



## Comments on the Kodak 5260 Wide Format Inkjet Printer



Kodak 5260 printer exhibited at ISA 2002 Tradeshow

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Inclusion in this study by itself in no way endorses any printer. Equally, exclusion from this study in no way is intended to discredit any printer. The same is true for the RIP, ink and media choices.

## Abstract

This is the saga of the most important inkjet printer technology advance of the last few years. Unfortunately the technology was so advanced that it did not function. But Kodak and then Encad continued to try to sell the printer, claiming it was the greatest thing since sliced bread. Every trade magazine and all the commercialized web sites repeated the official party line “wow, what a great printer, buy it.”

By August 2001 Kodak had began a publicity blitz about a secret new speedy printer. Full-page ads by Kodak stirred up considerable anticipation.

So it is to be expected that as a result many people have been asking for information about this printer. The constant requests for information resulted in us recognizing a need for some basic facts. We gleaned the following information from visiting six tradeshows and conferences over seven months.



FLAAR review editors at the Kodak booth at the Print '01 Tradeshow held in Chicago.

Everyone had great hopes for the new Kodak 5260 printer. The industry itself needs a piezo printer that can match the speeds of the thermal printers from HP, Canon, and ColorSpan.

The industry also needed a piezo printer that could escape the reputation for inherent horizontal banding defects of Epson and Xaar piezo-electric printheads.

The industry was also really keen to see an alternative piezo printhead so that Roland, Mimaki, and Mutoh were not captive to one rather slow-printing printhead technology (that of Epson).

Furthermore, this would have been the first time a head with Xaar and Spectra cross-licensing was truly photo-realistic quality (claimed by Vutek for their Spectra heads, but only reaching photo quality at a 10 foot viewing distance and only within the last few months of continued improvements). Only a portion of professional photographers would accept solvent ink output as photo-realistic. That day will come with the next generation of Spectra printheads, but is not yet reality.

Since FLAAR is a research institute dedicated to museum-quality photography, we were hoping the new Kodak 5260 printer would rejuvenate the overall photo-printer market.

Kodak itself hoped this printer would rescue the downward slide of their large format division. Their rebranded Encad printers and me-too Mutoh printers had not captured much market share.

During the 1990's and still today, there was simply less compelling incentive to buy a printer from Ilford, Oce or Kodak. We are not recommending this position; we are only documenting consistent end-user opinions based on frequent market surveys.

For example, we asked two major national dealers who sell two or more major brands: their consistent reply is that over the last year sales of Encad collapsed as the capabilities of other brands became better known. Nonetheless, FLAAR itself finds Kodak-Encad, Oce, and Ilford each a fully reliable

source for printers, inks, and media. Ilford is an especially good option for media. At ISA tradeshow (April 2002) the Ilford and Océ media were among the best on display, including on the HP as well as on other printers.

Kodak success over the last half century has been based on selling film not cameras. Thus the concept of selling media+inks instead of printers seemed logical. Unfortunately it has turned out that no incentive exists to buy Kodak media or inks, since these consumables were perceived as often re-branded from other companies. Staedtler and Lyson already cover the after-market ink supply, so even if Kodak inks are better, few people are convinced enough to buy it. Besides, Ilford inks from Ilford are excellent, as are the inks of Encad (even our prints with Encad GA inks have lasted for 5 years and are still holding up acceptably considering their age).



Yet for example, you could already get excellent Ilford inks for the Encad from Ilford. Photo-realistic media is already readily available from scores of other companies. End-user surveys have repeatedly demonstrated, month after month, that Kodak was not viewed by end users as a source neither for printers, nor inks, nor even media. The new Kodak 5260 had (originally) the potential to change all that. Unfortunately, this is not what happened. Instead the reverse occurred.

### Requiem for a deceased printer

At SGIA tradeshow in St Louis, no 5260 printer was shown. Rumors on the floor was that the printer had been cancelled. A few days later the Kodak 5260 printer disappeared from the Encad web site (we first checked Nov. 6<sup>th</sup>; the printer was gone).

No press release. To this day I have not seen any official explanation and obviously no time-line of the history of this debacle.

The million dollar ad campaigns simply disappeared.

Just another catastrophe like that of CrystalJet and the Bellise (of GretagImaging; another printer which never really functioned). Am curious how many millions went down the drain. Estimates range from \$30 million to \$100 million.



A Kodak presentation given at the Big Picture Show



A Kodak presentation FLAAR attended in Lisbon, Portugal at the IMI Conference.



Several things are noteworthy:

- This printer won a Seybold Hot Pick award. How? Why?
- This printer won an award from a trade magazine. How can a non-existent printer win?
- Not one single industry source wrote a penetrating review of this printer between the time Kodak spent millions of dollars pumping it to the moment that the printer simply disappeared off the Kodak-Encad web site. Not even a press release (that we know of) reported its demise.

The other noteworthy aspect:

- What about all the people who made deposits on this printer?
- What about all the photo labs and other companies which had their business plan arranged around the promises made about this printer?

I heard that in Australia many printers were sold, that some were actually delivered. But that all failed to function adequately. Sure is notable that not a peep of this appeared in the press.

### **Covering the Kodak 5260 inkjet printer**

Since the amount of information from Kodak Incorporated varied from zero to unrealistic from our first questions starting September 10<sup>th</sup>, 2001 through April 2002, we had to do some checking around the world on our own. It would have been so much easier if Kodak itself had provided the facts, but since that did not happen, we had to seek out our own sources outside Kodak.

The output from this Kodak 5260 printer is spectacular. This is the official output that Kodak exhibits in their tradeshow booth. Since no printer was present all last year, all you saw at Print '01 was a single photo mounted on the wall. These are the same prints Kodak hands out at press events. There is no way to document what settings were used, nor really what dpi they were actually printed, nor at what speed.

However it was presumed that the photos which were handed out were the result of the fastest speed. There is now serious reason to doubt this is the case.

At PMA (Feb 2002) the output at 500 sq feet per hour was flawed; the operator was forthright about this. At that early date the printer was not capable of producing the advertised quality without compromise at top speed. It is noteworthy that none of the slick samples handed out at any Kodak lecture, none have been documented to be at the top speed in a true production environment. At ISA and at IPEX I did not observe the printer attempting to output at its now infamous supposed speed of 500 sq feet per hour. Instead, all output was slowed down to 170 sq feet per hour. At this slow mode, the appearance is very impressive.

More to the point, there is no independent manner to verify whether this class of output can be obtained by an actual photo lab or sign shop using an actual Kodak 5260 printer. This is because there are no actual photo labs that we have yet been able to find who are using the printer (other than beta test sites).

Furthermore, there is no indication what the output looks like without lamination. The nano-porous Kodak media has to be laminated. One other thing I noticed about the media, it's layers peel off by themselves. The sample I have is peeling apart on three corners already.

Kodak stated that the reason no printers were available at their tradeshow booth at Print '01 was because the entire production run of 200 printers had been sold in Asia, and sort of also in Europe.

So we checked with European sources. We were informed that they knew of nowhere in Germany that the printers are installed. They had heard of roughly a dozen intended installations but that most of the photo labs had returned the printer due to the inherent problems most likely including piezo printhead banding tracks across the prints.

We do not have easy access to photo labs in Singapore, Malaysia, or the Philippines. It is quite possible that many printers have been installed there. As industry people have said, some buyers in that part of the world are not always as picky about quality. Or, they may be willing to serve as beta test sites.

So if there are 200 printers installed in Europe or Asia, we have not yet found them. And if any exist, we would need to inspect them in person in order to believe anything about them.

As of July 2002 we are still patiently waiting to find a photo lab in our area that has one of these printers installed and functioning.

### Our Hopes were very quickly deflated

FLAAR initially awarded this printer the "potential Best in Show" for Print '01 tradeshow, based on the image purported to be from this printer at its fastest speed.

However first a bit of reality: the printer itself did not appear at Print '01 tradeshow (September), nor did it appear at any earlier show in the USA. Instead the printer was shown in distant Singapore, and privately in Germany and a few other places. There is no way a printer can be awarded a prize if the printer does not appear. So no actual FLAAR award was given out, just an observation that if the printer was really capable of that output at its fastest speed, then it would deserve the favorable recognition.



Wide format printer at DPI Trade show.

The only reason a printer does not appear is when it does not consistently function as advertised. Note the word consistently. Any company can hopefully get a single prototype to work. After all, someone must have signed off on this printer before Kodak released its million-dollar PR blitz. As one industry expert indicated recently, this is the most embarrassing no-show of the year.

