FLAAR Reports

June 2010

Seiko I Infotech ColorPainter

H-74s and H-104s

Nicholas Hellmuth and Pablo Martínez

Seiko I Infotech ColorPainter H-74s and H-104s

Seiko ColorPainter H-74s solvent printer at Seiko I Infotech booth, ISA Orlando 2010.

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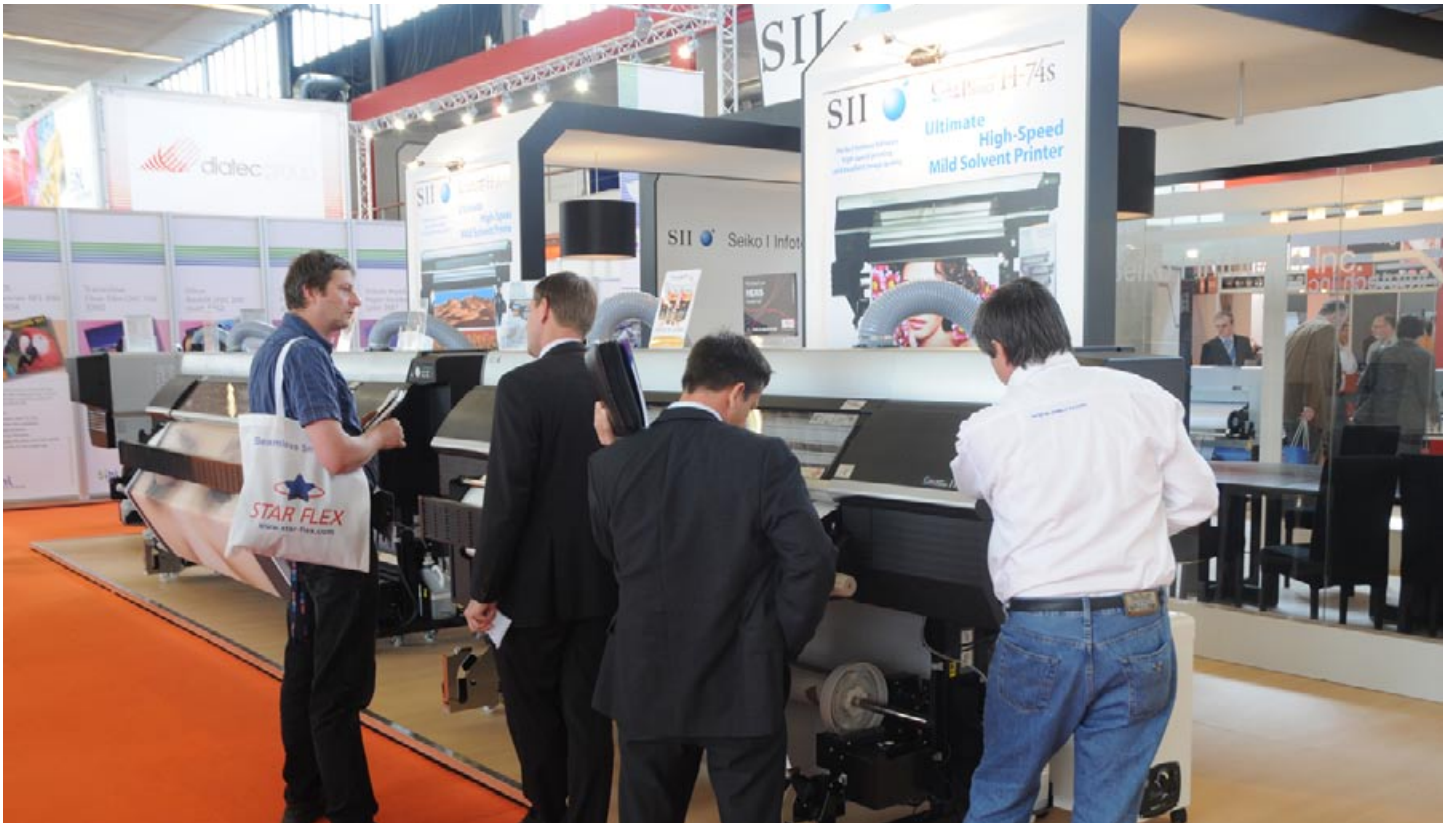


Seiko I Infotech Inc. booth at FESPA Digital, Amsterdam 2009.

Introduction

This is the latest generation of top-quality mild-solvent production printers.

Their intent is to be faster at print production, and last longer, than low-bid printers made in low-bid factories.

The printer is new, and one more step will be required for the full evaluation: a demo room visit, inspection, and results from test printing,

The first stage, presented here, is based on inspecting the printer at several trade shows since DRUPA 2008, ISA 2009, FESPA Digital Europe 2009 in Amsterdam most recently at ISA 2010. Pablo Martinez did the most recent inspection.

The next step was to find, and visit an actual printshop that has the Seiko printer installed and at work. By coincidence I was able to find a place near St Louis. Note that this was not a place suggested by the manufacturer; the printshop owner is a long-time reader of FLAAR Reports and actually I originally asked him about his Drytac UV coater and only later did I find out that he also had a Seiko H-104s. This printer has been in his company since March 2009.

On the Internet and in magazines you get pseudo reviews, sham reviews, or simply PR releases.

In distinction we are actually interested in learning which of the major brands are optimal: Mimaki, Mutoh, Roland or Seiko. And how do these printers compare with the diverse models of solvent printers from D.G.I. in Korea? I would rate Korean printers as professionally designed and intended to be frugal but not at all low-bid. "Low-bid" is a polite way of saying made of the cheapest parts, with not much attempt at quality control. Korean companies do not accept that, nor do Japanese manufacturers.

Seiko is a known and respected brand. Otherwise we would not waste our time even looking at this printer. The earlier models set sales records and quickly outsold the then #1 solvent printer of those years, the Mimaki JV3. So now Seiko has spent the last several years to engineer a newer, better printer that improves upon the earlier Seiko models of five years ago and improves upon the HP Designjet versions 9000s and 10000s.

THE BASICS

1. Brand name, model?

Seiko I Infotech H-74s and Color Painter H-104s are the popular designations. Solvent Ink Color Inkjet Printer IP-7700 and Color Inkjet Printer IP-7900 are the official names in the User's Guide. The specific machine we inspected in Illinois serial #8AA0072A, made in Japan.

2. What is the nature of the company? Is this company the manufacturer, distributor, or rebranding?

Seiko I Infotech is the company that designs and markets this printer. Seiko I Infotech is part of a much larger Seiko group. Epson is another company in the Seiko Group.

It has never been clear whose factory actually manufactures Seiko I Infotech or Epson large format printers. Recently Epson printers began to be assembled in China. I have not seen or heard of coments on whose factory the new generation of Seiko printers is manufactured in, but it is definitely not any factory outside Japan. The legal certification of point of manufacture on the back of each ColorPainter printer clearly says Japan.

3. What other printers are the same or similar chassis from this manufacturer or distributor? Is this same printer available elsewhere under a different name?

The same printer is not available under any OEM brand name. None of these new printers is available now, nor is likely to be available in the future, from HP.

4. How does this model compare with comparable previous printers?

The previous generation was the HP 9000s and HP 10000s, which were rebranding of the Seiko ColorPainter 64s and Seiko ColorPainter 100s. The 64s produced about the best color of any printer at every trade show in its heyday.

Seiko I Infotech booth, ISA Orlando 2010.

Seiko Color Painter H-104s at Seiko I Infotech booth, ISA Orlando 2010.

5. When and where was this model first introduced?
At DRUPA 2008.

6. Is this mature, or still in alpha-stage, beta-stage?
The H 104s and H 74s are relatively new when compared with Roland or Mutoh's machines, which have been around much longer. I would rate the Seiko printers as A production machine; out of beta stage but still new.

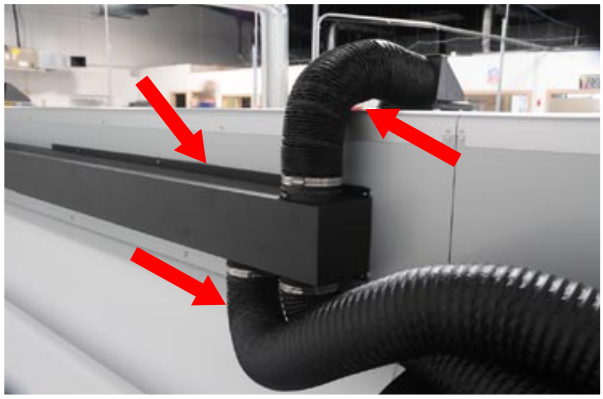
7. List price?
The recommended price for dealers for the Color Painter H-74s 39,000 Euros and for the Color Painter H-104s 57,000 Euros. In the United States the Color Painter H-104s price is $ 80,000 ($79,995).

8. What accessories are extra cost? Are these same or similar accessories included with other printers at no extra cost?
Optional exhaust attachments allow you to attach a ventilation duct to two locations on the top of the printer.

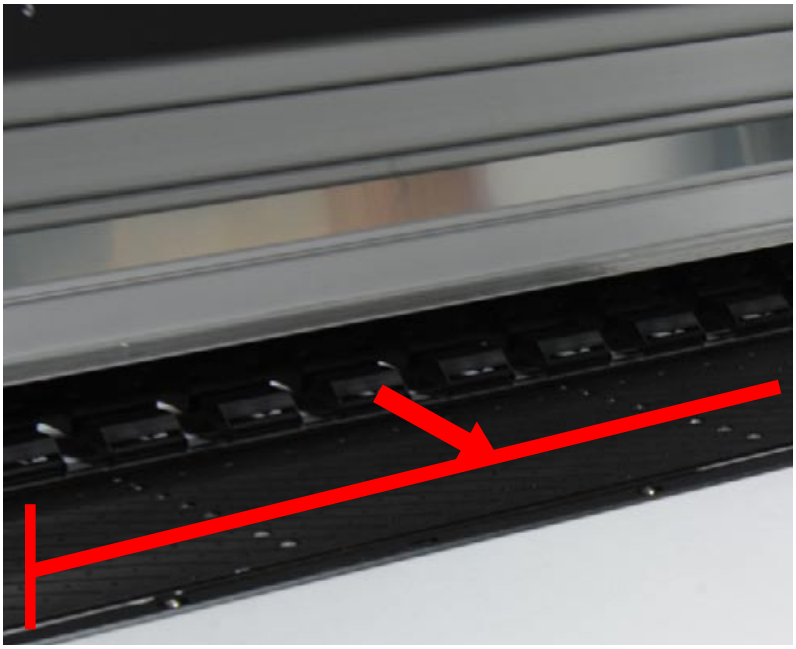
A footswitch (foot pedal) is optional.

9. Does a complete set of full-sized ink cartridges come with the new printer, or merely a "starter set" not as full as a regular set?
When the printer arrives in the Americas it comes with a complete Ink set; in some other regions, they ship a starter set only.

10. What other equipment is needed to operate this printer? For example, does this printer include its own power line conditioner?
There is an optional air cleaner in the Americas, as this is not available in some other regions. The original brand was PAT but these air purifiers are associated with Purex now.



There is an optional air cleaner; exhaust attachments to get rid of ink smell discharged during printing.



The vacuum system draws the media to the platen.

11. Do you need an uninterruptible power supply (UPS)?
It's not really necessary, only if you want it.

12. Do you eventually need or wish to buy an auxiliary heater?
Generally no, in all print modes the ink dries before is take up the only exception is when you print in 4 colors at draft mode you maybe need to search an extra heater or fan to help dry the media.

13. 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?
The printer includes a vacuum system that draws the media to the platen.

14. Is it recommended, or required, to buy a spare parts kit? Or extra printheads?
Only for dealers, the printer owner doesn't need one, if something is damaged you should call the tech service.

15. Or do the dealers prefer that customers not try to make their own repairs?
Only if you live in Alaska where is no tech service you should do your own repairs, but normally you have tech support available.

WHAT IS THE INTENDED MARKET FOR THIS PRINTER?

16. What is the market that the manufacturer has designed this printer for?
Signs and banners.

17. Are other markets buying this printer that were unexpected?
The printer is too new to have a complete list of the markets that are buying this printer.

