their printer. Equally well, if you send your sample images to the dealer, don’t be surprised if they come back looking awful. That is because many dealers won’t make a serious effort to tweak their machine for your kind of image. They may use fast speed just to get the job done (this will result in low quality). Check with other people in your area, or in

the same kind of print business that you do. Don’t rely on references from the reseller or manufacturer (you will get their pet locations which may be unrealistically gushy): find someone on your own.

Factors influencing output

Heat, humidity, static, dust, experience level of your workers (whether they are new or have prior years experience): these are all factors that will differ in your place of business as compared with test results or demo room results.

Actually you may have people with even more experience than we do, since we deliberately use students to approximate newbies. FLAAR is devoted to assisting newcomers learn about digital imaging hardware and software. This is why Nicholas Hellmuth is considered the “Johnny Appleseed” of wide format inkjet printers.

Therefore this report does not warranty any product for any quality, performance or fitness for any specific task, since we do not know the situation in which you intend to use the hardware or software. Nor is there any warranty or guarantee that the output of these products will produce salable goods, since we do not know what kind of ink or media you intend to use, nor the needs of your clients. A further reason that no one can realistically speak for all aspects of any one hardware or software is that each of these products may require additional hardware or software to reach its full potential.

For example, you will most likely need a color management system which implies color measurement tools and software. To handle ICC color profiles, you may need ICC color profile generation software and a spectrophotometer since often the stock pre-packaged ICC color profiles which come with the ink, media, printers and/or RIPs may not work in your situation. Not all RIPs handle color management equally, or may work better for some printer-ink-media combinations than for others.

Be aware that some RIPs can only accept ICC color profiles: you quickly find out the hard way that you can’t tweak these profiles nor generate new ones. So be sure to get a RIP which can handle all aspects of color management. Many RIPs come in different levels. You may buy one level and be disappointed that the RIP won’t do everything. That’s because those features you may be lacking are available only in the next level higher of that RIP, often at considerable extra cost. Same thing in the progression of Chevy through Pontiac to Cadillac, or the new Suburbans. A Chevy Suburban simply does not have all the bells and whistles of the Cadillac Escalade version of this SUV.

Most newer printer models tend to overcome deficiencies of earlier models. It is possible that our comparative comments point out a glitch in a particular printer that has been taken care of through an improvement in firmware or even an entirely new printer model. So if we point out a deficiency in a particular printer brand, the model you may buy may not exhibit this headache, or your kind of printing may not trigger the problem. Or you may find a work-around.

Just remember that every machine has quirks, even the ones we like. It is possible that the particular kind of images, resolution, inks, media, or other factors in your facility are sufficiently different than in ours that a printer which works just fine for us may be totally unsatisfactory for you and your clients. However it may be that the specific kind of printing you need to do may never occasion that shortcoming. Or, it may be that your printer was manufactured on a Monday and has defects that are atypical, show up more in the kind of media you use which we may not use as often or at all during our evaluations. Equally possibly a printer that was a disaster for someone else may work flawlessly for you and be a real money maker for your company.

So if we inspect a printer in a printshop (a site-visit case study), and that owner/operator is content with their printer and we mention this; don't expect that you will automatically get the same results in your own printshop.

In some cases a product may work better on a Macintosh than on a PC. RIP software may function well with one operating system yet have bugs and crash on the same platform but with a different operating system. Thus be sure to test a printer under your own specific work conditions before you buy.

And if a printer, RIP, media, or ink does not function, return it with no ands, ifs or buts. Your best defense is to show an advertising claim that the printer simply can't achieve. Such advertising claims are in violation of federal regulations, and the printer companies know they are liable for misleading the public.

But before you make a federal case, just be sure that many of the issues are not user error or unfamiliarity. It may be that training or an additional accessory can make the printer do what you need it to accomplish. Of course if the printer ads did not warn you that you had to purchase the additional pricey accessory, that is a whole other issue. Our reviews do not cover accessories since they are endless, as is the range of training, or lack thereof, among users.