I would paraphrase that, as the most visible no-show of the many years since the CrystalJet. The difference is that the Kodak 5260 will probably be re-incarnated as an actual production model before the end of 2002. What will change is the print claims: whereas the 500 sq feet per hour speed may remain in the typical pumped up advertising claims, the actual output which escapes the horizontal banding defects inherent in piezo printheads has already shrunk down to 170 sq feet per hour.

This is not the fault of Kodak, nor really of Brother, rather it is inherent in today's level of nascent technology. The ColorSpan Mach 12 has banding at it's high advertised speeds also. To get rid of the banding (which is possible) you simply slow down the printer with multiple passes. But then you do not get the claimed speeds at multiple-pass modes.

Why will the printing specs on the new Kodak gradually be lowered? Because to get rid of the banding the printer will have to do micro-weaving and multiple passes. So the printer will end up with the same problems of Epson piezo printheads, namely it takes multiple passes to create quality output. Each pass eats up time (and ink). An Epson and Roland and Mutoh and Mimaki (other than the new faster JV4) are slow because the printheads have to go back and forth, back and forth, to cover over the glitches, incomplete coverage, banding, and other generic defects of piezo printhead design. A Roland V8 can do up to 32 passes. Result: very nice (but it takes about two hours to do one single print of reasonable size).

Readers should note that FLAAR does not accept the HP speed results either and definitely not the Epson hype about their speed claims. This is because the speeds are not actual production speeds and/or the resulting images are such low quality they are not salable. Here is where Kodak has, or had, the potential to make its impact. However the new printheads were not, in fact, able to produce what was supposed to be possible.

By next year other companies will have printers that fast or faster, so we hope Kodak and Brother can solve their technical difficulties before Seybold San Francisco 2002. The poor performance of the printer at PMA (Feb 2002) and what I saw at IPEX was not conducive to a glowing report. If the printer bands in the company's own tradeshow booth, why should anyone trust such faulty printheads or print feed mechanism?

As soon as the Kodak 5260 is ready to be evaluated, and its true square-footage-per-hour certified, FLAAR will be glad to tackle this assignment. We are accustomed to going thousands of miles just to inspect printers. Part of our job. We went to Mumbai, India, to check on what sign shops there used. Have been to Japan three times, so going to Asia to take notes on a Kodak printer there would not be too difficult. But first we have to find one. If there are supposedly between 100 and 200 printers throughout Asia, surely someone can guide us to at least one!

### Getting the Actual Facts

Already by September 2001, FLAAR had learned about the new piezo head design. It is made by Brother. The printer itself is manufactured to Kodak design reportedly subcontracted through Mimaki (a respected manufacturer for the Japanese company which makes Mimaki printers and other technical equipment such as vinyl cutters).

There is reportedly no feature in this printer left over from the CrystalJet, once the most promising piezo printer project every conceived. Kodak owned a portion of the CrystalJet program. The CrystalJet's printheads turned out not to be easy to manufacture and the project collapsed. In other words, the Kodak 5260 printer is allegedly new from the ground up.



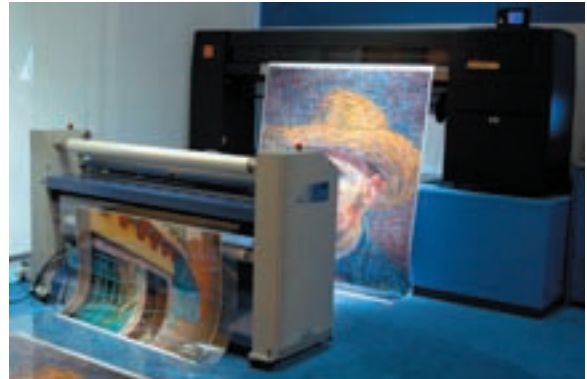
Brother actually has been quietly making piezo printheads for years. This kind of printhead is reportedly used in Pitney-Bowes postage meters for example. Someone else indicated this kind of Brother printhead is also used in fax machines, but we do not have documentation yet. Until more information is provided by Kodak, here is an excellent subject for students and other researchers to check out independently. Since this is the first generation as a wide format color printer, the eventual potential of this Brother printhead is awesome.

### Media

Next question relative to the claimed speed is: “how many kinds of media does the speed work with?” The printer requires a micro-porous media to dry quickly enough to sustain the speed.

But what if you wish to print on canvas, or textiles? Upps, sorry, does not work at the claimed speed?

Actually the Kodak web site shows that the majority of the great Kodak inkjet papers are simply “not recommended” <http://www.kodak.com/global/en/professional/products/EIMedia/compatibility/mediaCompKP.jhtml>



Encad-Kodak printer with laminator.

At least Kodak is honest in this respect, as opposed to one other company who keeps claiming that piezo printheads work with virtually all media. Yet our university professor at BGSU, trained at Rochester Institute of Technology, said that it was not until he bought his Epson 7500 and actually tried out all kinds of media that he realized most media did not work with Epson’s proprietary inks. So now most of the students use the HP 5000ps or the ColorSpan Displaymaker XII which are in the same room.

On the subject of media it is also worth pointing out the considerable difference in price per square foot of the instant-dry media (required by the Kodak 5260 if you seek any of the speed the ads trumpet about). This media is potentially substantially more expensive than normal media. Plus, remember you have to laminate. We can’t test actual costs until a real printer and the actual media are both ready, and available.

In the final analysis, lack of media selection was one of countless factors that doomed the Kodak 5260. The printer did not function irrespective of media, but even if the printer had actually been able to print, it would have faced a revolt by buyers after they realized that only one or two media worked on it. The same problem caused the demise of the eco-solvent printers in 2002: not enough media worked so the promises made in the ads were delusory. Translated: “people were so irritated with eco-solvent printers in 2001 and 2002 that they demanded their money back.”

A final problem with the Kodak is that no one thought of adding a 300 foot roll capability. The printer was (in theory) capable of running through miles of media a day, but if anyone had actually tried to print all day long, they would have run out of media very quickly. Of course a 300 foot roll, at full width, would have been a bit heavy to load, but that was the least of the potential problems.

### The issue of lamination

Do users realize that the prints from the new Kodak machine must be laminated? The most recent brochures (at ISA tradeshow, April 2002) we did not see the word laminator once. However at IPEX a laminator was parked directly in front of the printer.



People have commented that not a single shred of original Kodak printed material was available for inspection other than that which had been laminated. So few people have seen what the print looks like off the printer itself.

But what happens to micro-porous media if you laminate it immediately? Are there any chemical reactions of the ink still waiting to happen, all trapped under the laminate? We do not know because no printer or un laminated media is available to test in person.

And what about the special micro-porous media itself? Is it stable? Look what happened to Epson and their media which turned ozone-orange? That was not predicted in Epson's slick hype about photo-realistic output.

If nanoporous media has been a problem for other companies, what can we expect on the new micro-porous media? It would be helpful if more information were available about the pros and cons of this class of inkjet media. These are technical subjects and it is not fair to expect an average end-user to know all the details, especially when the paper mills, coaters, and resellers do not provide full disclosure. Since Kodak is a leader in public education it would be an appropriate gesture for their web site to provide an independent outside assessment of the pros and cons of products that are so new that users themselves do not yet fully understand the implications of using them.

A laudatory example of Kodak doing a valid public service is that Kodak is aware that longevity claims are dubious. Kodak points out clearly that the "200 year" claims are unrealistic. Kodak does not accept those claims, never did (nor do most independent specialists in inks and media). Indeed at recent lectures at inkjet technology conferences, virtually all the speakers have indicated "there is no way that you can possibly guess how long an inkjet media will survive; not even how long it will last in a dark closet, much less in a room with light."



The Kodak booth set up at the Seybold Tradeshow.

It is logical to expect that a large sign shop will have a laminator, but I am not so sure that all photo labs automatically have a laminator now already. Thus a photo lab anticipating purchasing this printer would be required to have a laminator per force. This also involves space and training for your operator.

What happens if your clients do not want the plastic glossy "laminated look?" Many photographers seek a matte surface. Other photographers prefer their work on canvas, or watercolor paper. Can the Kodak 5260 handle these media? Or even if so, at what slowness? These questions are not addressed in the Kodak sales brochures. The need for lamination, evidently to protect the micro-porous media, are the sort of things that no advertising brochure would be expected to reveal to you. That's why FLAAR is considered comparable to the "Consumer Reports" of wide format digital imaging.