PURCHASING

18. Are dealers national (most companies) or regional (Roland allows a dealer to operate only within a limited regional area)? Does a buyer have any choice in dealers?
In the US a buyer has a choice; in smaller countries there may only be one or two dealers. Many printshops in Latin America prefer to buy in Miami, Houston, or Los Angeles and have their printers shipped to them.

19. What kinds of leasing or other financing are available?
Seiko doesn't sell directly to the final user, they provide the printers to the dealer, so the financing that might be available depends on the dealer.

STRUCTURE OF THE PRINTER

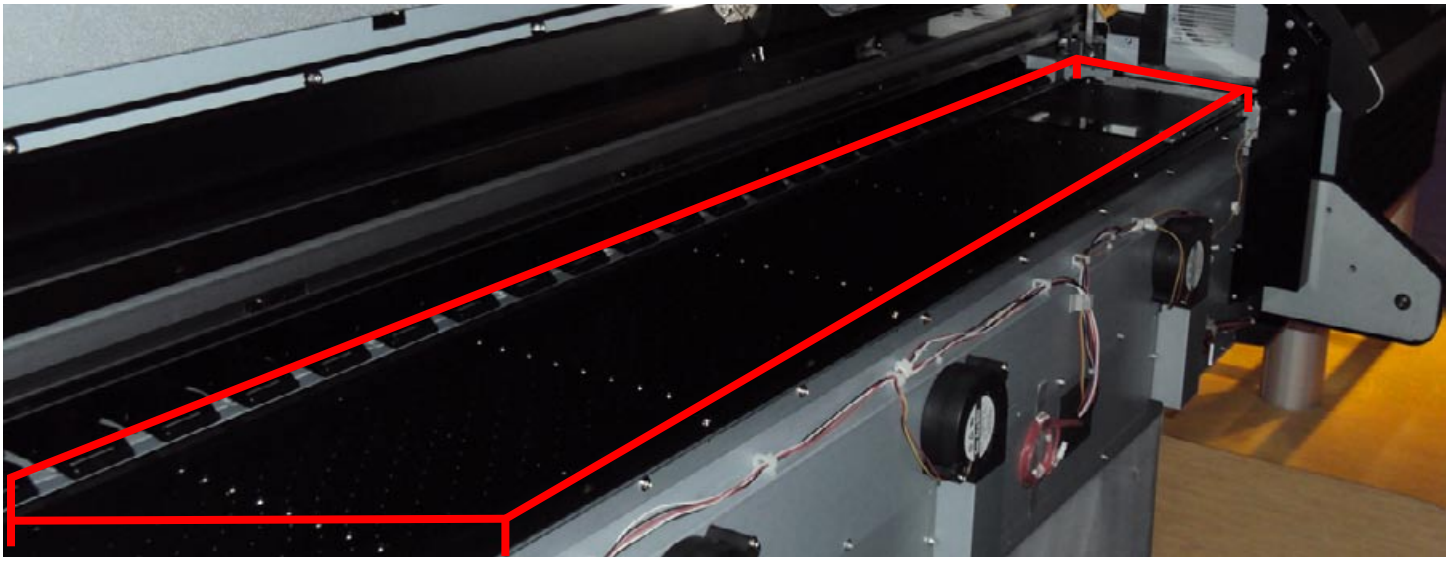
20. Is this printer made originally as a solvent ink printer, or is it retrofitted with solvent ink? If retrofitted, what was the original brand?
Yes this printer is made originally as a low-solvent ink printer.

21. If there is a vacuum function?
The printer has a series of multiple fans that sucks the media to the platen. You can control the air volume, high, normal, low and off.

22. In how many sections?
This is located only in the platen area.

23. Just Off and On? Or variable?
You can control the air volume, high, normal, low and off.

24. What are the features of the platen area?
The platen is about 10 inches deep, which is relatively wide. As with most platens it has all the holes for a light vacuum effect.

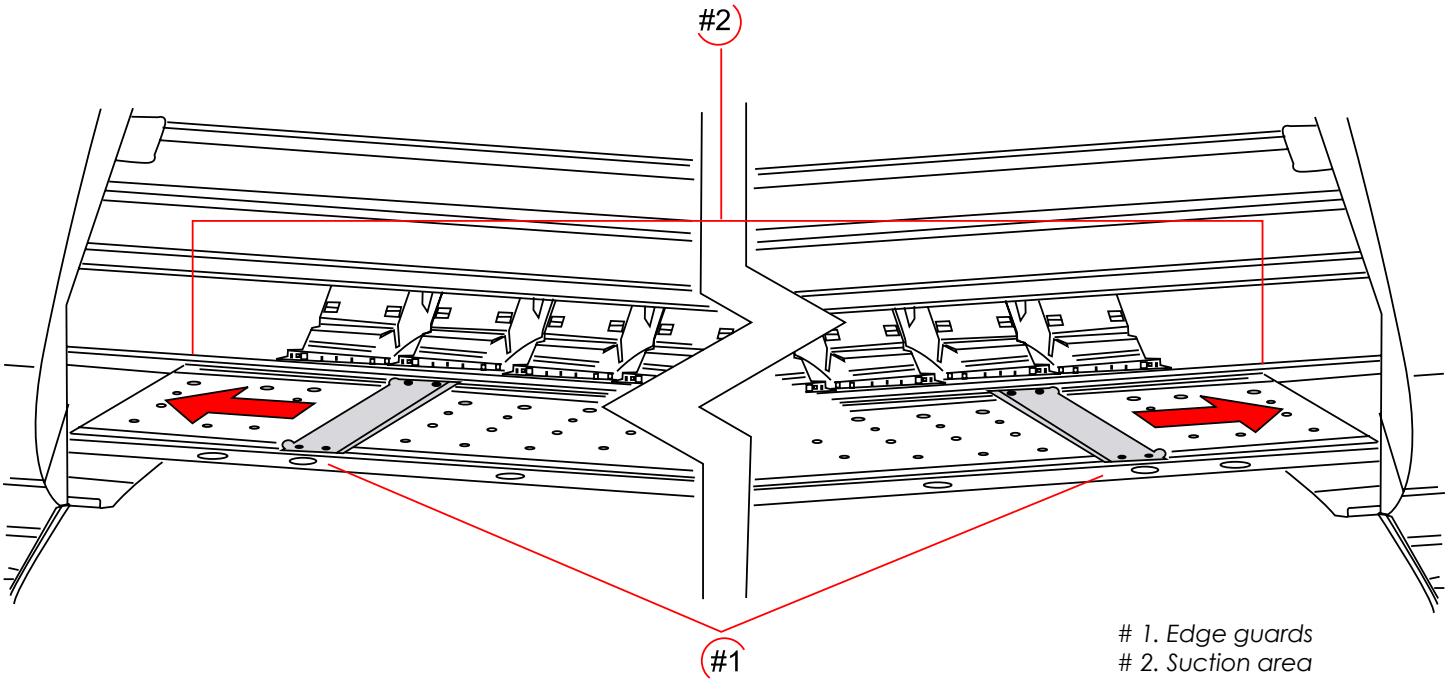


The platen is about 10 inches deep, which is relatively wide. The printer has a series of multiple fans that sucks the media to the platen. You can control the air volume, high, normal, low and off.

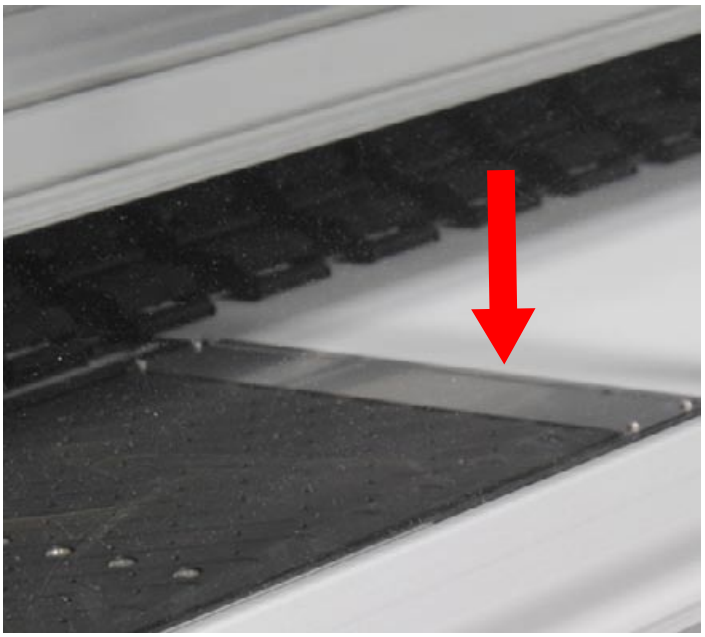
25. Are their edge guards (media clamps)? At left, or at right, or both?
You can find the media edge guards at both sides of the media.

26. Can you move the left guard, or the right guard, or both?
Yes, you can move each guard.

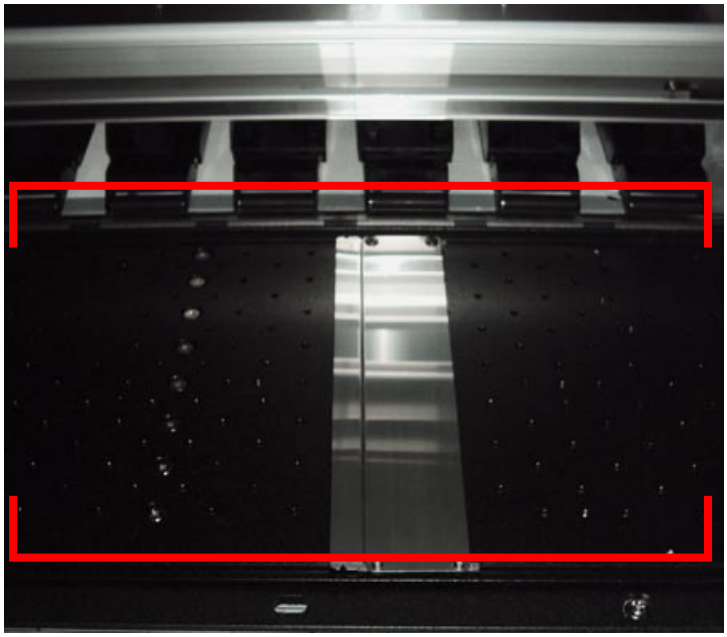
27. Can duplex (double-sided) printing be accomplished? If so, how difficult is it really?
Yes, can print in double-side. It is as easy as to change the printed roll and feed it again to the printer and then print the other side of the media.



 # 1. Edge guards
 # 2. Suction area



The media edge guards are located at both sides of the media, you can move each one individually.