The major causes of printer breakdown and failure is lack of maintenance, poor maintenance, spotty maintenance, or trying to jerry-rig some part of the printer. The equally com-

mon cause of printer breakdown is improper use, generally due from lack of training or experience. Another factor is whether you utilize your printer all day every day. Most solvent and UV printers work best if used frequently. If you are not going to use your printer for two or three days, you have to put flush into the system and prepare it for hibernation (even if for only four or five days). Then you have to flush the ink system all over again. Dust in the print shop are another serious issue (for clogging the printheads).

Also realize that the surface of inkjet prints are fragile and generally require lamination to survive much usage. Lamination comes in many kinds, and it is worth finding a reliable lamination company and receiving training on their products.

Also realize that no hybrid or combo UV printer can feed all kinds of rigid materials precisely. Some materials feed well; others feed poorly; others will skew.

Although we have found several makes and models to work very well in our facilities, how well they work in your facilities may also depend on your local dealer. Some dealers are excellent; others just sell you a box and can't provide much service after the sale. Indeed some low-bid internet sales sources may have no technical backup whatsoever. If you pay low-bid price, you can't realistically expect special maintenance services or tech support later on from any other dealer (they will tell you to return to where you paid for the product). This is why we make an effort to find out which dealers are recommendable. Obviously there are many other dealers who are also good, but we do not always know them. To protect yourself further, always pay with a level of credit card which allows you to refuse payment if you have end up with a lemon. A Gold or Platinum American Express card may allow you to refuse payment even months after the sale (for some products). This card may also extend your warranty agreement in some cases (check first).

Most of the readers of the FLAAR Reports look to see what printers we ourselves are interested in. Readers realize that we will have selected the printers that we like based on years of experience and research. Indeed we have met people at trade shows who told us they use the FLAAR web site reports as the shopping list for their corporate purchases.

Yes, it is rather self-evident that we would never ask a manufacturer to have us test a product which we knew in advance from our studies was no good. But there are a few other printers which are great but we simply do not have them in our facilities yet.

So if a printer is not made available by its manufacturer, then there is no way we can afford to have all these makes and

models in our facility. Thus to learn about models which we do not feature, be sure to ask around in other print shops, with IT people in other corporations, at your local university or community college. Go to trade shows....but don't use only the booth...ask questions of people in the elevator, in line at the restaurant, anywhere to escape the smothering hype you get in the booth.

Realize that a FLAAR Report on a printer is not by itself a recommendation of that printer. In your local temperature, in your local humidity, with the dust that is in your local air, with your local operator, and with disorientation of the insides of a printer during rough shipment and installation, we have no knowledge of what conditions you will face in your own printshop. We tend to inspect a printer first in the manufacturing plant demo room: no disjointed parts from any shipment since this printer has not been lifted by cranes and run over a rough pot-holed highway or kept in sweltering heat or freezing cold during shipment.

Taking into consideration we do not know the conditions in which you may be using your hardware, software, or consumables, neither the author nor FLAAR nor either university is liable for liability, loss or damage caused either directly or indirectly by the suggestions in this report nor by hardware, software, or techniques described herein because.

Availability of spare parts may be a significant issue

Chinese printers tend to switch suppliers for spare parts every month or so. So getting spare parts for a Chinese printer will be a challenge even if the distributor or manufacturer actually respond to your e-mails at all. Fortunately some companies have a fair record of response.

Recently we have heard many reports of issues of getting parts from manufacturers in other countries (not Asia). So just because your printer is made in an industrialized country, if you are in the US and the manufacturer is X-thousand kilometers or miles away, the wait may be many days, or weeks.

Lack of Tech Support Personnel is increasing Notice about issues with tech support

If you buy a printer direct from the factory, and if there is no distributor in your home country, it is not realistic to expect tech support and spare parts in subsequent years.

We have received e-mails from two individuals in different countries who indicated that tech support after about two years was difficult. One bought through a distributor but the distributor went out of business. This meant he had no tech support person.

The other print shop bought from the factory, and after several years had difficulty getting tech support.

This will be comparable for any brand.

