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Konica Minolta prepares for launch

- Digital Printing

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A short while ago we caught up with Akiyoshi Ohno, senior adviser to and former director of Konica Minolta's industrial inkjet division, who has overseen the development of the KM-1 inkjet press. It's been a while since we've heard from Konica Minolta, with the last major outing of its KM-1 inkjet press being the Ipex show in London last year. But he was happy to talk to us on everything from beta testing to a new MEMs printhead.

Konica Minolta is already a big player in the graphic arts with a range of dry toner presses that are widely used amongst printers and inplants, as well as various MFDs and a wide format textile printer. But the KM-1 is a totally different beast that will take the company into the high production commercial press market, with applications ranging from photo book printing to some packaging firmly in its sights.

Akiyoshi Ohno, senior adviser to and former director of Konica Minolta's industrial inkjet division, seen here at the Ipex 2014 press conference.

Ohno insists that the company has made steady progress in its development and we can see this in the way that the specifications have changed slightly in the years since it was first shown at the Drupa 2012 show. The printer itself is a cut-sheet B2 inkjet press that takes a maximum sheet size of 585 x 750mm, which is big enough to produce 6-up US letter size pages. It will take substrates from 0.06mm up to 0.6mm thick, which includes folding carton. It should be capable of printing up to 3000 sheets per hour in simplex, or 1500 sph in duplex mode. Konica Minolta is developing a digital front end, based on the Adobe PDF Print Engine, for full variable data printing.

The press is a joint development with Komori, which will also sell it as the Impremia IS29. Konica Minolta has provided the imaging while Komori has taken care of the paper transport, which includes developing a new sheet turner for duplex printing. However, Ohno makes it clear that Konica Minolta is the driving force, stating: "Komori puts the machine together as a sub contractor. Konica Minolta buys the machine and then OEMs it to Komori sales." Indeed, there seems to be some friction between the two companies with Komori also working for Landa, which could be a potential competitor.

Beta testing

The press is currently going through its first beta testing at an American printer, with plans for further tests with a Japanese and a European printer later this summer. Every vendor has its own idea of what beta testing means, with some companies continuing to develop the product to suit the demands of its first end users. But most companies embarking on a completely new technology, like, say, a high volume single pass inkjet press, would prefer to handhold the machine at this stage.

The KM-1 at the Ipex 2014 show.

However, Ohno says that for Konica Minolta the beta stage means that the press is ready and the test is not just of the machine but that any documentation and other support systems are ready. He adds: “We call the alpha test the Quality Assurance test. The QA department, on behalf of the customer, has already tested the machine to see if it meets the standard from the R&D department.”
Cleary Konica Minolta takes the QA department seriously and Ohno seems relieved that the press has passed this stage!

This first customer test is slightly ahead of schedule as the customer wanted to start production, which presumably means it’s being used for a seasonal application. Naturally, Ohno won’t confirm who the beta customer is but the point is that the press is going directly into production, with both the customer and Konica Minolta confident that it will perform.

Indeed, Ohno says that Konica Minolta has been forced to take a back seat, noting: “The customer doesn't allow our engineers to touch the machine so they can fix the problems themselves. So before the beta test starts they request us to train their engineer.” Ohno says that this is not a problem as the machine is now fully developed, adding: “There might be some problems and we will fix them but we don't expect that.” He points out that Konica Minolta will still be able to monitor feedback from the press: “We have a lot of ways to communicate with electronic data.”

But the expectation is clearly that the beta testing is almost a formality, and shouldn’t last for more than six months. This would mean that Konica Minolta could be in a position to take orders for the machine by the end of this year, though the official launch is still scheduled for the upcoming Drupa show next year.

Konica Minolta will sell the press through its business development sales channel, as the inkjet division doesn't yet have its own sales network. This also helps explain why the first beta is in the States, where Konica Minolta has a large sales network, rather than Japan, close to the engineers as would normally be the case for a beta test.

UV-curable ink

The ink will come supplied in a Konica Minolta box, with Konica Minolta also selling ink to Komori, which will supply it in its own box. But one of the great secrets of the inkjet world is that hardly anyone actually makes their own ink, despite the ink being one of the most crucial components of the press, not to mention the main source of profit.

In this case, Konica Minolta has sub-contracted the ink manufacture to a Japanese company, though Ohno won't say which one. He does say: "The ink is our recipe. We own all the intellectual property."

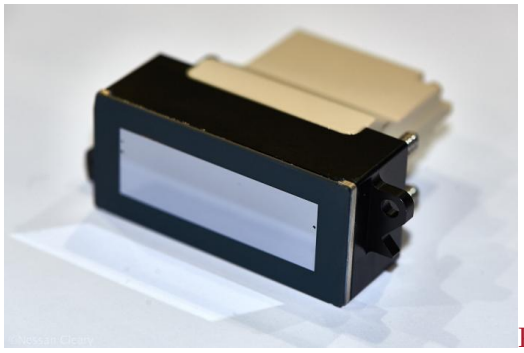
Being a UV-curable ink, it will adhere to a wide range of different substrates, including standard offset stocks as well as cheaper media. But UV ink tends to be more expensive than water-based inks and to produce a thicker film weight.