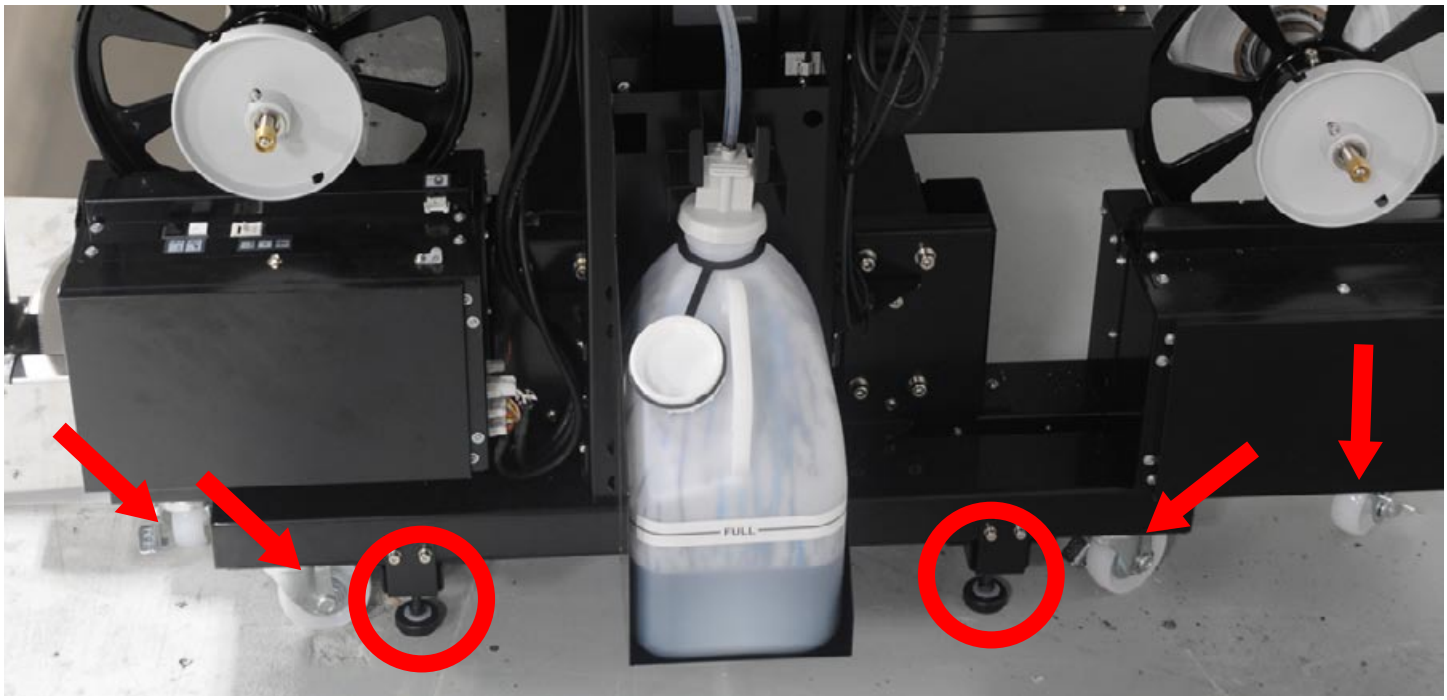


The printer has a series of multiple fans that sucks the media to the platen. You can control the air volume, high, normal, low and off.

28. Does the printer have levels built into the structure of the printer?
No it doesn't.

29. Does the printer have leveling supports? How many, and how strong?
The printer has two at each side.

30. Does the printer have wheels? Are they robust?
The printer has two wheels at each side that can be unlocked to move the printer and locked to immobilize it. All together there are a total of 12 wheels between the printer chassis and the area of the take-up reel.



The printer has two wheels at each side that can be unlocked to move and locked to immobilize the printer. All together there are a total of 12 wheels between the printer chassis and the area of the take-up reel, also has two leveling supports at each side.

ROLL-FED ASPECTS

31. How is roll media fed? Pinch roller against grit roller?
The grit roller advances or rewinds the media.

32. Are the grit rollers continuous or individual?
The system has one continuous roller with gritted surface in the areas under the 40 individual pinch rollers that stick down from above.

33. How are the pinch rollers raised as a unit?
At the front and behind the printer there is a pressure control knob that adjusts the pinch rollers.

34. Can one individual pinch roller be raised to get it off the material, say, at an edge?
No they can´t.

35. Can the pinch pressure of the pinch rollers be varied?
Yes, the pressure control knob has four positions: "high," "normal," "low," and "open".

The advances and rewind of the media is made by the grit rollers, the printer has one continuous roller with gritted surface in the areas

36. Can you load the roll in the middle, or does the system encourage you always to load the roll with the right end at the far right of the printer?
You have to align the media with the edge to the right side.

37. How is the roll held at the feeding position? On a spindle? On a saddle?
The fresh roll is held by a spindle.

Poorly manufactured cores (or cores damaged in shipment and handling) tend to be a problem on a spindle. On 5 meter wide machines the material tends to be banner material so there are not as many issues on a saddle. Paper-like media may sag in a saddle. "In general, if you hang a roll on a spindle, this is best" (observations by Mutoh managers at European factory).

38. Is there an air (pressure) core system?
No, there is no air pressure system. This is common on 3-meter wide printers and wider. The roll is fixed to the spindle by flanges that press against the core of the roll.

39. How is the roll media handled at feeding position? For example, is there a dancer bar?
Yes, there is a dancer bar that creates tension at the supply side (back of the printer).

40. How is the roll media handled at take-up position? For example, is there a dancer bar?
At the front there is tension bar that applies tension to the media.

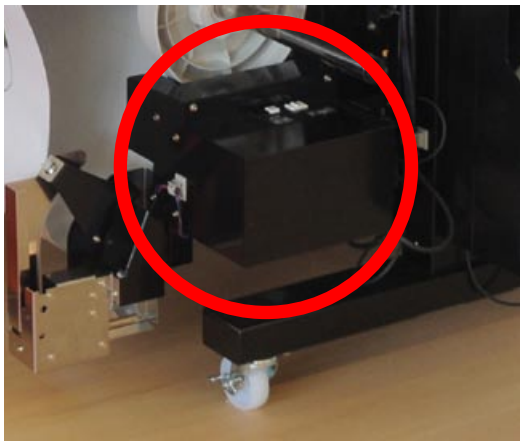
41. What about the take-up reel? Does it work unattended? Is it motorized?
In the lower side at the front there is a motorized take-up roll, which has a switch to set up the take-up direction. (Outer take-up, OFF and Inner take-up).

42. Is a heavy-duty unwinder-winder system available as an option to handle heavy rolls of materials?
Ability to handle up to 260 lbs. (H-104s) and 110 lbs. (H-74s) comes with printer.

43. Is there an accessory wheeled unit with special raising mechanism so you can easily transport heavy rolls of material?
Yes, it helps to have a dolly to carry heavy rolls. You can order such a carrying device as a separate item, not ordered from Seiko. Or, simply use two people, one person holding each end of a full roll.

44. What is the media path?
The machine has a simple path. You load from behind, and the media goes directly to the print area. Media that is going to be rolled by the take-up unit needs to be taped down to the take-up spindle.

At the front and behind the printer there is a pressure control knob that adjusts the pinch rollers at four positions: High, Normal, Low and Open



In the lower side at the front there is a motorized take-up roll, which has a direction switch to set up the take-up direction

45. Front loading, back loading?
Back loading.

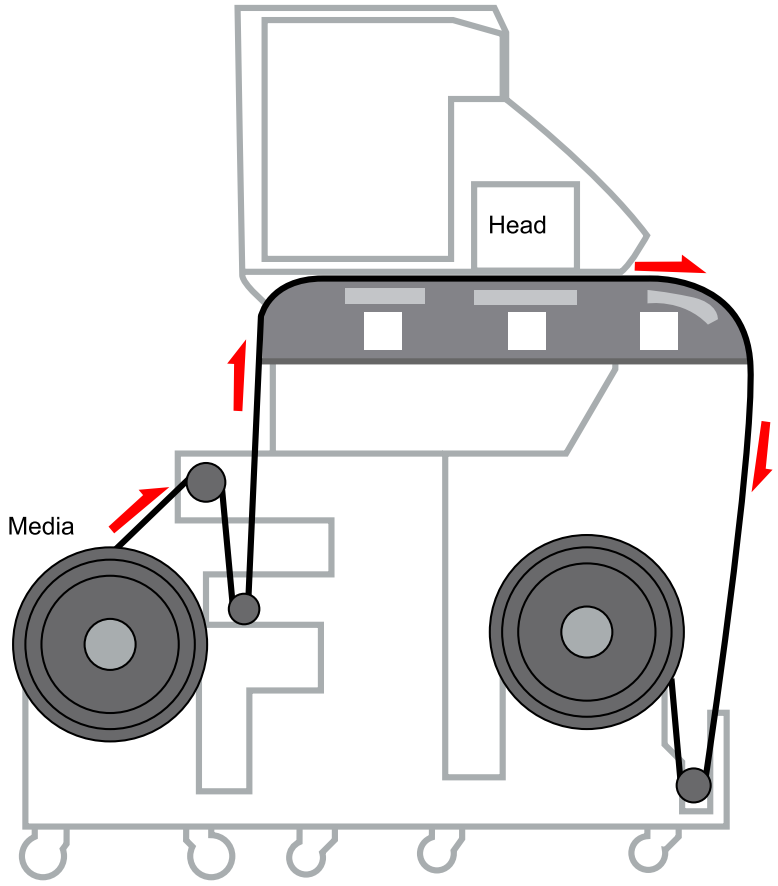
- To load a fresh roll, first adjust the roll spacer position according to the media width.
- Insert the scroller into the paper tube, determine the distance between the media edge and the flange, and then secure the main scroller.
- Attach the flange spacer and the flange stopper with the flange stopper matching with the claw of the flange spacer.
- Attach the scroller by fitting it with the roll groove of the printer.
- Remove the protection bar and open the front cover.
- Move the media edge guards to each side so that they are not under the media.

- Rotate the pressure control knob clockwise to raise the pressure roller.
- Insert the media end into the paper feeder while smoothing out the media by hand to prevent wrinkles.
- Feed the media until the media end almost reaches the floor.
- Rotate the pressure control knob counterclockwise to lower the pressure roller.
- Set the media edge guards and close the front cover.
- Press the tension bar to the peel roller's upper part. Then create a slack between the platen and the peel roller, by carrying the tension bar to the rear side of the peel roller with a supply-side feed switch.
- Attach the media to the take-up reel unit.

46. Is there a cutter? Is it manual or automatic.
No, this printer doesn´t have any cutter included, so you should use your own cutter, such as an X-acto blade.

47. Is there a "knife guide," a slot where you can draw your knife down and across the width of the substrate?
Yes, to cut the media you just have to open the front cover and slide the cutter at the cutter groove.

In general, detritus from cutting anywhere near the platen can be a factor in printheads clogging.



The machine has a simple path. You load from behind, and the media goes directly to the print area. Media that is going to be rolled by the take-up unit needs to be taped down to the take-up spindle.

HEATERS & DRYER

48. What about heater or dryer? Is there a pre-heater, platen heater and post-heater all three, or just one, or two? How many heaters does this printer have?
The printer has three heaters: Front heater, Print heater and Rear heater.

49. Where are the heaters located? Is heater on top of, or under, the media?
Behind the platen area is the rear heater that preheats media. At the platen area is the Print heater that penetrates ink into media to fuse the ink. At the front after the platen area is the Front heater that Dries ink to stabilize print quality.

50. Can you turn an individual heater on and off without turning off all of the others?
Yes, you can turn an individual heater ON or OFF.

51. Can you vary their temperature?
Yes, at the control panel you can vary the temperature of each one.

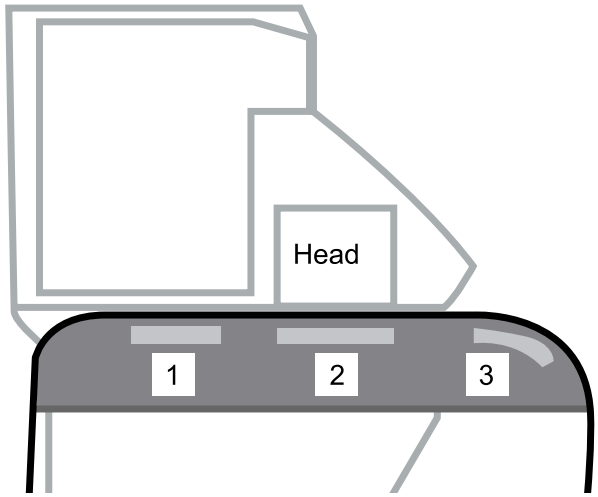
52. What is average monthly electric bill?
When calculating the actual cost of a printer most printshops forget to calculate the cost of the electricity it takes to run the printer. At present, some kinds of ink require almost furnace-like consumption of electricity. The ColorPainter uses about 1440 watts for printer, 2880 watts for heater.

53. Is an auxiliary heater or fan offered, or needed?
Yes, at the front the printer also has a Media dryer fan, that helps drying ink after printing.

54. Heat concerns: what heat settings are needed for special substrates?

Media type	Media selection	Print heater	Print heater	Rear heater
Glossy vinyl chloride	Glossy	45ºC	40ºC	45ºC
Matte vinyl chloride	Matte	45ºC	40ºC	45ºC
Tarpaulin	Banner	45ºC	40ºC	45ºC

At the front the printer also has a Media dryer fan that helps drying ink after printing.



#1. Rear heater that preheats media.
#2. Print heater that penetrates ink into media to fuse the ink.
#3. Front heater that Dries ink to stabilize print quality

UPGRADES, Future Improvements?