Any print, from any printer, always looks better if laminated. But to really judge the printer, you need to see the output NOT-laminated. You must see a raw print directly from the printer itself.

But many people dislike the mirror-like surface of the lamination. So don't presume that all your clients will put up with photo "ultra reflective." But if you already know your clients, and if they all routinely specifically request lamination, and if 170 sq feet per hour from a \$30,000 printer is cost effective for you, then you should consider trying out the Kodak 5260.

### Observations

But back to Kodak: they have a brand new piezo printhead, never before used in a production machine. They have a relatively new class of media, not yet tested in the real world. For example, what kinds of pollution will affect its unusual surface characteristics? What effect on the unusual media will happen from chemicals or atmospheric pollutants floating around a room? What about cigarette smoke? Ozone from laser printers or plate burners?

But the big question remains, why was no printer shown in the Kodak booth until February 2002?

Before Seybold tradeshow in San Francisco (autumn 2001), all the trade magazines had full-page ads announcing that Kodak was showing the new printer at Seybold. So FLAAR sent two editors to Seybold.

There we found an empty booth. Only a single sign. The sign said "Kodak will announce and show here the new 5260 printer"

But no Kodak anything; and definitely no Kodak printer. I was told that the next day someone even came and removed the embarrassing sign. Yes, naturally the disasters of September 11<sup>th</sup> contributed to Kodak pulling out of Seybold, but the question still remains whether the printer was ready. After all, it was Kodak that released all the expensive advertising showing a Ferrari to emphasize the supposed speed without compromise. Can't blame those ads on us.

Then the Kodak booth at Photo Expo East in early November 2001 in New York. Nice booth. Plenty of great Kodak products such as the impressive new digital camera scan back (48 megapixels). But no Kodak printer at all. If there was no printer in November it is all the more understandable why there was no printer at Seybold, even without the events of September 11<sup>th</sup>.

At The Big Picture Show Kodak gave a PR presentation on the 5260. Very impressive. They handed out beautiful sample prints. The print quality was outstanding, albeit neatly sealed under lamination.

Yet at the IMI conference on inkjet technology in Lisbon, Portugal, the FLAAR editor sat through a well-crafted PR presentation and sales pitch on the Kodak 5260 printer. Someone asked about the head technology. "Sorry, can't speak about that" was the expected answer. I was polite and said nothing, but was tempted to indicate that anyone who wanted to could go to the FLAAR web site and read about the head: "Brother head sharing cross-licensed technology both from Xaar and Spectra." It would seem that a buyer has the right to know what is inside the product he is purchasing. We all remember the infamous case of car buyers who bought a product with one brand name and found inside the car parts of another brand. Besides, people find out soon enough what is inside a printer.



But FLAAR saw no need or interest to spoil the presentation with irreverent facts. So we did not ask any prying questions nor point out any of the inconsistencies of the PowerPoint presentation.

### The Good News

Actually since November there have been positive advances; for example, evidently pigmented ink will indeed be available within a reasonable time.

The new Brother piezo printhead is the first serious challenge to Epson's lethargic printheads. Now Roland, Mutoh, and Mimaki (as well as ColorSpan, Encad, and Canon) at last realize that Epson is no longer the only source. Indeed, the Brother printheads are much much faster than anything Epson printheads can even dream of. Furthermore, the output from an Epson head at 360 dpi is often junk (usually considered worse than draft, it's throw-away). Yet Kodak claims their Brother printhead at 300 dpi is full photo-realistic quality. Of course Epson claimed the same thing for their 360 dpi output, until people found out that Epson output at 360 dpi was usually unusable. Epson toned down their excessive claims only this month, after almost two years of broadcasting what most industry observers documented as misinformation.

So the new Brother printhead documents that it is a whole new ballgame out there. Roland has severe banding problems with its Epson heads. Plus glacial slowness (too slow for sign shops). What if the Brother head comes out with a second generation, with micro-weave to eliminate banding, and dithering pattern from ColorByte (rated as better than Epson's own)? Then such a Roland (or Mutoh or Mimaki) would beat Epson on speed and quality both.

The Brother printhead is reportedly a shared-wall technology but has the piezo crystal in a special location as compared with normal shared-wall printheads. It is silly for Kodak itself to not indicate the printhead technology since everyone in the industry already knows it. For example, evidently this new Brother printhead is rather unique and requires massive electronics.

Our editors wish Kodak well. The digital millennium has been rough on Kodak.

Over 168,000 people were reading a single FLAAR web site during 2001. That's a lot of buyers of inks, media, and RIPs. More than 24,000 of these readers will buy a large format printer within one to six months of reading the FLAAR reviews. Indeed over the next 12 months about 12,000 people will write us a personal e-mail asking for specific assistance in selecting the range of printers which are most appropriate for their needs. During 2004, more than 275,000 people will read a single FLAAR web site (over a million across our whole network). If Kodak every comes up with a new printer that actually functions, we will be eager to let people know.

Every week we get e-mails from people whose photo labs or print shops ought to ought to consider the Kodak 5260 printer, but only when it functions as advertised.

Hopefully by the time of the Seybold San Francisco 2002, Kodak will have the next generation Brother printheads, will have new software to drive micro-weaving, and thereby will eliminate most of the banding. Eventually the production and potential chemical-aging reaction problems of the media will be solved. The lamination issue ought to be taken care of. So by then it will be a formidable printer for its target goal, namely large sign shops, photo labs and comparable sizeable companies. Kodak corporation told us the 5260 is not a printer intended for fine art giclee (giclee prints are usually not laminated). This is not intended for the individual photographer or first-time user either. Encad, Epson, HP, and Canon made plenty of models for those other uses.

FLAAR encourages its readers to make their decision on what to buy though learning from the experiences of other end-users who actually own and use the printer. Thus it is premature for anyone, Kodak or FLAAR, to answer whether you should consider buying this printer or not. The Kodak 5260 has the potential to be a landmark printer, a model which not only raises Kodak's market share from 1% upwards, but a printer which reveals to Roland, Mutoh, Mimaki, and Mutoh that they too can break away from the banding-prone and sluggish Epson brand of piezo printhead.<sup>1</sup>

Eventually, when the birthing pains are over, the Kodak 5260 may become a favorite of large photo labs. But at present this innovative printer is still an unproven, undocumented, and definitely still an unfinished product.

We would like the reader to recognize that since no realistic information was available from the manufacturer, in order to better understand the situation of this printer we have asked people in the industry about whether the 200 mystery units were really sold in Europe and Asia as officially and repeatedly claimed by Kodak.

One person commented that Kodak is an American company; that the main market for photo labs is in America, thus it makes no sense to hide the printers in Asia and Europe. Their own information sources was that 5 beta units were installed in Europe and at least 1 beta unit in the USA. To be fair, lets say a dozen beta units in the USA, unless there really are less to keep them far away in Asia.

So far none of my sources have information about how many of the Kodak 5260 were sold in Asia. But my impression was that the Kodak news releases specifically list Asia and Europe. If virtually none are in Europe, that means either all the rest are in Asia or that the whole initial manufacturing run turned out to be unusable.

### What Next for Kodak and Brother?

Having a printer not function at its debut is perfectly normal. The Epson 7500 and Epson 9500 were first shown at DRUPA 2000. The initial presentation was so bad that several people at booths showing the printer said it was a public embarrassment. The colors were wretched; no color management functioned. The showing was painfully premature. Yet both these printers were perfected over the following months. Within six months they worked just fine. Today there is even a fair range of media that works on them, even though not the range of what works on a thermal printer or even on piezo which is non-proprietary.

So merely having a printer that has serious banding problems is nothing new. The Epson 10000 was banding during its first public display at CeBIT 2001 (Hanover, Germany). The first models released had the same banding problem. Yet today the banding is not a generic situation with this Epson model. Today the Epson 10000 looks very nice, albeit the speed claims and longevity claims were typically misleading and woefully inaccurate. The ColorSpan Mach 12 is another example of banding at top rated speed. Single-pass printing generally means banding. That is one of several reasons why anything with an Epson printhead is slow (except the Mimaki JV-4, which has two sets of heads hence is faster. Something which took



ColorSpan Mach 12X with 12 printheads.