In other words: if there is a distributor in your country, you should get some tech support the first year or two, depending on the capability of the distributor. But gradually it may be more difficult to obtain tech support and spare parts.

But if the distributor fails, it is not realistic to blame the manufacturer.

This situation varies per country, but what we mention here is reality even if the printer is made in Europe. A factory is for manufacturing; the distributor is for tech support.

Fortunately there are many capable and supportive distributors, but we have no way to keep track of every distributor for the over 50 factories which produce UV-cured printers.

When a distributor drops distribution, you may get no more tech support!

If your distributor has issues with the manufacturer, you may be abandoned if that distributor drops the product.

If another distributor takes up that product, they may not provide you tech support because you did not buy the printer from them.

Occasionally even the manufacturer goes bankrupt!

Even major Swiss printer manufacturers have had issues and gone out of business (for their wide-format printers). THREE Swiss manufacturers are in this list actually. There are also companies in Canada, USA, and Europe which had corporate meltdown: Gandinnovations is the best example but there are many others. Neolt recently went into reorganization (July 2012) (a polite way of saying downsizing after filing a court case which would be roughly comparable to Chapter 11 in the USA). Most companies studiously avoid using the word "pleading bankruptcy" but to a lay person it's very close to the same.

In some cases the company continues (Neolt we hope is in this category).

Or sometimes a manufacturer simply runs out of money. They avoid publically announcing this but the effect is similar to Chapter 11 or bankruptcy: downsizing, and technical support may drop. Plus you may not get much innovation

from a company which can't afford to pay its bills.

Any new printer may take a few months to break in

Any new printer, no matter who the manufacturer, or how good is the engineering and electronics, will tend to have teething issues. Until the firmware is updated, you may be a beta tester. This does not mean the printer should be avoided, just realize that you may have some downtime and a few headaches. Of course the worst case scenario for this was the half-million dollar Luscher JetPrint: so being "Made in Switzerland" was not much help.

Counterfeit parts are a problem with many printers made in China

Several years ago many UV printers made in China and some made elsewhere in Asia had counterfeit parts. No evaluation has the funding available to check parts inside any printer to see if they are from the European, Japanese, or American manufacturer, or if they are a clever counterfeits. So when we mention a brand name, this is a brand name; this is not a guarantee the part is not counterfeited.

Be realistic and aware that not all materials can be printed on equally well

Many materials don't feed well through hybrid (pinch roller on grit roller systems) or combo UV systems (with transport belts). Banding, both from poor feeding, and from bi-directional (lawnmower effect) are common on many UV-curable inkjet printers.

It is typical for some enthusiastic vendors to claim verbally that their printer can print on anything and everything. But once you unpack the printer and set it up, you find that it requires primer on some materials; on other materials it adheres for a few weeks but then falls off.

And on most hybrid and many combo printers, some heavy, thick, or smooth-surfaced materials skew badly. Since the claim that the printer will print on everything is usually verbal, it is tough to prove this aspect of misleading advertising to a jury.

Not all inks can print on all materials. And at a trade show, many of the materials you see so nicely printed on, the manufacturer may be adding a primer at night or early in the morning: before you see the machine printing on this material.

We feel that the pros and cons of each product speak more than adequately for themselves. Just position the ad claims on the left: put the actual performance results on the right.

The unscrupulous hype for some printers is fairly evident rather quickly.

Be sure to check all FLAAR resources

Please realize that with over 200 different FLAAR Reports on UV printers, inks and other products you need to be sure to check the more obscure ones too. If a printer has a printhead issue, the nitty gritty of this may be in the FLAAR Report on printheads. The report on the model is a general introduction; if we discussed the intimate details of print-heads then some readers might fall asleep. And obviously do not limit yourself to the free reports. The technical details may be in the reports that have a price to them. Our readers have said they prefer to have the general basics, and to park the real technical material in other reports that people can buy if they really want that level of information.

