



## WHO IS THE BEST IN THE FLATBED MARKET?

The market potential for digital flatbed printing systems is enormous, and the manufacturers make lavish promises. But what is the reality? We drove 3,000 km to visit companies operating the Durst Rho 160, Inca Columbia and Vutek PressVu flatbed systems to witness manufacturer-neutral test runs. The results produced a new degree of transparency, making it possible to redefine the relative efficiency of each system.



The testfile: a tiff of 240 MB.

To come straight to the point, even we were astonished by the results. The identical jobs (see below: test file and test jobs) were performed at immensely different speeds. Purely in terms of print times for certain jobs, we recorded performance differences of 500% and over. Individual results like that are bound to hurt in a competitive context. Hence our plea to the manufacturers to treat our fair – and presumably globally unprecedented – test as a constructive contribution, enabling the performance of the systems to be optimised so as to improve customer satisfaction and efficiency. In this regard we would like to say a big thank you to the companies that were kind enough to make time to enable our tests to be carried out on their printing systems.

First a brief look at the prices of the three systems we tested: all three, the Inca Columbia (€680,000), the PressVu 180Ec (US\$600,000 / approx. €550,000) and the Rho 160 (€416,000) require detailed investment planning in view of the expense involved. The three test candidates also stand out markedly in terms of purchase price from other systems such as the Océ T 220 and the Zünd (both under €200,000). We conclude from this that the performance differences observed are not justified by the price differences.

The three printers are even technically related. For example, in all three systems UV ink is fired at the media by print heads made by the American manufacturer Spectra. Each of the machines has specific advantages, so our efficiency criteria will not be the only basis on which a purchase decision is made.

Both the Rho 160 and the PressVu were developed for printing on rigid media, but in both cases fabrics and paper can also be printed reel to reel. By contrast, the Inca Columbia can only print plates up to a 1.6 x 3.2 metre format. Among the systems tested, the PressVu, with a maximum working width of 182 cm, has a clear advantage over its competitors Columbia and Rho, which go no further than 160 cm. With regard to the thickness of the print plates, it should be noted that the Rho 160 and the Inca can handle plates up to 40 mm, whereas the PressVu can only take thicknesses up to 25 mm.

Our system comparison is focused explicitly on efficiency in production. Lead times for orders are often dramatically short nowadays and working hours are expensive, so we wanted to find out how much time the candidates took to perform specific print jobs.

**TEST FILE:** our test image was in TIFF format and at 240 MB was large enough to offer sufficient resolution even if sections were enlarged up to a page length of 300 cm. The file was based on the cover of LARGE FORMAT and contained a portrait of a woman photographed specially for this job in medium format. The blue of the cover provided a challenge for the printers, because this colour is composed of cyan, magenta and black and the even colour surface would quickly reveal any UV banding. Further demands would be made by the red and the finely graduated skin tones. A physical breakdown of the colour setting of the printing system was provided by an integrated grey wedge and a series of colour charts. A colour profile was deliberately not included.



**LARGE FORMAT**  
1. EUROPEAN  
FLATBED  
PRINTER  
PERFORMANCE  
CONTEST  
*ROI-Champion*  
RETURN OF INVESTMENT

The Durst Rho 160 is the "ROI-Champion" (Return of Investment-Champion). Rainer Tewes (left) boss of the Fotolabor M GmbH in Stuttgart, judging the printing-test with the operators Ilja Schenker and Dirk Hilmerich (right).

**TEST JOBS:** in order to measure the efficiency of the machines, the operators of the systems being tested were given the task of printing the test file in high quality, for example for a point-of-sale display. The operator was free to choose the mode. Three jobs had to be performed. We also allowed the operators time to set up the machine. In each case we measured the time that elapsed from the sending of the print job to the RIP up to the start-up of the print heads and up to the end of the printing process. The jobs were as follows:

**JOB 1:** The test file was required for point-of-sale use on a plate in 150 x 170 cm format.

**JOB 2:** From the test file, a section in 150 x 300 cm format was required for point-of-sale use.

**JOB 3:** From the test file, ten prints on a plate in 85 x 75 cm format were required. For this purpose several images were arranged on a plate (tile or multiprint function).

The performance of the test candidates is detailed below in alphabetical order.