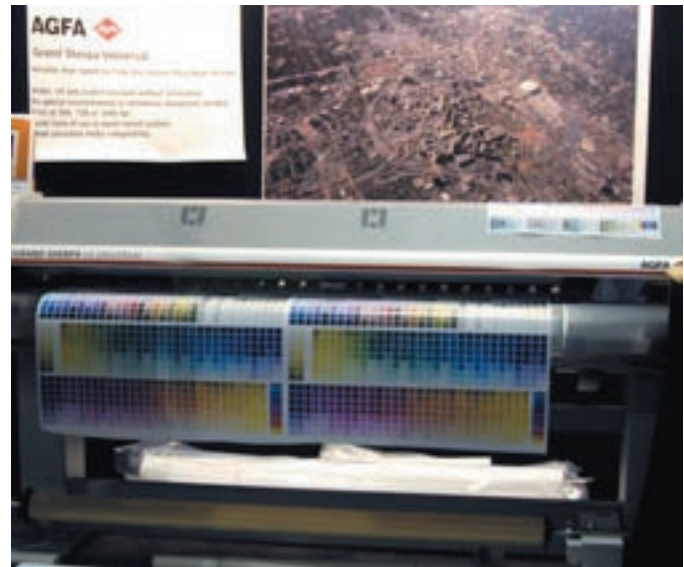
<sup>1</sup> Yes, the new Epson 10000 is less slow than the models 9500, and definitely the output quality from the Epson 10000 is laudatory. But the speed claims in ads were shameless until they were slightly toned down last month. The longevity claims verged on the irresponsible since Epson has no way to know whether even the surface layers of their media will last that long.

Yet for individual photographers with just a few images to print, the Epson 10000 is a good choice. If you need a faster printer with a wider color gamut, you may find the HP DesignJet 5000ps a better selection (as we have here at Bowling Green State University of Ohio; the students in the art department abandoned the Epson 9000 and trek over to the College of Technology to use our HP 5000ps with its bright spectrum UV pigmented inks).



a Mutoh 32 minutes to print can be produced in 8 minutes with the Mimaki JV-4. ColorSpan does not have either an Epson nor a piezo printhead; it has thermal printheads. They band too if not addressed with multiple passes (which is what slows down the printing at the higher quality modes).

The new Agfa GrandSherpa was prematurely showcased at Print '01 in September. The banding from this Mutoh OEM printer was the worst ever seen on any printer at any major tradeshow in recent memory. Yet that did not bother Agfa one whit. In the months since then that rebranded Mutoh has been fixed to actually work without banding. Indeed at the ISA tradeshow the Mutoh Falcon 2 was much improved: no notable banding any more. We also learned that the new version has the Epson 10000 print-heads. At Print '01 it was unclear what heads it was using then; some people estimated the older heads (same as the Roland V8).



Agfa Universal printer

The first display of the Mimaki JV4 printer at ISA 2001 and DPI 2001 revealed output so bad the booth attendants said the printer had been damaged in shipment. Yet today the banding is not as serious. Indeed the printer has been fine-tuned by Improved Technologies into one of the better fine art giclee printers of the year. It's speed makes it especially good for dye transfer printing. This printer reportedly uses the same heads as in the Epson 10000. The Mimaki JV4 is worth checking out.

So Kodak will hopefully eventually be able to get rid of the banding. After all, they don't have much choice. If this printer fails the same way the CrystalJet crash landed, then the large format inkjet division of Kodak may go the same direction as that of Ilford and Encad. We hope Kodak is able to rescue the printer, but that presumes that Brother is able to create a better generation of the piezo printheads. It's the banding at high speeds which is the bugaboo of so many printers.

### Questions

- Seybold awarded the Kodak printer it's "Hot Pick" award. This is heralded on the Kodak web site and on the Seybold web site.
- How did this happen, if Kodak was not able to produce a functioning model at the Seybold tradeshow?
- What are the requirements for obtaining a Hot Pick award?
- Did anyone at Seybold actually see the printer ?
- Did anyone see the printer in an actual working environment (in other words, a production model actually producing in the real world?).
- Why does the text of the Seybold Hot Pick award read like an official Kodak Incorporated Press Release?

- Was this award based on actual output that the judges saw printed before their eyes? Or did they realize that the output sent to them had been laminated, hence they were not seeing the actual output?

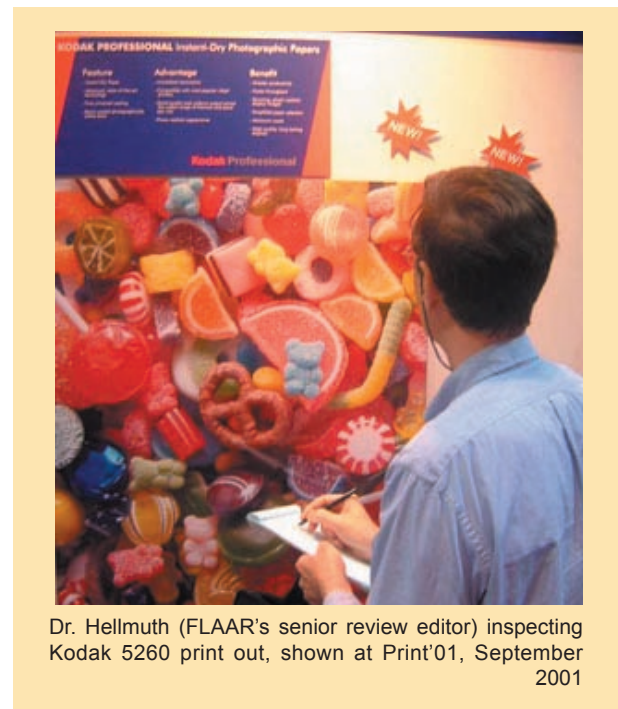
We too wanted to award the Kodak our best in show title for Print '01, but we held back because no printer was available to inspect in person. That might have been a more realistic manner for Seybold.

Not one of the pseudo review sites admitted the flaws in the printer. No one questioned the Kodak and Encad PR blitz: everyone just regurgitated the hype. So this is the most carefully documented case of seriously misleading advertising claims and mis-use of public relations and violation of the public trust. As one industry expert said, "printers are sold on the basis of lies and deceit." His comment is all the more true, and sad, because his conclusion was not specifically directed at Kodak.

But in the next six months possibly the technological glitches will be overcome and the printer will triumph and the printer can win further awards in a deserved manner.

### Conclusions

This has been a difficult review to write because we know and respect many of the key people at Kodak's and Encad's large format digital imaging departments. Furthermore, the overall wide format industry very much needs a successful alternative technology. Due to the size and worldwide reach of the FLAAR reviews, our report makes a notable impact. We would like the impact to be positive so that the Kodak alternative is taken seriously as an option. However the total discrepancy between the actual machine and the advertising claims leave us no choice. The obvious absence all during year 2001 (in the USA), and the serious banding defects of the printer also calls for scrutiny. The prototype shown in Singapore is absolutely meaningless to a photo lab in Chicago, St Louis, Atlanta, or Los Angeles. They don't want to be beta testers any more, or at least not at their own cost.



Dr. Hellmuth (FLAAR's senior review editor) inspecting Kodak 5260 print out, shown at Print'01, September 2001

We would also be curious to know where those 200 units really are. This is the supposed first production run. Of course if the initial production run was 200 units, and if those were already pre-sold in Asia and Europe, then any normal company would ramp up production and crank out another 200 units for the American market. After all, the printer was advertised since last summer... it was supposed to appear at Print '01 in September. Some people even suggested it was to have appeared even before then.

As soon as sign shops and photo labs have this printer in-situ so actual-factual feedback is possible; and most importantly, as soon as the brochures are completely rewritten to reflect not the printer someone believed could be engineered in beta stage year 2000, but instead the actual resulting machine with its true features in year 2002. At this point then FLAAR will be glad to completely rewrite this report.

The saddest part of the entire debacle is that Kodak never looked in the mirror to recognize their own faults. Their first reaction to the FLAAR reports was to assume that their competitors had paid me to

write it. My answer to that would be, "Why should a competitor waste their money to pay me to write the truth? The 5260 is self-destructing on its own problems and because of the misleading advertising and phony awards."

Another reason that no competitor would pay FLAAR to write against the opposition is because they all know I write whatever I want anyway. It does not take money. I don't have to support a wife and kids, and my girlfriend is a lawyer, so I don't need to support her either.

What Kodak does not realize is that this report was initiated because readers kept asking us for information. Normally we would not have written about a non-existent printer, but it was Kodak itself who placed millions of dollars of full-page color ads in every trade magazine for month after month touting the new miracle machine. So when the machine turned into vaporware and then actually disappeared, people naturally began to ask, what's going on?