So it may be best to ask for personal consulting. The details of the problems with the ColorSpan 5400uv series are rather complex: namely the center row of the Ricoh Gen3 printheads. This would require an expensive graphic designer and consultants to show the details. And the design of the printhead would probably be altered by the time we did any of this anyway. So it is essential to talk with people: with other end-users, and with FLAAR in person on a consulting basis.

Acknowledgements

With 15 employees the funding has to come from somewhere, so we do welcome project sponsorship, research grants, contributions that facilitate our educational programs, scholarships for co-op interns and graduate students, and comparable project-oriented funding from manufacturers. The benefit for the end-user is a principle called academic freedom, in this case,

- the freedom of a professor or student to speak out relative to the pros and cons of any equipment brought to them to benchmark.
- The freedom to design the research project without outside meddling from the manufacturer.

Fortunately, our budget is lean and cost effective as you would expect for a non-profit research institute. As long as we are not desperate for money we can avoid the temptation to accept payment for reprinting corporate PR hype. So the funding is used for practical research. We do not accept (nor believe) and certainly do not regurgitate corporate PR. For example, how many manufacturer's PR photos of their products have you seen in our reports or on our web sites?

Besides, it does not take any money to see which printers and RIPs function as advertised and which don't. We saw

one hyped printer grind to a halt, malfunction, or otherwise publicly display its incapacities at several trade shows in a row. At each of those same trade shows another brand had over 30 of their printers in booths in virtually every hall, each one producing museum quality exhibits. Not our fault when we report what we see over and over and over again. One of our readers wrote us recently, "Nicholas, last month you recommended the as one of several possible printers for our needs; we bought this. It was the best capital expenditure we have made in the last several years. Just wanted to tell you how much we appreciate your evaluations...."

FLAAR is a non-profit educational and research organization dedicated for over 40 years to professional photography in the arts, tropical flora and fauna, architectural history, and landscape panorama photography.

Our digital imaging phase is a result of substantial funding in 1996 from the Japanese Ministry of Public Education for a study of scanning and digital image storage options. This grant was via Japan's National Museum of Ethnology, Osaka, Japan. That same year FLAAR also received a grant of \$100,000 from an American foundation to do a feasibility study of digital imaging in general and the scanning of photographic archives in particular.

The FLAAR web sites began initially as the report on the results of these studies of scanners. Once we had the digital images we began to experiment with digital printers. People began to comment that our reports were unique and very helpful. So by 1999 we had entire sections on large format printers.

FLAAR has existed since 1969, long before inkjet printers existed. Indeed we were writing about digital imaging before HP even had a color inkjet system available. In 2000 FLAAR received an educational grant from Hewlett-Packard large format division, Barcelona, Spain, for training, for equipment, and to improve the design and navigation on the main web sites of the FLAAR Network. This grant ran its natural course, and like all grants, reached its finishing point, in this case late 2005.

In some cases the sponsorship process begins when we hear end-users talking about a product they have found to be better than other brands. We keep our ears open, and when we spot an especially good product, this is the company we seek sponsorship from. It would not be wise of us to seek sponsorship from a company with a sub-standard or otherwise potentially defective printer. So we usually know which printers are considered by end-users to be among the better brands before we seek sponsorship. After all, out of the by now one million readers, we have heard plenty about every single printer out there.

We thank MacDermid ColorSpan (now part of HP), Hewlett-Packard, Canon, and other companies for providing funding for technology training for the FLAAR staff and our colleagues at Bowling Green State University in past years and for funds to allow us to attend all major international trade shows, which are ideal locations for us to gather information. We thank Sun LLC, Caldera, EskoArtwork, Raster Printers (EFI Rastek), DEC LexJet, DigiFab, Barbieri electronic, Mutoh Europe, Dilli, Yuhan-Kimberly, GCC, Durst, and WP Digital for providing funds so that we can make more of our publications free to end-users in past years. During 2000-2001 we had grants to cover all the costs of our publications, and all FLAAR Reports were free in those early years. As that early grant naturally expired after a few years, we had to begin charging for some of our reports to cover costs. Now (in 2015), we are seeking corporate sponsorship so we can gradually make another 20% of our publications free to our readers.