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#### DURST RHO 160:

We were shocked by the CMYK incompatibility of the Rho software at Foto M in Stuttgart. It was both technically obsolete and a source of problems. But the owner Rainer Tewes explained the background to me: as Durst had written the Rho software in the mid-1990s for the RGB Lambda laser exposure system, 700 of which have been installed worldwide, Durst also used the software for the Rho, in order to make the switch to the Rho easier for the Lambda operators. They opted for a compromise, whereby the RGB software only allowed RGB to be used for the data input to the CMYK system. Our CMYK file was therefore changed back into RGB, and when a small section was printed it had a deep green tinge in the grey wedge. Admittedly this was quickly corrected by Tewes, and it is understood that Durst will revise the software this autumn so that CMYK data can be entered directly. After the shock about RGB, the Rho proved to be supremely fast: the output quality had been set at level 2, which represents a mid-point between the highest print quality and speed.

The physical output resolution in the Rho is 360 dpi. The Cheetah RIP processed our 240 MB file in an impressive 1:09 minutes. Then the print heads got going. It took 7:12 minutes to print a plate in 150 x 170 cm format. Once the file is in the RIP, it is saved in a proprietary format, which can be scaled extremely quickly. This had an impact on the processing speed in job 2, the 150 x 170 cm section. Operator Ilja Schenker positioned the section and gave the print command. Barely a dozen seconds later the print heads got to work. In this case we did not establish the RIP time, but included it directly in the printing time.

The same effect was seen in job 3. Operator Schenker arranged the motifs in 85 x 75 cm format on the monitor, gave the print command and a few seconds later the jets were firing. Leaving aside the confusion with the RGB conversion and the rapidly corrected green tinge, the print results of the Rho 160 were convincing.

#### INCA COLUMBIA:

The British company Inca was only founded in May 2000. The Eagle 44 flatbed printer was this young company's first product.

Columbia, a flatbed printer with a gigantic printing table measuring 1.6 metres wide by 3.2 metres long, is the third system built by Inca. It occupies a surface area of 112.5 square metres (15 x 7.5 metres), equivalent to that of a four-room flat, and the superlatives do not stop there: it claims to be the fastest printer in the world. The flyer put out by the German sales company metocolor talks of an hourly output of 123 m<sup>2</sup>. In order to test the Columbia, we travelled to Norrköping, south of Stockholm, where Kurt Alden runs the family business DesignForce. He also serves as the think-tank for SCA Packaging, a company that is also based in the university city of Norrköping. SCA Packaging was co-founded by Alden and its success soon left him with no free time for innovations, so 52-year-old Alden is now delighted that in his small company DesignForce he can concentrate on the development of new digital printing solutions. Alden also developed the "Easy Ad" system which McDonalds and a number of large department stores are already using in Sweden. (We will be reporting on Easy Ad in the LARGE FORMAT 7/03 edition due out on 10 October 2003). After a research phase lasting several months, Alden decided on the Columbia at the end of 2002, and it was delivered in the spring of 2003. The initial installation of the machine brought problems for Kurt Alden. For example, there were recurrent problems of tiny bubbles in the inks. Now the Columbia is running very reliably, although regular care is required. Head cleaning is essential every morning in order to clean ink residues from the jets. The Columbia also cleans the jets automatically every two hours. Operator Karoline Alden, the owner's daughter,



sent our test file to the Wasatch RIP version 4.4, and 10:35 minutes later the job was released for the printer. But then the Columbia really got down to work. The mighty printing table sped to and fro and the 150 x 170 cm plate was printed in 2:54 minutes. As with the results of Job 2, for 17 minutes the Wasatch RIP gorged itself on the test file, which the printer then whipped out in 4-pass mode in a breathtaking 3:39 minutes in 150 x 300 cm format, although 4-pass mode would not be suitable for point-of-sale use. The printing – on recyclable corrugated board – also showed banding, which could still be seen from a distance of two metres! Kurt Alden told his daughter to run the job also in 8-pass mode. Print time: 4:37 minutes. Quality: good to very good. This time corresponds to an hourly output of 58,483 m<sup>2</sup>. The same as the image with multiprint. Long RIP times and a fast print phase. Kurt Alden: "Most of our jobs are small print runs, and that is where the short print time counts. The RIP phase only becomes important with individual productions, which we seldom have."