We felt it was fair to ask Kodak for a time-line, so we went to Kodak to find out what was going on. But the no one was willing or able to give any realistic information whatsoever; the official story that 200 to 400 units had been sold in Asia and/or Europe seemed implausible. Thus we did some checking around, were unable to find an adequate number of functioning Kodak 5260 printers in Europe and the present PDF report is the best survey that we can present at this time.

We have hundreds of printers to cover, as well as RIPs, media, and accessories, yet we would still go over to Asia to find out whether any of the 200 units are really there. Airfare nowadays to Asia is a real bargain. Yet no one I have spoken with takes those 200 units seriously because no corporation would hide all their output so far away.

However as soon as the manufacturer is willing to provide actual documentation of 100 placements in Europe and 100 placements in Asia, and as soon as we can visit a reasonable sample of these to document how well these printers are doing, at this future point we will return with a full update.

This report ended up being so factual because Kodak did not tell the truth, would not provide any information, and hid the facts. So the only way to find out what was really going on was to do research. For example, several people told us that at one ISA trade show, the printer physically failed to function. If a printer does not work, not even in the manufacturer's booth, a year after it has been announced, something is fishy. It is the tidbit about the ISA experience that fueled the FLAAR reports, compounded by seeing the 5260 fail at IPEX too.

### Alternatives

XES and Seiko claim the usual exaggerated quality with the usual unrealistic speed (especially Seiko which it is faster than everything else). But the output from these oil-based printers with Xaar piezo heads is poor. Up close the output is splotchy but every six months the output technology is improved. Neither XES nor Seiko not truly photo-realistic however. The output from the Kodak printer is superior to that of the XES or Seiko.



Seiko printer at SGIA 2001

ColorSpan DisplayMaker XII with its 12 heads or the new Mimaki JV-4 with its 12 heads are the fastest printers I know of with true quality. ColorSpan DisplayMaker XII is possibly faster but has the visible dot pattern you expect from a 600 dpi printhead. Mimaki may have a better dot pattern and/or dithering pattern, but its piezo heads may not be quite as speedy as the thermal printheads of the ColorSpan Mach 12. What seems to be a possible viable alternative is precisely the ColorSpan Mach 12; we have one on order for inspection, review, and evaluation over the summer. Our purpose is to document its actual production speed up to the point that banding sets in (banding is normal on both thermal printers and piezo printers at one or two passes with no micro-weaving).

For billboards (viewed at distance) Gretag Arizona printers are impressive. Last year we noted their well designed construction, their enclosure for solvent ink emissions, and liked their quality better than the Vutek printers. However at ISA tradeshow this year the output from Vutek, Nur, Scitex Vision had caught up w w with the newest Océ-Gretag Arizona. So now you can get industrial piezo printheads at high speeds yet still achieve photo-realistic output. Solvent ink is not what a photo lab would seek for most customers, however for outdoor, for indoor tradeshow, and many other purposes a grand format is a potential alternative. Downside are the prices over \$150,000. Here the Kodak 5260 has a definite advantage. Plus, the inks of the Kodak are more benign than solvent inks.

It's a challenge to balance the pros and cons of each technology. That's why FLAAR works hard at research to produce over 50 titles, all available as a public service at no cost.

#### Update Jan. 16, 2002

FLAAR is read in 42 countries worldwide so we appreciate our readers in Asia for contributing. Today we received the following conformation:

"This printer was demonstrated at Kosign show (Korea Sign) early last December but after that no one sees it."

"I have not seen any sold unit of Kodak 5260 in Japan...."

#### Update February 2002

We read another news release claiming that the popularity of the printer elsewhere is why there is not one single solitary unit for sale in the USA.



But, that no way explains why there is not one single unit on public display at tradeshow.

Usually, the only reason to withdraw a printer from a tradeshow is because it would be a public embarrassment to show its defects. Epson made that mistake at DRUPA and again at CeBIT, showing their printers while still in final beta stage. Mimaki and Mutoh made that mistake as well: their printers looked awful, so bad that reviewers noticed it. But Mimaki got its engineers together and updated everything and today the Mimaki JV-4 works just fine (about 10 months after beta versions were shown). Same with Epson, after about five months they got rid of most of the quirks of their models and today they run just fine (albeit very slowly; something those piezo printheads are stuck with). After its embarrassing premature debut as the Agfa GrandSherpa the Mutoh Falcon II remained out of sight between October 2001 and March 2002.



Every time Kodak issues such an enlightening claim, FLAAR goes out to check reality. Here is one reply from a correspondent. I paraphrase. This is a general observation on new printer releases in general, and although it touches on the Kodak situation, it is based on the overall inkjet industry rather than merely the Kodak 5260:

*Some companies have limited knowledge to test in the practical environment. They are manufacturer of hardware and have high level of knowledge of mechanism but quite limited understanding of the surrounding technologies such as ink testing method, media, etc. So if a continuous bitmap image is successfully printed, they may regard it as good machine. But in the real usage, only a few inch width of one solid ink data with no background color is required to print continuously for 3 feet. In such an occasion, some of printers had clogging problem because the head moves back and forth in a very short distance and ink does not flow smoothly.*

*Another case is that when increasing the speed, they selected too fast drying ink which is absorbed to the bottom of media, which generates cockling of media. I have seen these mistakes in several vendors.*

*I believe that Kodak may recover in a few months.*

That is also our anticipation, that Kodak will recuperate, however it has been since before Print '01 that the printer was supposed to be finished. So it's six months delayed so far. Once it is retrofitted, it will be interesting how they handle the speed claims, since if it micro-weaves to cover the banding tracks, it is unlikely to handle 500 sq feet per hour.

One final comment: we asked over and over again, what about the 200 units Kodak claims are sold in Asia? One answer was that this is typical situation, that a manufacturer may "sell on paper" to its distributors. The distributors may actually order them, or at least get booked for that quantity.

But if the printer is a dud, either the distributors refuse delivery, or take delivery; find out the printer does not work as claimed, and return them. But on the books, officially they are still sold.

Innovative accounting is no longer accepted. Actually, no one cares how sales are accounted for internally. But when every official Kodak manager, representative, and reply uses "all the first production units were sold in Asia and Europe" as the sole explanation as to why no printer is actually in use in the USA, that begs lots of questions to be answered. It is not fair to suggest that the printer is so popular that every unit was snapped up when in fact this was not the case. This report is about fairness, fairness to the sign shop, photo lab, or other end user who has to make an important decision for the livelihood of their company, of their employees.

We do not have any insider sales information on that, so the Kodak situation may be different. Maybe they sold all 200 units in Malaysia and we just have not found them yet. But all it would take is a simple trip to Malaysia, Korea, Singapore (where it was first showcased) or wherever these 200 units are hiding. So far we have not even found 20, and definitely not all 200. Same in Europe. It's easy to get to Europe nowadays, so if there are any functioning printers there we would be glad to check them out. Besides, the last statement we heard from a Kodak spokesperson (at PMA tradeshow) was over 400 printers had been sold.

Why do they invent these implausible statistics? It just invites people to check them out.

### Update March 2002 (after seeing the printer at PMA tradeshow in February)

Since we knew that the eventual true print speed would be slow, we were curious to see how this would be reflected in the ads.

The Kodak rep at the tradeshow admitted the printer worked in photo quality only at 170 sq feet per hour (and that is 600 x 600 dpi, not much different than any regular printer).

The minute the printer was set to 300 x 300 dpi, which allegedly produces 500 sq feet per hour (which we would want to measure), perpetual banding set in, as in visible streaks all across the image.

Would a photographer pay for output blemished with streaks?

How could a sign shop producing backlit or a photo lab stay in business with what looks like incomplete or damaged print? Backlighting would illuminate the banding defects.

True, you can't see the streaks if you are 20 feet away. But since a portion of the market is photo labs, why buy a \$30,000 printer that produces what some photographers might judge as defective images? For \$30,000 you can get a Mimaki JV4, you can get three or four Epson 10000's, or four 42" HP DesignJet 5000 printers or Canon BJ-W9000 printers.

Read the brochure. Look at the output produced at 500 sq feet per hour. The supreme image quality claimed by the brochure is not achievable at 500 sq feet per hour. So why does the sales rep admit it does 170 sq feet while the sales brochure claims 500 sq feet per hour?