Since 2006 we do a major part of our evaluations at a factory and headquarters demo room. Since the university does not fund any of these trips, it is traditional for the manufacturer to fund a research sponsorship. In the US this is how most university projects are initiated for decades now, and it is increasing. In fact there is a university in Austria that is not an "edu" but is a "GmbH", funded by the chamber of commerce of that part of Austria. In other words, a university as an educational institution, but functioning in the real world as an actual business. This is a sensible model, especially when FLAAR staff need to be on the road over a quarter of a million miles per year (roughly over 400,000 km per year total for the staff). Obviously this travel is hosted since unless money falls from heaven there most realistic way to obtain funding to get to the demo rooms for training is direct from the source.

It has been helpful when companies make it possible for us to fly to their headquarters so we can inspect their manufacturing facilities, demo rooms, and especially when the companies make their research, engineering and ink chemistry staff available for discussions. When I received my education at Harvard I was taught to have a desire to learn new things. This has guided my entire life and is what led me into wide-format digital imaging technology: it is constantly getting better and there is a lot to learn every month. Thus I actively seek access to improving my understanding of wide format printer technology so that we can better provide information to the approximately quarter-million+ readers of our solvent and UV printer web site (www.large-format-printers.org) and the over half a million who read either our wide-format-printers.org site or our roughly half million combined who read our digital-photography.org and www.FineArtGicleePrinters.org sites.

Barbieri electronic (color management), Caldera (RIP), ColorSpan, DEC, Durst, EskoArtwork, Gerber, Grapo, IP&I, JET-RIX, Mimaki USA, Mutoh, Dilli, GCC, NUR, Oce, Shiraz (RIP), Sky AirShip, Sun, Teckwin, VUTEk, WP Digital, Xerox, Yuhon-Kimberly, Zund have each brought FLAAR staff to their headquarters and printer factories.

Bordeaux, Inktec, Hongsam, InkWin, Jetbest, Sam-Ink, and Sunflower ink have brought us to inspect their ink manufacturing facilities and demo rooms. Of these we have maintained contact with Hongsam and Sam-Ink, a polite way of saying that we have no recent information on any of the other brands of inks. But we have visited Hongsam and Sam-Ink several times, including in 2014.

We have visited the world headquarters and demo rooms of HP in Barcelona and received informative and helpful technology briefings about every two years in past years. We are under NDA as to the subjects discussed but it is important that we be open where we have visited. Mimaki Europe has had FLAAR as their guest in Europe to introduce their flatbed UV printer, as have other UV-curable manufacturers, again, under NDA as to the details since often we are present at meetings where unreleased products are discussed. Xaar has hosted an informative visit to their world headquarters in the UK. You don't get this level of access from a trade magazine writer, and I can assure you, we are provided much more detailed information and documentation in our visits than would be provided to a magazine author or editor. Companies have learned that it's a lot better to let us know up front and in advance the issues and glitches with their printers, since they now know we will find out sooner or later on our own. They actually tell us they realize we will find out on our own anyway.

Contributions, grant, sponsorships, and project funds from these companies are also used to improve the design and appearance of the web sites of the FLAAR Information Network. We thank Canon, ColorSpan, HP, ITNH, and Mimaki for providing wide format printers, inks, and media to the universities where FLAAR does research on wide format digital imaging. We thank Epson America for providing an Epson 7500 printer many years ago, and Parrot Digigraphic for providing three different models of Epson inkjet printers to our facilities on loan at BGSU (5500, 7600, 7800). We thank Mimaki USA for providing a JV4 and then a Mimaki TX-1600s textile printer and Improved Technologies (ITNH) providing their Ixia model of the Iris 3047 giclee printer.

We thank 3P Inkjet Textiles and HP for providing inkjet textiles so we could learn about the different results on the various textiles. IJ Technologies, 3P Inkjet Textiles, ColorSpan, Encad, HP, Nan Ya Pepsa, Oracal, Tara and other companies

have provided inkjet media so we can try it out and see how it works (or not as the case may be; several inkjet media failed miserably, one from Taiwan, the other evidently from Germany!). We thank Aurelon, Canon, ColorGate, ColorSpan, ErgoSoft, HP, PerfectProof, PosterJet, Onyx, Ilford, CSE ColorBurst, ScanvecAmiable, Wasatch and many other RIP companies for providing their hardware and software RIPs.