55. What features have been added, or changed since the printer first appeared?
The takeup and feed system have been improved since summer 2008 and today (2009); also the ColorPainter H-74s and H-104s now comes with an optional mesh printing kit.

56. What features have been added in the last six months?
The changes were made only in the ColorPainter H-74s.
Based on the information received by end user, it was concluded that changes should be performed only to this printer, but not to the H-104s, which are similar, but is more stable and robust for its larger size.

In the first model, media advance/takeup system is operated by driving the both flanges.

In the new model, the system is operated by driving one flange and one opposite-side scroller. The trench-shaped treatment on the platen surface was removed.

57. What firmware upgrades have been made available?
Two firmware upgrades were made in the early months since the first launch at DRUPA 2008, so there is not need for a further major upgrade at present.

58. What new firmware upgrades are likely in the future?
The firmware is pretty solid after two upgrades.

In the new model, the trench-shaped treatment on the platen surface was removed.

OPERATING THE PRINTER

59. Can the operator manage print jobs via the Internet with this printer?
Only through your RIP, if your RIP allow this.

60. 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? Is the printer user-friendly?
The User's Manual suggests that the printer operator should make this daily inspection and maintenance:

- Check the wiper blade for contamination
- Replenish wiper cleaning liquid
- Clean the capping unit
- Replenishing spittoon absorber liquid
- Check the waste ink bottle
- Clean the carriage
- Clean the media edge guard
- Performing normal clearing
- Performing nozzle print

61. In the main area for operation, is the machine software based (touch screen), or with physical control buttons? Or both?
The printer uses physical control buttons, located at the control panel.

62. Do you get an LCD screen in the printer or a real computer monitor? How big is the screen or monitor?
At the front of the printer in the right side there is an LCD screen that displays messages and status of the printer in alphanumeric characters, KANA characters and symbols.

63. Is the position of the LCD screen or monitor user-adaptable?
No, the display screen is fixed into the printer, so it can't be moved.

64. Can you do unattended printing? For how long? How about overnight?
Yes, you can leave the printer working all the night as long have material.

At the front of the printer in the right side there is an LCD screen that displays messages and status of the printer in alphanumeric characters, KANA characters and symbols, where the operator can control a lot of printing options.

65. How many operators or operator assistants does this printer require?
One person is capable of handling the printer.

66. What can you control, as operator?
At the control panel, you can control: the MEDIA, USE EDGE GUARD, MEDIA ADV MODE, SUCTION FAN LEVEL, AFTERHEATER INIT, PRINTHEATER INIT, PREHEATER INIT, COLOR STRIPE, BIDIR VALUE1, BIDIR VALUE2, BIDIR VALUE3, BIDIR VALUE4, PH HEIGHT ADJ, PRINT QUALITY MODE, PH CLEANING, BACK ADJUST VAL, PH REST PERIOD, PH REST TIME.

67. Where does the operator stand or sit?
The operator stands at the front of the printer at the right side where the control panel is located.

68. What aspects of the printer can you operate from behind (the loading area)?
You can control the pinch pressure.

69. What is at either end?
The waste ink bottle is outside at right end, at the left end nothing external.

70. Is a foot pedal included (for operating aspects of the printer)?
No, the printer doesn´t have a pedal to operate any printer aspect, everything is handled at the control panel. But there is an optional foot switch that allows to operate the take-up reel unit by foot.

CONSTRUCTION (BUILD QUALITY)

71. What is the solid-ness of the construction of the outer body? Is it plastic? Metal? Heavy gauge?
The structure is a mixture of plastic and metal that gives the printer a solid structure but also makes it lightweight.


Seiko ColorPainter H-74s front view, at FESPA Amsterdam 2009.


Seiko ColorPainter H-104s view, in Seiko I Infotech booth at FESPA Digital, 2009.

72. Is there both a front hood and a back hood?
There is only a front hood that you can open upwards.

73. The hood, is it strong, or cheap plastic?
It is strong enough for its size.

74. Does the hood have a frame?
Yes the hood has a frame.

75. Is the frame plastic or metal?
Primarily metal.

76. How would you describe the overall workmanship of visible parts? Clean (Swiss made), or flimsy and uneven (several Chinese-made printers)?
Well designed and professionally manufactured.

77. Does the printer wobble back and forth when printing?
No, it doesn't.

78. What sensors does the printer have?
Take up, feed, media in platen, home position sensor; wiping and capping station; above 14 or 15 sensors all together.

At the front of the printer there is a strong hood that you can open upwards.

AESTHETICS

79. Can you easily tell which is the "front" and which is the "back'?
The simple form and design make it easy to recognize the frontal part as well as the back side.

The printer structure make easy to recognize the front side of the back side.

SET-UP OF THE PRINTER: PRACTICAL CONSIDERATIONS

80. What are the electrical requirements of this printer? This means, will the building have to be rewired.
Printer power supply: 200 to 240 VAC, 6 A, 50/60 Hz
Heater power supply: 200 to 240 VAC, 12 A, 50/60 Hz

81. Are there any special temperature or humidity requirements or preferences of this printing system?
Temperature : 15 to 30°C (60°F to 80°F) Humidity : 30 to 70%RH

82. What is the connectivity? Network, SCSI, FireWire, USB 2, or other?
USB 2.0

83. Does the printer come in one piece? Does this mean you have to remove a wall to get the printer this size into your office?
The person who comes for setup will assemble the take-up and feeding aspects of the printer.

84. How many boxes arrive?
Several boxes; the ink also comes in a separate box (Americas).

85. What comes in the box?
- 2 Scroller
- 2 Tension bars with flanger
- 1 Tension bar with no flanger
- 1 Roll media

- 1 Waste ink bottle
- 1 Phillips screwdriver
- 1 Paper tube for take-up reel unit
- 2 Paper tube flange
- 1 Rubber spacer A
- 1 Rubber spacer B1
- Rubber spacer C
- 2 Flange for take-up/fixing ring
- 1 Pullout handle of scroller
- 1 Paper setting gauge
- 2 Powe cable
- 1 USB 2.0 cable
- 8 Ink tray
- 8 subcartridge (one per color)
- 1 Daily maintenance kit
- 1 Wiper cleaning liquid set
- 1 User's guide
- 1 Spittoon absorber liquid set
- 1 Wiper cleaning liquid extraction set
- 1 Dummy pack

Pablo Martínez, from FLAAR, taking notes of the content of the boxes that arrived with the printer ColorPainter H-74s, in Seiko I Infotech booth, at ISA Orlando 2010.

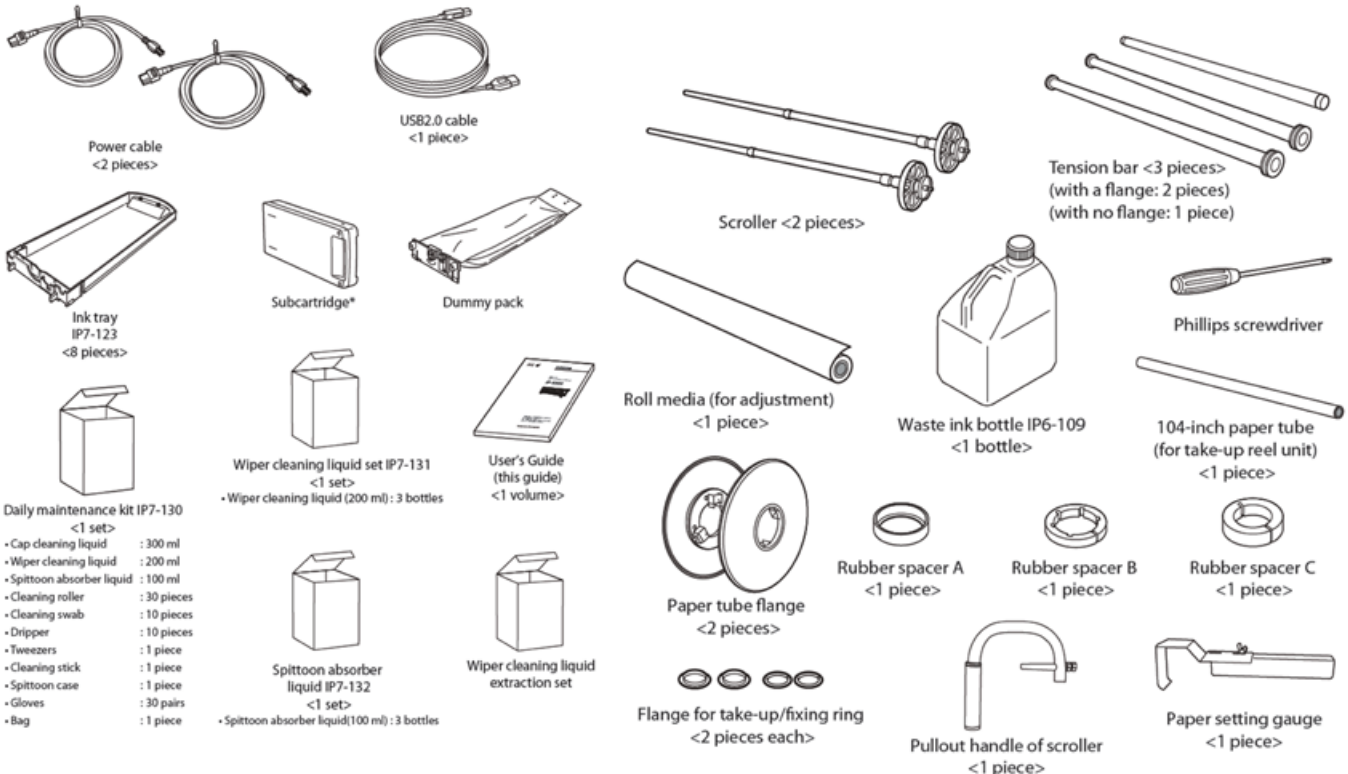
86. What is the size and weight of the printer

External dimension:
ColorPainter H-74s: 3,383 mm (W) X 1,275 mm (D) X 1,511 mm (H) ±10 mm

ColorPainter H-104s: 4,126 meters (W) X 1,366 m (D) X 1,513 m (H) ±10 mm

87. Realistically, how much surrounding and support space will the equipment need in addition to the machine's own footprint. What space is needed to accommodate not only the printer but everything else to make the printer fit into your workflow?

Min. 4.926 meters (W) X 2.90 m (D) X 2.20 m (H) for the Seiko ColorPainter H-104s.



Items that come in the ColorPainterH-74s and H-104s printer box. Image extracted from the Seiko I Infotech Inc. User's Guide, ColorPainter H-74s and H-104s (Solvent Ink Color Inkjet Printer IP-7700 and Color Inkjet Printer IP-7900).

INSTALLATION OF THE PRINTER

88. Can you install this printer yourself?
You should not attempt to install this printer yourself. Installation is a 3 or 4 hour job by Seiko or dealer technician.

89. How many manuals are available?
The printer has four manuals: Users manual, service manual, installation manual and site preparation manuals but for the end user is only available the User manual.

90. What is the rating of usefulness of the User's Manual and other associated materials?
The operator's manual is a basic instruction manual. It is definitely better than 95% of the manuals that come from elsewhere in Asia. One nice aspect is that the manual is that it is actually in real English. Too many other manuals are either gibberish or lack proper editing. I am surprised how many manuals created elsewhere in Japan are not in acceptable colloquial English (they are too stilted, too obviously translated in Asia; not written by an actual person for whom English is his or her original language).

The printer possesses a User´s Manual both at digital and printed version.

91. Is there a glossary in the User's Manual?
No, there is no glossary at the User´s Manual.

92. Is there a Service Manual?
Yes, but not usually given to the end users; there is a parts catalog for the service people.

93. Is the Service Manual for the end-user or only for tech-support?
Only for the tech support.

94. Is installation included in the purchase price?
Depends who sells the printer, sometimes the dealer will charge more for the installation sometimes doesn't.

95. How many people come for the installation?
Depends, normally one person; usually the dealer does the installation.

96. Realistically, what expenses must you incur for the installation, such as a fork-lift truck or crane to lift the printer off the truck?
Yes, lift gate or loading dock helps.