A final observation is their slick comparison of print speed between the Kodak and the HP 5000 printer. Lets look at that: RIP time they claim is 9 minutes for the HP 5000. That is probably the ps RIP (the Kodak ad does not indicate which RIP). No FLAAR report recommends that ps RIP due to its slowness. But PosterJet RIP could potentially RIP and print simultaneously so that part of the comparison is not necessarily a realistic comparison since a savvy photo lab would have a faster RIP than the ps. It takes about 8 seconds to start to print with PosterJet RIP, as Kodak should know since several years ago Kodak featured an earlier version of PosterJet RIP.

But the question is: is this Kodak chart claiming 10 minutes at 500 sq feet an hour? If so, then the average photographer would throw the image away because of the banding defects.

So it makes no difference how fast the HP prints because you can easily sell its output at max quality mode. The art department on our campus treks across campus almost every day to abandon their Epson 9000 printer because they prefer the ease of use, cost savings, and wide color gamut of the HP 5000 printer in our College of Technology at Bowling Green State University of Ohio.

But a Kodak dynamic contone print if produced at full speed would not be acceptable to the art students, not even if it were free. Besides, the art professors do not want their work messed up with plastic lamination. Of course an HP print with banding would not be accepted either; nor with lamination but at least here you have a choice. So it is not the brand what counts, it is the technology, media, and speed for actual photo-realistic output that counts.

All these problems will go away when the Kodak 5260 gets new improved printheads, better micro-weaving software, pigmented inks, and an ability for the print to survive without lamination. At this future point we will gladly rewrite the reviews to showcase such an impressive printer.

### Update April 2002, ISA Tradeshow

We saw the printer only at its slowest mode. Quality was very beautiful.

Did not see the printer work at 500 sq ft per hour so have no way to tell whether it still bands at that speed as it did at PMA two months previously.

Subtle changes in the ads: 500 sq ft no longer claimed (though many of the older ads still handed out).



The newer version drops speed to 475. Although the slogan "speed without compromise" was still the headline, there was no claim of quality with the speed of 475. The claims were kept separate, however with no specific admission that high speed resulted in less quality.

Still missing however, a clear statement that you have to laminate the prints and that the speed works only with one kind of media. No comparative chart of ink cost or media cost.

It appears that the 5260 had serious problems at ISA. It has been widely reported that the first printer they brought out failed, and it had to be replaced. Not a good omen.

The Kodak web site does not provide quick or easy access to information on this printer, probably because it is now on the Encad site. Unfortunately the Encad web site still states the printer delivers its full quality at its full speed, which is now clearly documented at PMA as not to be the case. However perhaps this will be changed the same way the hard copy brochures were updated. It's a huge company so probably not easy to change everything at once.

### Update mid-April, IPEX tradeshow

We went to Birmingham, England to gather additional information. Had a challenging discussion with a capable person from Kodak-Encad. This is the first time we got even close to recognition that there were no 200 units (much less 400 units) in operation anywhere. Backorders perhaps; interest from distributors in Asia perhaps, beta test units in situ most certainly, but the printer is not now shipping as far as we can determine.



The first day the output looked great (at the slow photo mode, 170 sq feet per hour). But by the second day we noticed line of ink (not smudges, not banding) across the image then severe banding, the entire printhead path. The printer had been stopped already. Next time I passed by there was no more movement from the printer. Possibly the printer was repaired subsequently. I was only at the tradeshow for two days.

In fairness it should be stated again that a prototype is not the same as a production machine. A prototype is handmade. Next step is to translate that prototype into a product that can flow from the assembly line.

Considering the tons of money put into this printer so far, surely with the help of Brother, Xaar, Spectra plus all the software specialists and other integrators certainly eventually the few remaining glitches will be overcome. When and if this happens, at that point we will update this report.

Although I did not attend DPI tradeshow in California, one person I spoke with indicated the Kodak 5260 was not printing the time he was at the booth. Of course not all printers are working the whole time at other booths as well, but until there is evidence this printer can run around the clock, month after month, we reserve judgment. We routinely operate our ColorSpan and HP printers overnight. Some models of Encad can also be operated overnight. I would guess most Mutoh and Mimaki printers can run just fine unattended.



Other printers such as Roland, which use Epson piezo heads and hence may clog, drop colors or band severely, are occasionally iffy letting them run unattended overnight. You might return and find one color stopped printing at 2 am, but that miles of costly media kept on being fed through the printer, and liters of expensive ink kept on being laid down...except for the one color which clogged or banded. But banding is not always predictable. Most Rolands and Epsoms work just fine if the humidity, dust, media selection and other factors are strictly controlled.

### Update Summer 2002

In 1997 the most hyped printer in the world was the CrystalJet. Massive PR was generated by the manufacturer. Millions and millions of dollars were spent on developing this printer.

The similarity to the saga of the current Kodak 5260 is uncanny:

The CrystalJet won the PEI Cool<sup>2</sup> award, "most desirable imaging product of 1997" Yet the CrystalJet failed to actually function as advertised. CrystalJet actually turned out to be the equivalent of vaporware. The company collapsed. Kodak bought the rights to the remaining technology as it was on the auction block.

The Kodak 5260 continues to win industry awards, yet we are still searching for an actual printer in use full time other than a beta site filled with engineers and tech support that is capable of functioning as advertised.

The CrystalJet offered "user-selectable droplet size" "CrystalJet is capable of amazing print speeds..." The CrystalJet was touted as capable of "At 360 dpi and even 180 dpi the precision variable ink drop delivery system produced results that quite outshone rival piezo output..."

Problem was, the CrystalJet printer could not be manufactured, or, put more politely, the printer was manufactured, but the machines turned out not to be capable of sustaining the claims the over-eager product managers generated. CalComp effectively disappeared as a wide format printer manufacturer as a result.

Kodak is large enough to survive the now second calendar year of delay. Problem is, they don't own either the manufacturing company or the printhead company. I do not yet know who makes the nanoporous media. So it's tough for the mechanism, the printhead, or the media to be improved.



### Update Autumn 2002

At Photokina the printer seemed to function adequately. However text under the image was fuzzy and very low quality. So if you have any captions on your images, better find out what print speed and settings can handle text. What I saw was substandard.

At GraphExpo the output was beautiful. The printer was not running but when I commended on this fact evidently they subsequently turned it on.

The general word on the street is that quite a number of internal features have had to be redesigned. I am guessing that a lot of software has to be improved as well.



The other delay is lack of media. The speed requires nano-porous media. Otherwise, no other media dries fast enough to be wound up on the take-up reel. If you use regular media you would have to slow down the printer to allow the freshly printed surface to dry enough so the tacky ink would not stick as the paper was wound up on the take-up reel.

Unknown is whether Kodak will attempt to assemble the printer in the old Encad plant in San Diego, or try again through Mimaki in wherever that plant is located. The lost income from the delay must be staggering.

This is what can be expected when you do not own any of the technology, especially no printhead patents.

Evidently the grayscale manner of driving the printhead is rather unusual. The consensus is that the initial concept was very daring, but too unproven outside of design and concept stage. So this was precisely the kind of project that everyone could get very excited over, and would tend to approve. But carrying out the dream has, so far, not been successful.

As long as Xaar printheads are only so-so; as long as Spectra printheads are primarily for solvent and UV cured ink (rather than for water based inks); as long as Epson printheads are slow and have banding issues, Kodak still has a slim chance of pulling this off... if they can get the 5260 to function, flawlessly, before some other breakthrough in thermal printhead or Epson printhead technology renders the Kodak 5260 obsolete.

That fate is precisely what overtook the CrystalJet. It too promised contone output at high speeds, but that high quality turned out to be ethereal. No factory (at that time) could produce the printheads and/or the printer itself.

### Update November 2002

The 5260 was shown at Photokina. However the image was so pixellated there was no way to tell whether the image was flawed or the printer was flawed. The caption, however, was fuzzy, as though the 5260 was unable to do text well at all.

At SGIA tradeshow a large crate appeared in the Encad-Kodak booth. But this crate was never unpacked. Was this the last of the 5260? Or was this the new printer (something totally different than the 5260)?

At SGIA tradeshow Encad was supposed to unveil a new printer to print directly on vinyl. However at the very last minute the printer was not unpacked. Probably safer not to show another dud so soon after the 5260 fiasco.

We hope the vinyl printer can be rescued. That would liven up the market for printers for signs.