We thank Dell Computers for providing awesome workstations for testing RIP software and content creation with Adobe Photoshop and other programs. We also appreciate the substantial amount of software provided by Adobe. As with other product loaned or provided courtesy of ProVar LLC (especially the 23" monitors which makes it so much easier to work on multiple documents side by side).

We thank Betterlight, Calumet Photographic, Global Graphics, Westcott, Global Imaging Inc., Phase One, and Bogen Imaging for helping to equip our archaeological photo studios at the university and its archaeology museum in Guatemala. Heidelberg, Scitex, CreoScitex (now Kodak) and Cruse, both in Germany, have kindly provided scanners for our staff to evaluate.

We really liked some of the results whereas some of the other products were a bit disappointing. Providing samples does not influence the evaluations because the evaluators are students, professors, and staff of Bowling Green State University. These personnel are not hired by any inkjet printer company; they were universities employees (as was also true for Nicholas Hellmuth). The testing person for the HP ColorPro (desktop printer) said he frankly preferred his Epson printer. When we saw the rest results we did not include this Hewlett-Packard ColorPro printer on our list of recommended printers, but we love our HP DesignJet 5000ps so much we have had two of them, one at each university.

Sometimes we hear horror stories about a printer. The only way we can tell whether this is the fault of the printer design, or lack of training of the operator, is to have the printer ourselves in-house. Of course some printer manufacturers don't understand the reasons we need to have each make and model; they are used to loaning their demo units for a week or so. That is obviously inadequate for a serious review.

Some of the media provided to us failed miserably. Three printers failed to meet common sense usability and printability standards as well (HP 1055, one older desktop model (HP Color Pro GA), and one Epson). Yet we know other users who had better results; maybe ours came down the assembly line on a Monday or Friday afternoon, when workers were not attentive. One costly color management software

package was judged “incapable” by two reviewers (one from the university; second was an outside user who had made the mistake of buying this package).

So it’s obvious that providing products or even a grant is no shield from having your products fail a FLAAR evaluation. The reason is clear: the end user is our judge. The entire FLAAR service program is to assist the people who need to use digital imaging hardware and software. If a product functions we find out and promulgate the good news. If a product is a failure, or more likely, needs some improvement in the next generation, we let people know. If a product is hyped by what an informed user would recognize as potentially false and misleading nonsense, then we point out the pathetic discrepancies very clearly.

This is what you should expect from an institute which is headed by a professor.

Actually, most of our reviews are based on comments by end users. We use their tips to check out pros and cons of virtually every product we discuss. You can’t fool a print shop owner whose printer simply fails to function as advertised. And equally, a sign shop owner who earns a million dollars a year from a single printer brand makes an impact on us as well. We have multiple owners of ColorSpan printers tell us that this printer is their real money earner for example. We know other print shops where their primary income is from Encad printers. Kinkos has settled on the HP 5000 as its main money maker production machine a decade ago, and so on.

Yet we have documentation of several print shop companies whose business was ruined by specific brands that failed repeatedly. It is noteworthy that it is always the same brand or printer at both locations: one due to banding and printheads then simply no longer printing one color; the other brand due to pokiness of the printer simply not being competitively fast enough. Same with RIPs, we have consistent statements of people using one RIP, and only realizing how weak it was when they tried another brand which they found substantially better. Thus we note that companies which experiment with more than one brand of product tend to realize more quickly which brand is best. This is where FLAAR is in an ideal situation: we have nine RIPs and 25 printers. Hence it is logical that we have figured out which are best for our situation.