97. What is setup of the printer like? How many people are required to be provided by the end-user to help for setup?
Generally 1 day install plus training.

TRAINING

98. Is training included in the purchase price? If so, what kind of training is offered?
Yes, the training is included when you purchase the printer, but that depends of the brand dealers.

99. Is factory training available?
In the US, training would usually be provided by dealers rather than at the main distributor. There would not be factory training in any event.

The printer comes in several boxes; the ink also comes in a separate box (Americas).

ColorPainter H-74s delivery box.

ColorPainter H-74s unpacked in Seiko booth.

Seiko staff, taking out the printer parts form the delivery boxes.

Seiko ColorPainter H-74s box content.

Seiko staff, prepairing to install the ColorPainter H-74s in their booth. Installation is a 3 or 4 hour job by Seiko or dealer technician.

Omar Mendez, Seiko Technical Specialist for Latin America, assembling the ColorPainter H-74s in their booth at ISA 2010.

Sieko ColorPainter H-74s in Seiko I Infotech booth, ISA 2010 Orlando, final installation.

TECH SUPPORT & WARRANTY

100. What is the original warranty period?
One year for the printer and for the print head.

101. Does it include parts, labor, printheads?
Yes is included.

102. What are the hours of tech support?
8 am to 5 pm Pacific time.

103. Can the manufacturer remotely diagnose the printer?
Usually can troubleshoot the issue over the phone (90%+ success rate), but service may require an on-site visit.

104. What is the native language of the tech support person?
English and Spanish.

105. Does the dealer or manufacturer provide the service?
Seiko I Infotech provides direct phone support (North America only), and either dealer or direct on-site service (Americas).

106. Who does repairs? Dealer, manufacturer, or third-party?
The dealer does the repairs.

PRINTHEAD Technology

107. What printheads are used? Xaar, Spectra, Epson, Konica, Seiko or other?
The brand of printhead is not listed in the spec sheet but this printhead is quite fast. Once you have the printer for a while, you will be able to figure out which brand and model of printhead it is. This is definitely not the same printhead as in the earlier HP 9000s printer. The head used now is significantly more advanced.

108. What model of the printhead is used?
Uses a new generation of printheads from a leading manufacturer (which tend to be Japanese).

109. How many printheads per color?
One printhead per color, but can be configured in two ways 8 x 1 (eight colors, one head each color) for maximum print quality or 4 x 2 (four colors, two heads each color) deliver maximum speed.

In the eight-color set-up you can achieve True Monochrome printing.

110. How many printheads in total?
Eight printheads in total (C,M, Y, K, Lc, Lm, Gray and Light Gray, or dual CMYK)

111. Can a sensor(s) detect clogged nozzles and can software provide backup nozzles to cover that missing area on the next pass?
No, they can't do that.

112. What is the firing frequency of the printheads (in KHz)? Can the firing frequency be varied by the end-user?
The size of the printhead, and the capabilities of the printer hardware and control software, are what give you the impressive speed of this Seiko printer.

The brand of printhead is not listed in the spec sheet but this printhead is quite fast. The head used now is significantly more advanced.

113. Do you have to maintain negative pressure on the printhead?
Yes, you have to maintain negative pressure on the printheads.

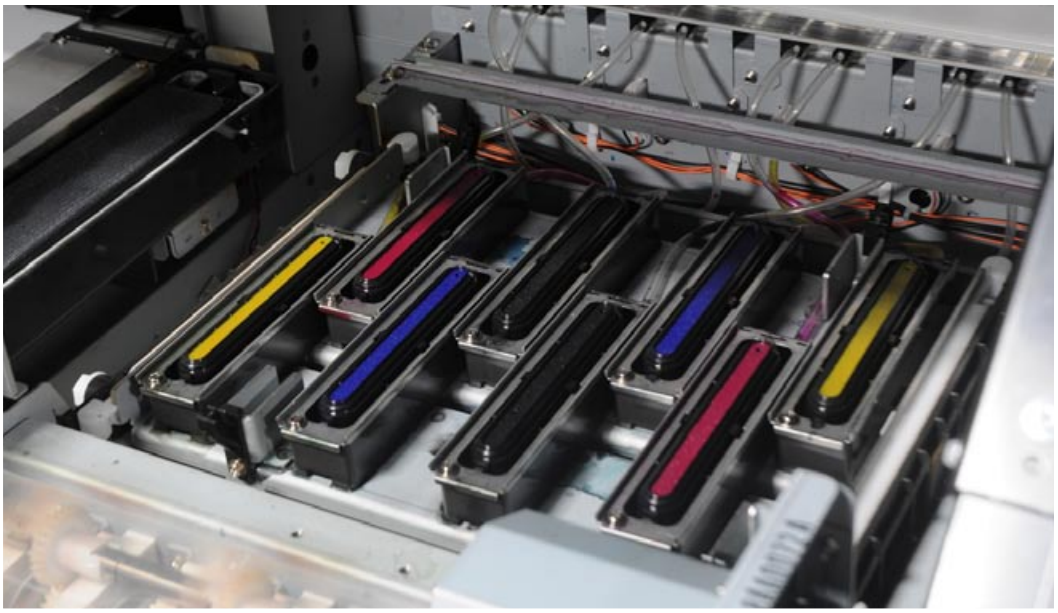
114. Can you regulate this pressure yourself?
No you can't, the printer does automatically.

115. How does this affect the print quality or the printing speed?
If you don't have negative pressure you will have drops over the printhead nozzles.

PRINTHEAD Positioning

116. Are printheads at an angle, or in a row?
The printheads are displayed in a row.

117. Are printheads in a single row, or staggered?
The printheads are staggered.



The printheads are not at an angle, they are in a row offset from each other, but perfectly parallel.

PRINTHEAD DPI & Print Quality

118. What is the drop size in picoliters?
12 picoliters in standard mode, 24 picoliters in draft mode.

119. Is there variable droplet capability?
Yes, you can vary the drop size by changing the print mode.

120. How many nozzles per printhead?
508 nozzles x 8

121. How many nozzles per color?
508 nozzles

122. What is the advertised DPI, and is it true dpi or "apparent" dpi? How is dpi presented (with what adjectives)? How is this dpi calculated?
True 720 x 720 dpi.

123. How does the resolution of this printer compare with other brands or other models of the same brand?
Print resolution is similar to the previous Seiko printer, it's high in the middle range for resolution.

124. How many print modes are offered?

- Draft1: This print mode emphasizes productivity.
- Fine draft: This print mode emphasizes productivity and print quality reasonably.
- Normal 1: This is the normal print mode.
- Normal 2: This print mode used for media with which weak or thin-spot.
- Quality: This print mode is used when the print dries slowly in the NORMAL1 print mode or when uneven print is notable.
- Density2: This mode is used for print on backlit media (FF, transparent vinyl chloride, translucent vinyl chloride, etc.) and for the print requiring density.

125. How many passes can this printer achieve?

At quality and density2 mode the printer could achieve 16 passes.

126. What is rated speed at

- Draft1: 4 pass, 60m^2/h (100m^2/h)
- Fine draft:6 pass, 40m^2/h (80m^2/h)
- Normal 1: 8 pass, 30m^2/h (60m^2/h)
- Normal 2: 10 pass, 24m^2/h (48m^2/h)
- Quality: 16 pass, 15m^2/h (30m^2/h)
- Density2: 16 pass, 15m^2/h (30m^2/h)

The speed also depends on whether you are using one set of eight colors or two sets of CMYK. Dual CMYK at four-pass is rated at 1075 sq feet per hour.

127. Do you print bi-directional or uni-directional?

The printer could print at bi-directional and uni-directional mode.

128. Which materials can be printed at bi-directional setting?

Any material can be printed at bi-directional.

You can print any material at bi-directional mode. Seiko H-104s printing samples, GDS site visit 2009.

PRINTHEAD Banding Issues

129. Is there banding in areas of solid black?
If you properly do everything there is no banding. But this requires understanding the variables in the different kinds of substrates, whether the core of the media roll is straight and sturdy. If you have cheap junk from Brand X then the roll itself can't feed adequately through any printer straight.

130. What causes banding in this particular system?
If you have nozzle drop up, don't maintain in good condition the printer, or have wrong setting in the bi-directional profiles these factors could be the cause of the banding.

131. How can banding be avoided?
You can avoid banding primarily by using substrates that are not on bent or inadequate cardboard cores, media that is not wound properly at the mill, as well as gaining experience adjusting the bidirectional profiles; using the Smart Pass Technology option; using a mode that is not as fast.

If you properly do everything and set correctly the the bidirectional profile there is no banding.

132. Does this printer offer intelligent interweaving or comparable software?
Yes, Seiko I Infotech has licensed Smart Pass Technology software. But I did not see it in operation yet.

133. Are there problems of air getting into the system?
Not generally.

PRINTHEAD Life Expectancy

134. How long do your printheads really last? Do you have that written in a warranty? If your longevity specs are in drops, please translate that into liters of ink or square footage of media.
You should not have to change them often.

135. How is the nozzle plate protected? Is it recessed?
The nozzle plate is not protected by being recessed.

136. Is there an alarm system to stop the head from hitting substrate if head is not high enough?
Printer automatically senses and sets head height according to the media thickness loaded. It also has a automatic safety shut off if carriage hits something.

137. Can you vary the gap (the distance from the printhead to the media, which is the distance the ink droplets must fly?
The adjustment value range is: -0.3 to +1.0 mm.

CLEANING & MAINTENANCE

138. How easy is it to access the area where you have to clean the heads?
The cleaning station is very accessible. Just open up the main front hood and then the cap cover. This is an improvement over the earlier Seiko and HP 9000s.

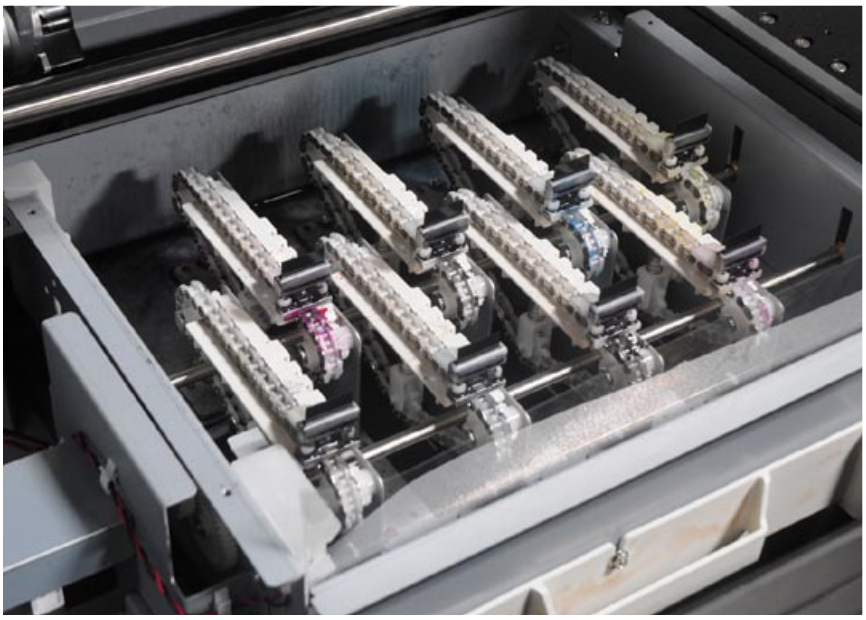
139. How is head cleaning accomplished? Spray, vacuum, manual, other?
The wiper blade removes foreign particles on the surface of the printheads.

140. To initiate a purge, where is the control or button? Is it software generated or do you have to press a button? Is the button on the outside of the printer, or inside on the carriage?
To initiate the purge, you just have to select the option at the menu in the control panel.

141. How many levels (strengths) of printhead cleaning (purging and/or sucking) can be accomplished via the firmware (software)?
There is a function called PH Cleaning, which has 2 modes or settings:
Normal all: Recovery from nozzle-out
Strong all: Recovery from nozzle-out that is noy rectified by normal all mode.

142. Does the machine automatically periodically purge itself?
To keep the print head condition, select a clearing mode which is automatically performed by the printer:

- Start & End: Cleaning is performed automatically at the beginning or at the end of print, judging from the past print history.
- During Print: Cleaning is performed automatically at predetermined intervals during printing.
- During Print2: Cleaning is performed automatically at predetermined intervals during printing.