Ohno believes that it is a good balance between these different priorities, saying: "It's basically a radical UV ink plus maybe some modification." This modification appears to share some of the characteristics of a cationic ink, which Konica Minolta does have experience with. Most of today's UV-curable inkjet printers use a radical UV ink but this ink works best with larger drop sizes and struggles to get enough oxygen when working with smaller drop sizes. But as Ohno explains: "With a cationic ink we can put a small drop size but the disadvantage of the cationic ink is that it's not good in humidity and that prohibits the curing." However, he adds: "We need a small droplet that works well in every environment."

It will print to standard offset papers, without any precoating or overcoating. Ohno says: "We checked almost all the major offset stocks and it's even wider than normal offset can print. We can also print to a slightly embossed paper." He adds: "The current ink can stretch a little. We will modify the formulation of the ink for elasticity this year."

MEMs Printhead

Konica Minolta has a proven track record in developing printheads, with a number of other vendors including Agfa and Inktec using them. So naturally the KM-1 is fitted with greyscale Konica Minolta printheads, which deliver 1200 x 1200 dpi resolution.



Konica Minolta has developed new MEMs printheads, including this MC160H/ ML160H.

The print heads up to now have used Shear head technology, originally licensed from

Xaar. But Ohno says that this is a mature technology with little room left for improvement. Konica Minolta has instead developed its first MEMS head, having started working on the technology some years earlier. Micro Electro Mechanical Systems (MEMS) is a micro-fabrication method that involves building a tiny mechanical system on a substrate, such as silicon or glass, for very precise, high performance with fine resolution and accurate drop placement.

The new heads have 1024 nozzles. There are several versions including the ME130H, which has a native resolution of 1200 nozzles per inch and offers drop volumes from 2-4 picolitres, as well as the MC160H and ML160H, which both have 600 npi and drop volumes from 4-8 picolitres. These droplets can be combined in-flight to produce at least four different drop sizes, depending on how the head is configured.

Ohno says: “One of our specialities is that with the current head we can jet almost any type of ink that you can imagine. Even a very strong acid or alkali.” He adds: “Our main strength is that we have a lot of chemists supporting the head. We develop the glue to assemble the head which is quite good against very strong solvents. We are very good at setting the ink flow and the non-wet coating on the nozzle plate. We can jet very strong acids.”

The new heads are said to have long life cycles and to handle high temperatures with a wide viscosity range, which in turn means a wide range of different types of inks for various applications. Ohno adds: “Some versions have built in heaters to raise the temperature of the ink so that the viscosity goes down to match operating window.”

Konica Minolta is already producing samples of these heads, with mass production scheduled for Q2 of next year.

Future plans

Not surprisingly, Konica Minolta is planning to use the MEMs head in the next version of its press – dubbed the KM-2 - with Ohno adding: “At a certain point in time we might upgrade this version.”

He says that the new head could allow for additional colours. The KM-1 uses four colours - CMYK – but Ohno says that the next version could also include white or varnish.

Akiyoshi Ohno of Konica Minolta, together with John Corrall (left), managing director of Industrial InkJet, the UK partner for Konica Minolta's inkjet division.

The KM-2 is also likely to be bigger. Ohno says: "This first version is for commercial printing but it already includes some thick paper up to 0.6mm so that can cover some materials like folding carton. But the packaging industry needs at least B1 paper." The KM-2 will also work with plastic and film and Ohno says that Konica Minolta may also consider a version specifically to handle corrugated media. Indeed, B1 inkjet presses, capable of handling a wide range of substrates and directly competing for packaging work is likely to be one of the themes that we will see at the next Drupa. A number of players are already working on this, including HP, Kodak and Bobst, Heidelberg and Fujifilm and, of course, Landa. What we know of the KM-1 so far suggests that Konica Minolta would be a valuable contributor to the B1 packaging space.

The KM-1 isn't the first B2 sheetfed inkjet press but it does hold out the possibility of being a game changer. Judging from the samples that we've seen in recent years, it's clearly aimed at the high value end of the market, such as photobooks and some packaging, an area that is still dominated by toner printers. It's considerably faster than Screen's Truepress Jet SX and capable of single pass duplex printing, unlike Fujifilm's JetPress 720. And being an inkjet printer, it's potentially cheaper to run than an Indigo 10000. It's likely that we'll hear a lot more about this press in the next couple of months as it completes its beta testing and Konica Minolta prepares to launch it.