#### VUTEK PRESSVU 180 EC:

When I arrived at Weger GmbH in Hückeswagen in the Bergisches Land, the PressVu was being attended to by Vutek service personnel following a breakdown the previous evening. Production manager Tim Bangert explained to me that the upgrade had dramatically speeded up the performance of the Vutek, particularly when sending data to the machine's buffer. The RIP took two minutes, and it took 4:50 minutes for our 150 x 170 cm file to be sent to the buffer of the PressVu. After 16:14 minutes the print was ready. But operator Michael Prell was not happy with the result. Brightness differences in the blue of the test motif were very noticeable. Everything had been set to high quality: 600 dpi resolution in 8-colour mode; ultra-mode selected at 60 ips. Such brightness differences should not arise. When we started job 2, in the hope that a readjustment of the anti-static rod would bring about an improvement, we experienced several print interruptions. The Vutek engineer was called in again and was back on site within 70 minutes.

Then finally it got going again. The file, which was RIP-ed in 1:48 minutes, was sent to the machine's buffer in just 10:14 minutes. The print time was 35:10 minutes. The Multiprint achieves similar timings.

**TO SUM UP:** in terms of price and performance as well as the space required, the Columbia is the undisputed number one. It applies the inks to the medium at such a speed that we can only endorse the statement that

it is the "fastest flatbed printer in the world", although there is a conspicuous disparity between the fantastic output speed and the RIP times. For those, including the bulk of prospective customers, who want to use the Columbia for small print runs, the print time will be the crucial factor, not

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1. EUROPEAN  
FLATBED  
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CONTEST  
*Winner*



Clear winner of the First European Flatbed Printer Performance Contest is the Columbia of Inca. It managed to print a part of the testfile in 150x300 cm, with a calculated output speed of 58,483 m<sup>2</sup>

Left: The fastest and colourwise best-printing flatbed-system is the Inca Columbia. Kurt, Morgan and Karoline Alden critically observe their print.

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the RIP performance. Clearly the best price/performance ratio in this three-way comparison is that of the Rho 160 by Durst. With a projected output of 20.124 m<sup>2</sup>/h (based on a print time of 13:25 minutes for 150 x 300 cm) with a system price of €416,000, the Rho is after all €134,000 cheaper than the PressVu, which it far outperformed in terms of print speed. On the basis of its excellent price/performance ratio, the Rho 160 therefore earns the title of ROI champion (Return On Investment). Naturally Vutek draws attention to the fact that the smoothing function activated on the PressVu in order to minimise UV banding in our test reduced the speed by 74%, but that does not alter the fact that the time required to carry out a job is far higher than with other systems. Our aim here is not to question the high degree of satisfaction expressed by Vutek owners such as the Weger company. Michael Kleppe, Company Secretary of Weger GmbH, pointed out that apart from the breakdown on the day on which the test was carried out, the PressVu had operated reliably in two shifts and with a higher quality than screen printing. Perhaps it had to do with the extreme heat on the day of the test: 34 degrees? In any event we did not see the PressVu in the way it is normally presented to us journalists. My personal view is that we are in a pioneering market and setbacks of this kind should serve as an opportunity to fundamentally revise the technology. The PressVu clearly still has untapped potential. *Hermann Will*



The PressVU at the Weger GmbH printed in 8 colour-mode with activated smooting-function, which eliminated Banding, but also slowed down the process. The upper image shows production manager Tim Bangert.

 I. EUROPEAN FLATBED PRINTER PERFORMANCE CONTEST			
	DURST RHO 160	INNCA COLUMBIA	VUTEK PRESSVU 180EC
<b>JOB 1: (150X170cm)</b> RIP-Time+Transfer to Hardware: Print-Time: RIP+Print-Time:	0:01:09 0:07:12 0:08:21	0:10:35 0:02:54 0:13:29	0:06:50 0:16:14 0:23:04
<b>JOB 2: (150X300cm)</b> RIP-Time+Transfer to Hardware: Print time: RIP+Print-Time: Projected Output:	0:00:00 0:13:25 0:13:25 20,124m <sup>2</sup> /h	0:17:00 0:04:37 0:21:37 58,483m <sup>2</sup> /h	0:12:02 0:35:10 0:47:12 7,677m <sup>2</sup> /h
<b>JOB 3: (MULTIPRINT/ X 75X85cm)</b> RIP-Time+Transfer to Hardware Print-Time: RIP+Print-Time:	0:21:45 0:21:45	0:10:27 0:07:27 0:17:54	0:08:59 0:49:38 0:58:37
			