At the left side is located the service station that has the wiper blade which prevents the nozzle of the printheads from drying .

143. Is there a capping station?
The capping station is located at the right side of the printer.

At the right side is located the capping station, that has the capping area, which prevents the nozzle of the printheads from drying.

144. What is the nature of the service station?
The service station has the capping area, which prevents the nozzle of the printheads from drying.

145. Where is the service area? At the left, or at the right?
The service station is located at the right side of the printer.

146. Where is the parking area? Is the service area the same as the parking area?
The parking area and the service station are located at the right side of the printer.

147. Does this printer spit, or "weep" at regular intervals?
Yes, the printer spits at regular intervals.

148. What cleaning materials are recommended? What is not recommended?
You can learn about cleaning materials during installation training and by seeing what is provided by the company.

149. What daily maintenance is required if you print the entire day long?
The User's Manual suggests that the printer operator should make this daily inspection and maintenance:

- Check the wiper blade for contamination
- Replenish wiper cleaning liquid
- Clean the capping unit
- Replenishing spittoon absorber liquid
- Check the waste ink bottle
- Clean the carriage
- Clean the media edge guard
- Performing normal clearing

You should clean the printheads at least once a day.

150. What other periodic maintenance is required by the operator?
The User's Manual suggests that the printer operador bimonthly should replace the spittoon case and clean the print heads with head cleaning kit.

SLEEP MODE & STORAGE

151. How long can the printer sit unused?
If is plugged in and on line it will purge and recharge periodically.

152. How should a printer be prepared for sitting unused for a long time?
To prevent the print head from drying, clean the print head and the ink flow path with the storage liquid, and leave the printer with storage liquid filled. (Eight storage liquid packs and eight dummy subcartridges are necessary for this maintenance.)

153. When you go to wake your printer up after several days not using it, what do you need to do that's special?
Clean the print head and the ink flow path with the cleaning liquid, Select PH.MAIN MENU from the operation panel, and then select the head wash. After the head wash, perform the CHARGE (INKPACK) to prime the ink system.

SAFETY CONCERNS

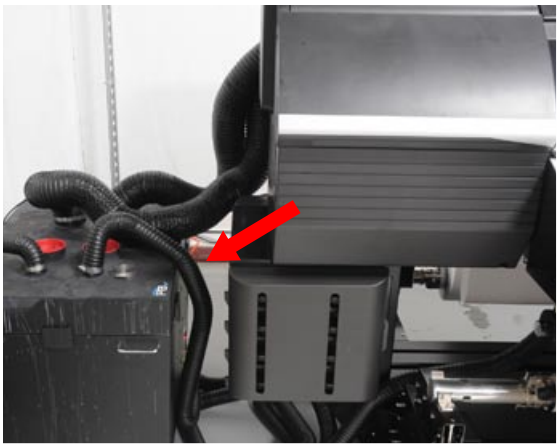
154. Are emergency buttons present, and if so how many, and where are they situated?
No, there is no visible emergency button.

155. How much odor is emitted by the ink?
With PAT air purifier plugged in, the ink odor is not offensive.

156. Is the machine enclosed, or exposed?
Is enclosed.

157. What system of ventilation or exhaust system is built into the printer?
The printer has two exhaust outlets on top. It is very important not to block these orifices.

The printer we inspected in Illinois had a PAT air purification system hooked up directly to their Seiko printer.



With PAT air purifier plugged in, the ink odor is not offensive.

158. What other fans or exhaust openings exist in the printer?
You can buy optional exhaust attachments to exhaust ink smell discharged during printing to the outside

159. Do the printer specs list the noise level?
Standby: 45 dB (A) or less

Operating: 60 dB (A) or less (continuous sound) excluding supply/takeup motor noise and ink charging noise.

160. How easy is it to access the MSDS of the ink?
It is rare that the MSDS of the ink is easy to obtain. If the MSDS is an auto-download from the company website, this is how it should be. But most companies do not wish the end user to know which brand of ink is being used, so hiding the MSDS is not necessarily an attempt to hide the dangers, but may be to hide the source of the ink from dealers.

You can buy optional exhaust attachments to get rid of ink smell discharged during printing.

INKS

161. How many kinds of ink are available?
One ink class is available: mild-solvent.

162. Is this a full-solvent, mild or lite-solvent or eco-solvent?
This is a Mild solvent printer. "lite-solvent" is the same thing; just a different word; no cyclohexenone is supposed to be in the ink.

163. Is white ink available?
White ink is not really available for most solvent inkjet printers. Roland and Mimaki offered white ink for a while but most people commented that it was not opaque enough. Then about a year ago Mimaki came out with an improved white ink, that does appear to be acceptable. Now Roland has a white ink that hopefully is better than its first try four years ago. Just realize that white ink chemistry is not easy to maintain in a stable fashion. So there are many good reasons why white ink is not included in any Seiko solvent printer.

INK Cost

164. Does ink come in cartridges or bulk?
The ink comes in eight 1.5 liters ink bags, one for each colors.

165. How do you add the new ink?
Just change the ink ink bag of the specified color, the positions of ink packs are specified by color.

166. Where do you add the ink? Front or back of the printer?
Price per liter is $220, but you buy it in 1.5 liter containers, so price-per-container is $330 (North America).


The printer uses ink bags, that you change at the front of the printer; at the back of the printer is located the sub cartidges that you can use as auxiliar ink tank.

167. What is ink cost per liter (per cartridge, and per liter)?
Price per liter is $220, but you buy it in 1.5 liter containers, so price-per-container is $340.

168. What is the cost, in ink, per square unit?
Average 1 mil per square foot.

169. Which color of ink is used up the quickest?
In 8 color set maybe the black. Light magenta and light cyan may be used more than other colors. Obviously this depends on the colors of your output.

170. How do you see the ink levels?
In the LCD screen in the control panel you can easily check the ink level.

171. What ink-out alarm system exists?
At the control panel there is an Ink LED (green color) that indicates how much ink is remaining:

- ON: Ink of all colors is present.
- Blink: Ink near-end (Ink of any color is little)
- OFF: No ink

172. Where is the waste ink container situated?
At the lower right side is located the waste ink bottle.

At the lower right side is located the waste ink bottle; the bottle must be changed every time the bottle is filled to the level of full. Perhaps once a month.

173. How often does the waste container need to be emptied?
Every time the bottle is filled to the level of full. Perhaps once a month.

174. How do you know when the waste container is full?
The control panel shows a message, also you can view the ink full level in the waste bottle because is located in the lower right side of the printer.

175. Where is the ink waste container? Is there one, or two?
The printer has only one waste container that is located at the lower right, that should be emptied one a month.

INK Color Gamut

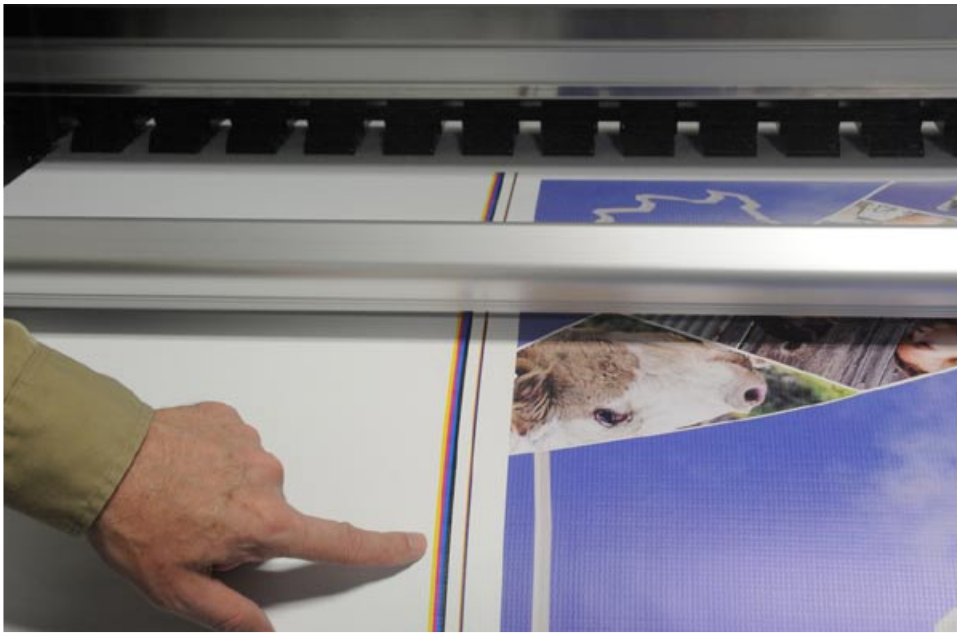
176. What colors are hard to achieve?
Purples or brown may need more passes.

INK: Miscellaneous

176. What about ink drying time?
Dry by time it hits take up, but if printing in draft mode you may need supplemental dryer.

177. Do you need to have a band of printable colors along the edge, outside the main printed area, to keep all printheads and their colored inks fresh and ready to print (so as not to dry out when not be used by the colors in the design)?
Yes, it helps.

178. What filters are on the ink system to trap particles?
There are filters in the needles that go into the ink cartridges.



To keep all printheads fresh and avoid them to dry out when not be used you can print a band of printable colors along the edge.

INK: Longevity

179. Is 3M warranty available? Is Avery warranty available? What are the full added costs in ink, media, and lamination for such a warranty?
Yes, both 3M and Avery provide warranties with the ColorPainter inks.

SUBSTRATES

180. What sizes of material can be printed on?
For the Color Painer H-74s, the maximum media width: 74.4" (1.900 mm)
For the Color Painter H-104s the maximum media width: 103.6" (2,632 mm)

181. What is print width relative to roll width?
We have this entry because some printers are called "3.2" because they accept substrates that are 3.2 wide, but the printer can actually print only 3.1 meters. In such a case the model name is misleading (and incorrect in a sense).

Print width	Material width	Claimed by how the model is named
	74"	H-74s
	104"	H-104s

182. How about maximum roll diameter or weight?
Color Painter H-74s
Maximum media Weight: 110 lb./ 50kg
Maximum media diameter: 8.7" (220 mm)

Color Painter H-104s
Maximum media Weight: 264 lb./ 120kg
Maximum media diameter: 13.8" (350 mm)

183. What thickness can this printer handle?
You can setup the head height at two levels: 0.08" (2.1 mm) or 1" (2.6mm)

184. Is printhead height adjustment available? Manual? Automatic? How much?
The printer automatically adjusts the head height to the best height when the printer is turned on or when media is set. To adjust the head height according to the media to be used, select MEDIA REG MENU on the operation panel and adjust the head height.

You can setup the head height at two levels: 0.08" (2.1 mm) or 1" (2.6mm).
The process is made at the control panel in the PH Height Adj menu.

185. Is there manual feed capability of sheets (sheet feed)?
Yes you can print on cut-sheet media. But you have to follow a number of manual procedures to ensure its proper feeding.

186. Can the media feed without skew?
The printer checks media skew at every 3m printing. If the printer detects a skew exceeding the specified level, the printer enters the print pause mode and displays the screen to select continuing or stopping printing.

187. How much media is wasted in starting a new roll?
About one meter.

In these two photos you can see the color gamut of the ColorPainter H-104s. VisCom Germany 2008.

SUBSTRATES: Issues

188. What materials does the manufacturer recommend to use this printer for?
Uncoated and coated PVC, banners, backlit film and other media designed for solvent printers.

189. Can the printer handle ink that goes through the open weave of mesh or fabrics? Is there a "mesh kit" to collect the ink?
Yes, you can purchase an optional mesh kit that keeps the ink from ruining the platen. Should state about ½ hour to install, its very easy. I would like to inspect this kit and see it in operation.

SUBSTRATES: Image Quality

190. Is backlit saturated enough with one print, or do you have to print two and mount them together?
Yes, you can do backlit in high density mode 16 pass so better on the new Seiko than on a former Mutoh, Roland or Mimaki. Every time I visited a printshop anywhere in the world, who had any printer using Epson printheads in the years 1999-2004, they always commented that backlit could not be done well. In those same years the best backlit from an entry-level wide-format printer was with an HP Designjet 5000 or 5500. Today of course we are in 2009, and the Seiko does not use cheap printheads, plus has firmware to help you achieve backlit. Backlit is something I will hope to test later this year.