However as of early November the Kodak 5260 was removed from the Encad web site. The removal was so thorough that even doing a search for "Kodak 5260" turned up zero results, as if the printer had never existed.

Think of all the tradeshows where this printer was sold to photo labs whose business must have taken a hit because the promised printer was never delivered.

And a personal note, it is regrettable that Kodak and Encad managers were never forthright about the real problems. Their answer was always, and we have this in print on Kodak letterhead, I paraphrase a longer pile of mumbo-jumbo: "the printer was so popular that the entire production run was sold to eager buyers in Asia." We learned later that indeed printers were sold to eager buyers in Australia. Reportedly they all dumped the printer rather quickly. Yet at tradeshow after tradeshow Kodak was still taking deposits and signing up still more buyers.

### **Update January 2004**

It has been over a year now, and I am still not familiar with any post-mortem on the 5260. It is as though it never existed. Kind of hard, since they spent millions advertising it with a Ferrari.

The only feedback I had from Kodak was a polite apology. Not a full admission, but the apology was appreciated. Unfortunately the person who apologized (who had been the Kodak spokesperson who was feeding out the "they are so popular they were all sold in Asia so that's why we don't have one at the trade show here in America") a few weeks later lambasted me for not saying enough good things about their Kodak digital camera back. He point blank, in writing, stated Kodak would not provide any more equipment since our reviews were not as effusively laudatory as discussions by other "reviewers." We also heard similar comments from another photographer, that if you expected to receive Kodak equipment on loan for review, you had better not write about flaws. The same is rumored about the ill-fated Contex digital camera: that they refused to provide them to any reviewer if they felt they might possibly not get a glowing write up.

But this policy is self-defeating. It means how can any knowing photographer trust any review of any Kodak product in the future?

The only other feedback I had from Kodak was through the grapevine, that Kodak was very impressed that I knew so much about the flaws of the printer as well as the technology of the printheads and all that. My answer is simple, it's what you expect a research professor to do, do research. We don't use commercial PR releases, we use something called independent research.

We also learned that Kodak and Encad used the FLAAR reports internally to document that the printer indeed had serious problems. In other words, no Kodak or Encad employee or manager dared admit

the full truth about the impending debacle. But it was easy to show the FLAAR Reports at a meeting and reveal the mounting programs. This is a clever use of our reports.

Thus FLAAR is sad that the printer did not work, but proud that we provided end-users the only independent voice about the true status of this flawed machine.

We also learned that Brother had reportedly expressed no interest in improving the printheads or otherwise fixing the problems.

We learned that Encad attempted to see whether they could manufacture the printer in the USA; that too failed. The first attempt to manufacture the printer was reportedly on Mimaki-related assembly lines.

Naturally some industry pundits asked out loud whether the competition was interested in the printer being a success. We obviously have no way to answer this other than to observe that you are a lot safer if you have your own assembly line and if you control your own technology.

Canon owns and controls its own printhead technology. HP owns and fully controls its own printhead technology. Epson does not manufacture their own printers (Mutoh did until recently; Mimaki does now), but Epson does have its own printheads.

Encad had no printhead technology; they buy Lexmark printheads. The Kodak 5260 used heads from Brother.

Overall it is notable that the world's four largest photographic film companies lack their own printer technology:

- Agfa rebrands printers from Mutoh;
- Fuji occasionally sells rebranded Epson printers;
- Ilford sells Encad and other printers;
- Kodak makes their own Encad hardware but uses Lexmark printheads



Canon printer at Photokina trade show.

Canon is the only camera manufacturer to have their own inkjet technology, the bubble jet system.

### **Our Hopes for Kodak Printers**

We saw a recent news release from Kodak that spoke of nano-sized pigmented inks for the Kodak 5260. The lack of pigmented inks is what has clobbered the Canon BJ-W9000 (along with its small width and lack of Canon wide format dealers). So if the new Kodak printer does indeed come out with a wide-gamut pigmented ink, with no clogging problems, they have a winner. Unfortunately in the meantime Canon has come out with an entire line of new printers, the imagePROGRAF series (2200, 7250, 7200). They now have pigmented ink (Canon imagePROGRAF W8200). You can expect a 24" pigmented ink Canon printer sometime this year.

Kodak is an American icon and we hope they succeed primarily because it will nudge other printer companies to improve their quality at their faster speeds. Perhaps the next generation Kodak-Brother printhead will work as advertised at the higher speeds and thereby become a favored technological product.

## Future Reviews

If the banding situation at 500 sq feet per hour is remedied, or if the brochure is changed to reflect reality, we will gladly rewrite and update this review.

If we have an opportunity to see this printer in a production environment, as with any printer we will be glad to update our comments. After all, FLAAR is an institute dedicated to museum-quality photography for over 30 years. We have all the large format camera equipment necessary to produce an outstanding suite of test photos capable of showcasing the quality of the Kodak 5260 printer.

We are also very curious to see what the trade magazines will say about this printer as it actually performs in real life. Awarding it printer of the year designation merely draws attention to the fact the printer is not yet shipping.

Maybe the printer will be held back and not sold until the banding is resolved. We noted a subtle change at ISA tradeshow (April 2002). For the first time buyers were being gently notified that output at full speed was “only sellable to some customers.” In other words, a distinction was being made between the output with banding (at top speed) and the outstanding photo-realistic output at slow mode (170 sq feet per hour).

The most logical solution would be rewrite the sales literature, and simply sell what is realistic. Maybe this printer has other redeeming value. Maybe this printer can do something not feasible with an Epson (Kodak printer is definitely much wider).

All printers face technological glitches when first designed. The ColorSpan Mach 12 was one; the Mimaki JV4 was another; the Mutoh Falcon 2 as well. Yet today the ColorSpan and Mimaki are both shipping; we just inspected a Mutoh Falcon 2 last week: output looked just fine. As early as IPEX 2002 the Agfa GrandSherpa was no longer doing serious banding. So all printers get better as the snafus are overcome with practice and precision. The Mimaki JV4 has by now probably sold several thousand units: that is perhaps \$60,000,000 worth of printers, inks, and media. Sixty million dollars will pay back lots of research and development costs. So it seems that with stakes this high for any company it is worth investing some money in a more realistic PR campaign.



Mutoh Falcon 2

Thus we at FLAAR hope the same progress can be made with the Kodak printer. That by this summer or autumn either micro weaving will overcome the banding or else the specs and ad claims will be modified to reflect the actual printer's real potential. However as of summer 2002 the ads were still claiming “speed without compromise.” It is ironic that this is precisely the ad claim that resulted in so many people wanting to learn about the reality of this printer.

In the meantime it is worth noting that the Kodak printer has won another industry awards from another trade magazine. Yet it won these awards at a time the printer was still not shipping, and as far as most people could judge, the printer was not yet functioning as advertised.



During this same period, we are not familiar with a single outside review of this printer. Why is it that no one writes about the printer in an actual photo lab, in a sign shop?

It is also noteworthy that the Kodak instant-dry media is not included in Wilhelm tests, but then again, that site has been off the air most of the last year. As of July 1<sup>st</sup> it was totally off the air again. You don't need to close down an entire site (and empty the archives) just to update a site. All that aside, would be interested in test of the media for the 5260 unprotected by lamination.

Another question worth asking is, "Why are there no independent reviews of the printer or its output?" Why are none of the beta test sites publishing their findings? Why do the industry awards repeat ad slogans, the same way premature industry awards repeated CrystalJet PR release texts during that still-born printer debacle?"

We hope a newer, better, and functioning Kodak Encad printer is finished and ready for public view at Photokina 2004. Nobody wants another CrystalJet debacle. Perhaps Brother can just redesign the printheads, after all, all sophisticated technology takes a while to be perfected. The Epson piezo heads of today are superior to the earlier Epson piezo heads of two years ago.

### **When you should buy a printer**

The following statement holds true for any printer, whether Epson, HP, ColorSpan, Mimaki, Mutoh, Roland or Encad.

Do you want to be a beta tester? If so, be the first in your neighborhood to buy the first production run.

Otherwise, savvy buyers suggest to wait. Wait until you can find another print shop that is earning a profit with this printer. As soon as a printer is good enough to earn your company a profit, that is the time to buy it.

We all know this experience with any new software update, especially with new versions of Microsoft operating system. Knowledgeable veterans tend to wait until the updates document that the new system really works as it is supposed to.

How do you know when that time has arrived?

Find another place that has the desired printer in situ. See if it functions, see if it functions as advertised. And ask how long they have had the printer.