Grant funding, sponsorship, demonstration equipment, and training are supplied from all sides of the spectrum of printer equipment and software engineering companies. Thus, there is no incentive to favor one faction over another. We received support from three users of thermal printheads (Canon, ColorSpan and HP) and also have multiple print-

ers from three manufacturers using piezo printers (Epson, Seiko, Mutoh, and Mimaki). This is because piezo has definite advantage for some applications; thermal printheads have advantages in different applications. Our reviews have universal appeal precisely because we feature all competing printhead technologies. Every printer, RIPs, inks, or media we have reviewed have good points in addition to weaknesses. Both X-Rite and competitor GretagMacbeth provided spectrophotometers. Again, when all sides assist this program there is no incentive to favor one by trashing the other. Printer manufacturer ad campaigns are their own worst enemy. If a printer did not make false and misleading claims, then we would have nothing to fill our reviews with refuting the utter nonsense that is foisted on the buying public.

It is not our fault if some printers are more user friendly, print on more media than other brands. It is not our fault that the competing printers are ink guzzlers, are slow beyond belief, and tend to band or drop out colors all together. We don’t need to be paid by the printer companies whose products work so nicely in both our universities on a daily basis. The printers which failed did so in front of our own eyes and in the print shops of people we check with. And actually we do try to find some redeeming feature in the slow, ink gulping brands: they do have a better dithering pattern; they can take thick media that absolutely won’t feed through an HP. So we do work hard at finding the beneficial features even of printers are otherwise get the most critique from our readers. Over half a million people will read the FLAAR Information Network in the next 12 months; about 480,000 people will be exposed to our reports on wide format printers from combined total of our many sites on these themes. You can be assured that we hear plenty of comments from our readers about which printers function, and which printers fail to achieve what their advertising hype so loudly claims.

An evaluation is a professional service, and at FLAAR is based on more than 16 years of experience. An evaluation of a printer, an ink, media, substrate, a software, laminator, cutter or whatever part of the digital printing workflow is intended to provide feedback to all sides. The manufacturers appreciate learning from FLAAR what features of their printers need improvement. In probably half the manufacturers FLAAR has dealt with, people inside the company did not, themselves, want to tell their boss that their pet printer was a dog. So printer, software, and component manufacturers have learned that investing in a FLAAR evaluation of their product provides them with useful return on investment. Of course if a printer manufacturer wants only a slick Success Story, or what we call a “suck up review” that simply panders to the manufacturer, obviously FLAAR is not a good place to dare to ask for such a review. In several instanc-

es it was FLAAR Reports that allowed a company to either improve their printer, or drop it and start from scratch and design a new and better one.

And naturally end-users like the opportunity to learn about various printers from a single source that covers the entire range from UV through latex through all flavors of solvent.

We have also learned that distributors often prefer to accept for distribution a printer or other product on which a FLAAR Report already exists.

We turn down offers of funding every year. These offers come from PO Box enterprises or products with no clearly visible point of manufacture. Usually the company making the offer presumes they can buy advertising space just by paying money. But that is not what our readers want, so we politely do not accept such offers of money.

Contributions, grants, sponsorships, and funding for surveys, studies and research is, however, open to a company who has an accepted standing in the industry. It is helpful if the company has a visible presence at leading trade shows and can provide references from both end users and from within the industry. Where possible we prefer to visit the company in person or at least check them out at a trade show. Obviously the product needs to have a proven track record too. Competing companies are equally encouraged to support the FLAAR system. We feel that readers deserve to have access to competing information. Competition is the cornerstone of American individualism and technological advancement.

FLAAR also covers its costs of maintaining the immense system of about 8 web sites and its facilities in part by serving as a consultant such as assisting inkjet manufacturers learn more about the pros and cons of their own printers as well as how to improve their next generation of printers. It is especially useful to all concerned when manufacturers learn of trends (what applications are popular and for what reasons).

FLAAR also serves as consultants to Fortune 500 companies as well as smaller companies and individuals who seek help on which printers to consider when they need digital imaging hardware and software.

A modest portion of our income comes from our readers who purchase the FLAAR series. All income helps continue our tradition of independent evaluations and reviews of inkjet printers, RIPs, media, and inks.

Most recently updated August 2015.