191. What is the situation with adhesion?
The User's Guide points out that the prints should not be touched before the ink dries, and mentions a drying period of 24 hours. This is a very honest and ethical comment by Seiko.

192. Does ink tend to collect on the heads when there is too much static charge?
The printer is well grounded so excess static charge should normally not be an issue.

193. How much acclimatization time is needed for the media?
Acclimatization time will depend on the status of your media in terms of humidity, because the recommended temperature for all media is around 23°C (73°F), and curl of paper in low humidity and wrinkles of media in high humidity occur easily.

APPLICATIONS: What Questions should the printshop owner ask of himself?

194. What other kinds of applications can you print?

- Billboards (good on most materials; you can use fast printing mode)
- Banners, general signage (good on most materials, you can use fast printing mode)
- Exhibit graphics; very nice if printed with 8-color system with quality mode.
- Backlit; I need to print samples and then inspect them in a backlit setting.
- POP; will look handsome if printed with 8-color system with quality mode
- Bus shelters very nice if printed with 8-color system with quality mode.
-

Quality from a 4-color printer will differ; the higher quality will come from the 8 -color printer and at its quality mode.

ColorPainter H-104 printing some samples in Seiko booth, at ISA 2010.

195. What kinds of applications are not something you should try? What applications print well, mediocre, or poorly, and why?
Anything thicker than 1 mm is not intended for this or most other solvent printers.

Image Quality Issues Relative to Applications

196. How good is the adhesion of the ink?
Should be same as Color Painter 64s.

197. What about solvents such as cleaning solvents? Do they mar, dull, or wash away the ink or change the surface quality?
Be sure to do these tests yourself; but let the ink dry 24 hours first.

- Windex – Ammonia Okay
- Acetone
- Cleaning alcohol
- Gasoline -- need to test but not expected to be a problem
- Soap and water
- Scotch-tape pull-off test

198. Is text sharp or fuzzy? What is the smallest text that you can easily read?
In the examples seen at FESPA 09, the text can easily be read at a 10 point size.

199. Is misting observable?
The way you can tell whether your printer has an issue with misting is to put a white napkin inside the printer. See if it turns colors from ink mist landing on it. All printers have some.

Or, look under the media edge guard. If the area to the right (where mist can land) has a faint barely perceptible gray or other light color, that is misting ink that has landed there.

RIP SOFTWARE

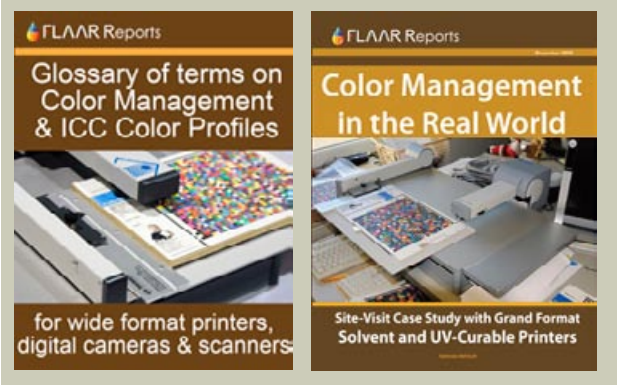
200. Is a RIP included?
RIP is separate.

201. How many other RIPs work with this model of printer?
The printer is compatible with Caldera, Onyx, Sai and Wasatch RIP software.

COLOR MANAGEMENT FEATURES

202. What color management sensors or measuring tools are onboard?
Not usual.

203. Are ICC profiles provided by the manufacturer?
Some ICC profiles are provided already for basic materials. FLAAR recommends that a printshop, ideally, should learn how to accomplish their own custom ICC profiles (FLAAR offers plenty of free PDFs on how to get started).



PRODUCTIVITY & ROI (Return on Investment)

204. What is the level of productivity, high, medium, low?
The printer is built for productivity.

GENERAL CONSIDERATIONS

205. What will the resale value of your printer be in three to five years? When you buy a printer nowadays, people easily forget to ask what the resale value will be in three to five years.

So a good question is, will either the brand name or model specifications cause a knowing buyer three years from now to shy away from your printer or cause a knowing buyer to only want to pay a very low price as compared to the other printers our company is considering?

A company which is no longer in business may cause printers of that brand to lose value in the used market. A company which has filed for bankruptcy (irrespective of what other legal jargon they use, to the normal person, if a company does not pay its bills, it is considered effectively bankrupt). It is possible that such a printer brand could lose value when offered used.

Seiko is a large company and there is not much liklihood that either Seiko, or Epson, will disappear. Naturally I can't predict all aspects of the future, but Seiko has an excellent brand name reputation, and recognition. Resale value should be appropriate.

206. Another question is to ask, is there some major technological breakthrough in your market applications that will result in less value for your current model?

All solvent ink chemistries should still be around in three to five years, no matter how fast UV printer sales rise. The EU chemical registration laws, REACH, may cause issues for full-solvent chemistries, but mild-solvent is not yet known to be affected. A solvent printer simply costs less in every aspect: machine and ink. Rather than all solvents disappearing, what is more likely is that inks such as Sepiax or comparable will gradually become available, kind of like latex ink is available today. But latex ink requires substantial heat; no other ink that I am familiar with requires that much heat. But latex ink is not replacing even mild-solvent ink, it simply offers an extra alternative.

Conclusions

The Seiko ColorPainter H-104s was worthwhile spending the time to track it down at ISA '09 and then FESPA Digital '09, and then at a printshop in Indiana. This Seiko printer has improved since I saw the first prototype at DRUPA 2008 in Duesseldorf. This Seiko printer now offers significant competition for Mimaki, Mutoh, and Roland.

Mutoh has both mild-solvent and eco-solvent printers, so there is a Mutoh model that would cover some of the same territory as the Seiko printers. But somehow there is a mystique about Seiko printers, probably due to their excellent color saturation. But I have been at Mutoh Europe for an entire week inspecting the Mutoh solvent printers, and frankly I was pleasantly surprised.

You could consider that the "AJ" series of Roland printers would be comparable. There is a FLAAR Report on the AJ-1000. One person within the industry admitted that this was not the best printer they had ever produced. This statement agrees with the assessment of our evaluators of an AJ-1000 in a printshop Guatemala. The printshop owner said it was noticeably better than his multitude of Chinese printers, but was definitely not perfect. So we do not rate the Roland as a bad printer at all. Just not a superhero. But in the US and Western Europe, Roland is a very popular brand. The Roland booth at trade shows in the US and Western Europe is usually the most popular solvent printer destination at the show. And I hear from end-users that other models of Roland are reliable machines and have stamina under hard usage. So Roland is a viable competitor in the marketplace.

The Mimaki JV5 series had hiccups the first two years, sufficient minor issues that it was not worth our time to evaluate them in detail past hearing the litany of glitches. Today the JV5 is definitely improved, but the JV3 had a much better reputation in its time. I find the Mimaki JV33 and others have a better reputation than the JV5. But the Mimaki JV5 does have some very nice individual features, such as its "bumper" to protect from head strikes. So every printer has some excellent features somewhere. You just need to look for them.

FLAAR evaluated both the original Seiko ColorPainter 64s and the subsequent HP 9000s version. It is estimated that about 15% of the people who came to the Seiko booth, or who e-mailed or inquired about the Seiko version (2006) had read a FLAAR Reports PDF on this Seiko.

But then after the HP rebranding things changed: ink pricing, printer pricing, and this was the first solvent printer for most of the resellers (who were accustomed only to water-based printers). There was no report on the HP version because in 2007-2008 we were busy evaluating UV-cured flatbed printers in those years. But towards the end, FLAAR did evaluate the HP Designjet version, but due to the costs this was not a free report. Actually our most recent evaluation was in Spring 2009 (and will be out in a few weeks, since some people may be tempted for an HP 9000s used; but be sure to read the FLAAR Reports first….).

One thing we are looking at with respect to the new Seiko series, are which features of the older models have been improved. By 2009 there was much more feedback available on the HP 9000s so it was possible to have a list of issues: mainly occasional skew if the materials were not loaded properly, and awkwardness of access to some of the cleaning functions (really getting inside the capping area).

On the H-104s, the spittoon requires only one screw to remove it. So this is an example of improvements over the older model. For the next update of this present FLAAR Report, I hope to have a longer list of comparable improvements. The present evaluation is a work-in-progress and we look forward to learning more about the ColorPainter.

Issues

No printer is perfect, and if you asked 100 different end-users each one would have a different preference. My own preference is always for a larger LCD display so you can see more things at once, like those on recent ColorSpan printers (especially their model 5440uv printer). The engineers who design solvent printers have memorized the control button sequence years ago, so they don't need a bigger monitor.

One end-user reports that a downside is propensity for banding if set at top speed and if the media is not straight and well wound onto the role from the media factory. The problem appears to be the inner cardboard rolls on which the media comes. With calibration, however, the banding can be avoided.

This end-user says that it would definitely help if there are more media profiles (ICC profiles, from the manufacturer).

Once several thousand of these printers are installed, it would help to offer tech support from 9 to 5 pm for the East Coast time zone also.

Good features

The potential benefits of the Seiko H-104s printer are multiple, including excellent color saturation. This is a serious production machine; this is not intended as an entry-level printer. If you prefer an entry-level mild-solvent printer, Seiko offers their new V-64s model.

The one black-and-white that was bring printed while I was in the printshop was relatively neutral. I would need to see the original images (and perhaps test a FLAAR image, since we do many black-and-white, especially infrared images. This kind of test is what I will do when I can get to the Seiko headquarters near San Diego.

The mild-solvent ink is not zero-smell but odor is not objectionable if you have an air purifier attached to the printer.

The ink on the H-74s and H-104s is more advanced than that of earlier Seiko printers, and is milder than the ink for the 64s (of the years 2006-2007). So you can potentially expect fewer clogs and potentially not need to change heads as often. Naturally all this we will know better at Print '09 and SGIA '09. FLAAR will have a booth at Print '09, plus Nicholas will be giving a 3-hour presentation in the seminars organized by RIT Professor Frank Romano. If you have questions you can just ask after the lecture.

The end-user commented that "Seiko has the potential to change the economics of printing. At $80,000 this printer is substantially less cost than grand-format printers in the past. You will pay for this printer real quick at over a thousand square feet an hour."

Harvey Meister, whose printing company demonstrates clearly that he has experience, said, "I saw the Seiko at SGIA last Fall; nothing else comes close."

In the list of advantages of mild-solvent over other ink types is the fact that some other kinds of inks require excessive amounts of electricity.

Plus the printer is definitely solidly constructed. One comment was, "Seiko focused on engineering; they put their money where it needed to be." Remember, this is a printer made to be 104", made to handle rolls that length and weight. This is not a quickie stretch-model pumped up from 54" or even stretched from 74". In fact the Seiko 74" was built after the 104" and the 64" V-64s is based on another platform.

I always like to check with more end-users so I can update this report. But looks like a lot of potential here. Plus Seiko clearly has a good reputation in mild-solvent printers, starting with the better-than-competition color saturation in 2006. Now they offer speed on top of this.

Conclusions

Harvey Meister already has a (Gandinnovations) UV-flatbed. He purchased the 104-inch Seiko because it gives him performance of a top brand grand format, but at about half the price. He is setting up the workflow of his company around the speed potential of the Seiko (remember, he has the dual CMYK version).

The secret(s) of success of this new printer are the advanced engineering, robust construction, the improved ink, full eight colors (or dual CMYK), and especially all new printheads.

Most recently updated June 2010.
First issued June 2009, after two days inspecting the printer in action in Illinois.

Complete Workflow for wide-format inkjet printing

Once you have a UV-curable flatbed, hybrid, combo, or roll-to-roll printer, there are several other components of the workflow that you need:

- RIP software
- an understanding of color management and ICC color profiles
- and an awareness of when and whether you need lamination or top coating

Every printer manufacturer will tend to say that the output with their inks do not require lamination….

- But what about floor graphics ?
- What about vehicle wrap ?

And what about covering over cure-banding and banding from feeding inaccuracy ?