Actually this is the suggestion of one of the leading specialists in inkjet printing as we discussed the Kodak 5260. FLAAR has made considerable effort to obtain an industry consensus about this printer. Actually we had to sort of tone down most of what we heard. We prefer a more positive attitude since the success of this printer is vital to providing rejuvenating revitalization to the industry. The failure of this printer to function as advertised is not in anyone's best interest. Indeed the success of this printer will result in major improvements in competing piezo from Epson, Spectra and Xaar as well as renewed development in thermal printheads by HP and Canon. We hope Lexmark can be revitalized too but so far they stick with their 600 dpi tradition.

As soon as we find a photo lab or copy shop or sign printing establishment that has the Kodak 5260 running around the clock at 500 sq feet per hour with output that is salable to a professional photographer, we will record this event and rewrite this report. We work in a museum and National Geographic has published our photographs, so we sort of can recognize photo-realistic quality when we see it.

Sorry, but banding is not accepted by professional photographers.

Banding is, however, considered bearable (albeit undesirable) by most sign shops in instances where the printer is super fast (as compensation) and in instances where the signs are far enough away that people don't notice the banding.

### Why this printer ultimately failed?

The printer attempted to

- combine an untried printhead (Brother's previous heads were primarily for postage meters).
- Evidently had a novel ink delivery system
- Used a new media (nano-porous)
- And evidently attempted a grayscale technology which was innovative. I don't fully understand the details (for which I hope I can be forgiven since clearly the engineers did not either, as it evidently did not function).
- Attempted to pull the media through rather than feed by pushing.

In other words, the printer consisted of several major components (among others) which were not previously tested in a production model. Essentially everything about the printer was before its time. What compounded the mess was a failure within the corporation to recognize the situation in time. Instead they claimed the printer was so good that people were buying the entire production run. This left egg on their face when the truth came out.

Add this to the fact that Kodak had never developed an inkjet printer before.

Combined with the fact that they asked a competing printer company to manufacture it on the same assembly line that their competition was being assembled. But in fairness it should be pointed out that reportedly Encad itself was not able to successfully assemble fully functioning models on their assembly line either.

### Consulting with Nicholas Hellmuth

If you wish to make an appointment to consult with Nicholas in person at an upcoming trade show, next opportunity is PMA, ISA, DRUPA in Duesseldorf, then Photokina in September-October (Cologne), SGIA, then PhotoPlus Expo East in New York. A consulting fee is required in advance. The easiest time to be sure he is not on the move is during breakfast, lunch, or dinner.

If you have purchased any four FLAAR Series you can have 30 minutes telephone consulting with Dr Hellmuth in person, or lab manager Brent Cavanaugh, for a flat \$300, or an entire hour for \$400 or visit with Nicholas at a trade show; same fee plus the meal cost.



Dr. Nicholas Hellmuth at GOA trade show.

If you have purchased any five FLAAR Series you get 30 minutes telephone consulting for \$200, or an entire hour for \$300. Or, you can drop in and visit us in person for \$300 per hour or visit with Nicholas at a trade show; same fee plus the meal cost.

If you have purchased any six FLAAR Series you get 30 minutes telephone consulting for \$100 or an entire hour for \$200. Or, you can drop in and visit us in person for the same fee the first hour, \$300 per hour thereafter or visit with Nicholas at a trade show; same fee plus the meal cost.

If you wish Dr Hellmuth and/or Brent Cavanaugh to visit your facility, anywhere in the world, fax 419 372 8283 or e-mail FLAARtest@aol.com for price list for on-site consulting.

If you wish complete training in color management, this is available only on-site (your place or ours), and is best done over two days.

Telephone consulting can explain what tools and software you need, but we can't rectify your ICC profiles by telephone (but we sure can by on-site visit at your place).

Telephone consulting is primarily to answer your general questions as best we can and to assist in deciding what makes and models of hardware and software would be optimal for your specific situation. We can also answer your questions about scanners and digital cameras. Assuming you have already read the FLAAR Reports, we can usually resolve your situation in 30 minutes on the telephone as follow-up.

If you wish to walk the trade show floor and get Prof. Hellmuth to explain the pros and cons of each printer one after the other, with the printer in front of you, cost for a 1-day six-hour experience is \$3,000, or \$2500 if you have already purchased five or more FLAAR Report Series.

Obviously consulting fees are non-refundable.

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fax 419 372 8283. Please fax your complete list of questions. Indicate whether this is a new first-time enterprise or list what equipment you already have or are about to buy if you are an established company. Our services are equally available for newbies as well as for Fortune 500 corporations, Ma and Pa print shops, or individuals who wish to establish their own printing system for their own work. Everyone is welcome.

## Glossary

**banding** on inkjet is more complex than a different kind of banding on desktop office laser printers; several kinds of banding may occur in wide format inkjet output. All kinds of printheads can include banding defects, including thermal printheads (HP and Canon). However banding is less prevalent on those thermal printheads; on the Lexmark thermal printheads used by Encad banding is especially rare. At the slow, multi-pass photo-quality mode on an Encad you rarely see banding, for example. Banding on an HP is rare, usually on a worn printhead (which can easily be replaced). Banding is most noticeable on an HP print in areas of cyan or blue (such as the sky) or across dark solid colors. A further advantage of thermal printheads is that it is easier to fine tune the system to avoid banding. Most (but not all) banding results from clogged nozzles, especially on piezo printheads and notably on some Roland printers.



Banding may be worst in humid environments and on certain media. Xaar printheads on the former Gerber Orion were especially prone to banding. Indeed the Xaar piezo banding was double-sided, light defects on one side, dark horizontal imperfection on the other side, all the way across the sheet. The new Brother printhead on the Kodak 5260 printer bands at high speeds, but at slow photo mode the banding goes away or is imperceptible. Banding is called many other things, such as streaking, but it's not a streak, it's a continuous horizontal defect. For more information see FLAAR Report on Piezo vs Thermal.

**media** is jargon for any material that is coated with an inkjet receptor coating. It is rare that a normal inkjet printer can print onto regular paper. The Hewlett-Packard 1050, 1055cm and 1055+ are exceptions: these HP printers, especially with appropriate RIPs to reduce the ink to avoid excess ink which causes rippling from the moisture, can print directly onto normal economical Kraft paper or even raw newsprint. Solvent inks can usually print directly on raw vinyl (without any coating). In that case the vinyl is called a substrate.

**micro-porous = nano-porous**: would require a PhD dissertation in inks, media, physics and chemistry to explain. Best place to learn about this is to attend the IMI conferences on inkjet technology: <http://imi.maine.com>. In the meantime the user should realize that this kind of media is relatively new and hence fraught with problems inherent in any untried product.

**piezo-Electric**, or simply **piezo**. A kind of inkjet printhead. An electrical pulse in a piezo crystal causes a flexible membrane to oscillate. That flexing pushes out a droplet of ink. Epson makes the piezo printheads used by Mimaki, Mutoh, Roland, Gradco, and naturally Epson itself. Xaar, Spectra and other companies made industrial piezo printheads, primarily for solvent or UV curable inks. However there are currently several companies attempting to make a normal piezo printhead for water-based dye and solvent inks that can compete with Epson's printheads. Such a breakthrough (the Brother printhead, if it actually functioned as promised) would be a bonanza for future generations of Mimaki, Mutoh, and Roland printers.



The competing printhead technology would be the thermal printhead of Hewlett-Packard or Lexmark and Encad, similar to the bubble-jet printhead of Canon.

**pigment Inks**, also called UV inks. While conventional inks are essentially water-based dyes, pigment inks consist of tiny chunks of solid pigment suspended in a liquid solution. According to their proponents, pigment inks offer richer, deeper colors and have less tendency to run, bleed or feather. UV inks is the term mainly used by Hewlett-Packard. These inks should not be confused with UV curable inks (not usable in HP or any conventional inkjet printer; UV inks are currently available only for industrial inkjet printers).



**thermal** printhead (also known as bubble-jet, especially by Canon). Thermal printheads are made by Hewlett-Packard, Lexmark, and Canon, among others. HP thermal printheads are used by HP, Western Graphtec, ColorSpan, and occasional industrial applications. Lexmark printheads are used primar-



ily by Encad and a few industrial applications, but not many. Canon printheads are used primarily by Canon itself. A thermal printhead heats the ink in a fraction of a second. The heat generates a bubble which pushes an ink drop out the nozzle.

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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.

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