- What about the fact that 75% of UV-cured printers can't produce gloss and some not even satin surface appearance?

Hmmm, so now you know why FLAAR is evaluating liquid top-coating equipment and studying film laminators and liquid laminators. Indeed one of the several new staff that we hired is an experienced printshop operator with practice on VUTEk solvent printers and Seal brand liquid laminators.

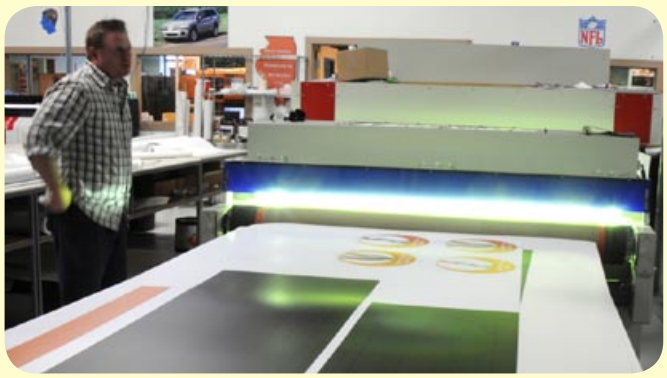
Our first major research project is on the UV-cured liquid top coating system of Drytac. We found a printshop that had bought a the #1 leading brand of coater, found that it did not work to his expectactions. So he looked around at several trade shows and then bought a Drytac UV coater.

FLAAR sent Dr Nicholas Hellmuth and one Technical Writer to inspect the liquid coating system, spending two days at the printshop in Illinois.

So whether you print giclee, or décor, or signage of all sizes, shapes, and materials, you can now look forward to the FLAAR Reports bringing you innovative reports on more than just printers.

To see the FLAAR video on our inspection for the evaluation, click here

Here is Nicholas interviewing the owner of the coater. Previously he had bought the biggest name brand, but their UV coater did not function adequately and he asked them to take it back. Then he spent time checking out every single other brand: he selected the one you see here.



Here is the printer and coater operator, Jacob Duquenne. Notice that FLAAR actually makes printshop inspections and actually checks out how the equipment performs.

The print shop is a 6-hour round trip drive from the FLAAR office in St Louis, so it was relatively easy to reach. You can also download the FLAAR Reports on the other equipment at this printshop: Seiko ColorPainter H-104s.

And, while we were preparing the Seiko evaluation, we dedided to issue a complete glossary on solvent printers: eco-, mild-, lite-, and bio-solvent.

What's next at FLAAR ?

Our report on Caldera RIP is being updated. We are receiving more training on the HP latex ink printers, since more people are writing asking FLAAR about this ink than we anticipated. FLAAR was initially trained on HP latex ink first in Israel and then at the world headquarters of Hewlett-Packard wide-format printers in Barcelona (all before the printer was even released to the public or shown at any trade show).

click here

Reality Check

Being a university professor for many years does not mean we know everything. But intellectual curiosity often leads us to enter areas that are new to us. So we do not shirk from entering areas where we are obviously not yet expert. If in your years of wide format printing experience have encountered results different that ours, please let us know at ReaderService@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).

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Update Policy

Starting in 2008, updates on UV-curable wide-format inkjet printers are available for all individuals and companies which have a subscription, or to companies who are research project sponsors. If you are a Subscriber or manager in a company that is a research sponsor, you can obtain the next update by writing ReaderService@FLAAR.org. If you are neither a Subscriber or a research sponsor, simply order the newest version via the e-commerce system on www.wide-format-printers.NET. Please realize that because we have so many publications and many are updated so frequently that we have no realistic way to notify any reader of when just one particular report is actually updated.

There is a free PDF that describes the UV-curable inkjet printer Subscription system. Subscriptions are available only for UV-related wide-format printer publications.

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.

FLAAR still publishes individual reports on solvent printers, and on giclee printers, but subscriptions on these are not yet available; these FLAAR Reports on solvent, eco-solvent, and water-based wide format printers have to be purchased one by one.

Please Note

This report 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 is frequently updated, if you got your version from somewhere else, it may be an obsolete edition. FLAAR reports are being updated all year long, and our comment on that product may have been revised positively or negatively as we learned more about the product from end users.

If you receive any FLAAR Report from a sales rep, in addition to being violation of copyright, it is useful to know if there is a more recent version on the FLAAR web site, because every month new UV printers are being launched. So what was good technology one month, may be replaced by a much better printer elsewhere the next month.

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.FLAAR.org.

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 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 are being updated every month sometimes, 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.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.

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 license the report or otherwise notify us in advance. FLAAR reports are being updated every week sometimes, 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.

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.

Advisory

We do our best to obtain information which we consider reliable. But with hundreds of makes and models of printers, 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 we have in the FLAAR facilities. 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 for the first few weeks, may subsequently turn out to be a lemon.

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 and their university colleagues 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 101 different UV printers from more than 46 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 testing, 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 printshop 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. If you received a FLAAR PDF from a sales rep, they may give you an early version; perhaps there is a later version that mentions a defect that we learned about later.

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 101 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 printshop 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-party 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.

It is also crucial to realize that an ink (that we inspect, that works well where we inspect it), your printer, your printhead, the heat, humidity and dust conditions in your printshop, may cause that ink to react differently in your printer. And, there are different batches of ink. Even in the really big multi-national billion-dollar ink companies, occasionally one batch will have issues. There are over 100 ink companies; six colors per company, many flavors of ink per company per color. We have no realistic manner of testing each ink. The same is true of media and substrates. One production run can have a glitch: chemical or physical, even in the best of companies. A major Swiss-owned media company, for example, had several months of media which were almost unusable. Yet other kinds of media from the same company are okay (though we stopped using that brand and stopped recommending them after all the issues we ourselves experienced).

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 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. Plus, there is no way to know if all MSDS sheets are honest to begin with! 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 make 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.

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 unidirectional, which may be twice as slow as bi-directional.

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. Five 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.

Images printed at trade show may be in uni-directional mode: so you may not realize 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.

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 hard-

ware 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. Please be aware that our comments or evaluations on any after-market ink would need the end-user to use customized ICC profiles (and not merely generic profiles).

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.

Don't blame us… besides, that's why we are warning you. This is why we have a Survey Form, so we can learn when you find products that are inadequate. We let the manufacturers know when end users complain about their products so that the manufacturers can resolve the situation when they next redesign the system.

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 common 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.

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 American Express card allows you to refuse payment even months after the sale. 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 use in our own facilities. 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 send 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 lifed by cranes and run over a rough pot-holed highway or kept in smeltering 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 to have a fair record of response; Teckwin is one (based on a case of two problematical hybrid UV printers in Guatemala). The distributor said that Teckwin sent a second printer at their own expense and sent tech support personnel at their expense also. But unfortunately both the hybrid UV printers are still abandoned in the warehouse of the distributor; they were still there in January 2009. But Teckwin has the highest rating of any Chinese company for interest in quality control and realization that it is not good PR to abandon a client or reseller or distributor all together.

Recently we have heard many reports of issues of getting parts from manufacturers in other countries (not Asia). So just because you 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

The recession resulted in tech support issues: some manufacturers may need to skimp on quality control during a recession, or switch to cheaper parts suppliers. Plus they are not hiring enough tech support during a recession. So the bigger and more successful the company, in some cases the worse these particular problems may be.

Any new compiled printer may take a few months to break in

Any new printer, no matter who the manufacturer, or how good is the engineering ane 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.

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, 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 printheads 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 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 19 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 incapabilities 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 36 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, Parrot Digigraphic, Color DNA, Canon, Gandinnovations, 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 Caldera, EskoArtwork, EFI Rastek, EFI and VUTEk, OTF (Obeikan), Drytac DigiFab, Barbieri electronic, Seiko II, Parrot Digigraphic, AT Inks, Sepiax inks, Sam-Ink, Dilli, Grapo, and WP Digital for providing funds so that we can make more of our publications free to end-users. 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 2010), 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, EFI, EskoArtwork, Gerber, Grapo, IP&I, Mimaki USA, Mutoh, Obeikan, Dilli, Drytac, GCC, NUR, Oce, Shiraz (RIP), Sky AirShip, Sun, Teckwin, VUTEk, WP Digital, Xerox, Yuhan-Kimberly, Zund have each brought FLAAR staff to their headquarters and printer factories. AT Inks, Bordeaux, InkWin, Sepiax, Sam-Ink, and Sunflower ink have brought us to inspect their ink manufacturing facilities and demo rooms. Notice that we interact with a wide range of companies: it is more helpful to our readers when we interact with many different companies rather than just one.

We have visited the world headquarters and demo rooms of HP in Barcelona and received informative and helpful technology briefings

from HP about every two 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 access to their digital equipment, also 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 Pepa, 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 Heweltt-Packard ColorPro printer on our list of recommended printers, but we love our HP DesignJet 5000ps so much we now have 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 primarily income is from Encad printers. Kinkos has settled on the HP 5000 as its main money maker production machine, 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 receive support from three manufacturers of thermal printheads (Canon, ColorSpan and HP) and also have multiple printers from three manufacturers of 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 one million people will read the FLAAR Information Network in the next 12 months; 480,000 people will be exposed to our reports on wide format printers from combined total of our three 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 11 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 instances 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 8 web sites in three languages 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). For example, manufacturers need to know whether to continue designing software for Mac users, or concentrate software for PC users. So the survey form that you fill out is helpful to gather statistics. You benefit from this in two ways: first, you get the FLAAR reports in exchange for your survey form. Second, your comments bring (hopefully) change and improvement in the next generation of printers. When we do survey statistics, then the names, addresses, and telephone numbers are removed completely. A survey wants only aggregate numbers, not individuals. However, if you ask about a specific brand of printer, and do not opt out, we forward your request to a pertinent sponsor so you can obtain follow-up from that brand, since we ourselves do not have enough personnel to respond to each reader by telephone. But we do not provide your personal information to outsiders and our survey form has an opt out check-off box which we honor.

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.

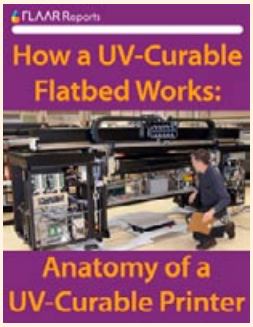
A modest portion of our income comes from our readers who purchase the FLAAR series. All income helps continue our tradition of independent evaluations and reviews of inkjet printers, RIPs, media, inks, cutters, laminators, and color management systems.

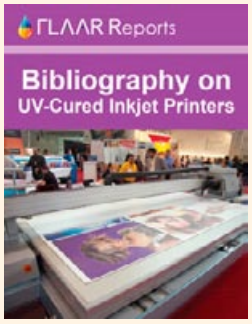
These are some of the most

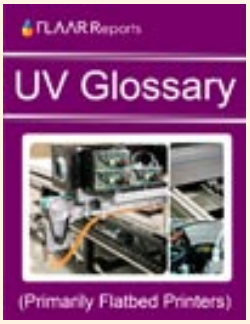
Recent FLAAR Reports (2008-2010)

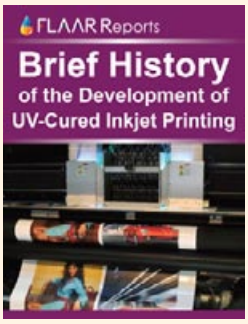
You can find these and more reports at: www.wide-format-printers.NET

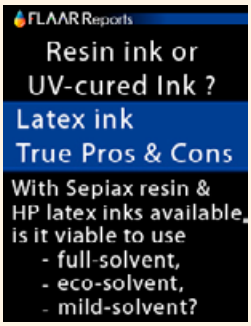
Introduction to UV Curable Inkjet Flatbed Printers

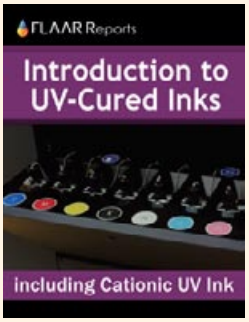












Most recent UV Printers

These are some of the most

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Comments on UV Inkjet Printers at Major Trade Shows 2007-2009

UV Printers Manufactured in China, Korea and Taiwan