

HP Indigo Pre-DRUPA Review

March 12, 2020



HP Indigo had arranged an analyst meeting in Israel for last week to review what the company is putting forward at DRUPA. Coronavirus put a stop to that – as it has to DRUPA as a 2020 show – but Indigo followed up rapidly with a Webinar outlining what we would have seen. This is our report on that Webinar.

HP Indigo, based in Israel, is a strategic sub-division of HP Inc's Graphics Solutions Business (GSB) division focused on Print for Pay production digital print markets in the Commercial/Document print, and Labels and Packaging (L&P) segments. HP Indigo has revenues a little south of about \$1.5B in I T Strategies' opinion.

Indigo have developed a leadership position over nearly 30 years in all the major markets they have targeted – Pressure Sensitive Labels, Flexible Packaging, Folding Carton and Digital Production Document & Photo Print in the commercial sheet offset print market. That position is sometimes very new, usually focused on high value applications, and also represents even in the longer-established markets, usually a small share of the physical output of the corresponding analog print market, but in each case enjoying a dominant share against digital competitors. But these statements do not adequately reveal the strength of Indigo's positioning for future markets.



From the start Indigo targeted production print for pay markets before most vendors did, and Indigo made it their exclusive activity. They entered the pre-existing large-scale analog print markets of communications print among the sheet offset printers, and of pressure-sensitive labels print among established label converters. In those two markets they achieved acceptance of digital output print quality and format as being at par with analog technology well ahead of competitors.

Indigo did this by being able to reproduce what analog technology can print on any substrate, and by years of exclusive focus on learning, understanding and supporting the fragmented and uniquely different channels involved. In more recent times Indigo have begun to follow the same model in Folding Carton and Flexible Packaging.

Throughout Indigo has pursued a high-cost, lower-volume model compared to offset to the profitable advantage of themselves and their customers. A point has however been reached where the market is pulling Indigo towards higher volumes of print as digitization infrastructure enables and forces a wider adoption of digital print. Indigo can reap the benefit now as the pre-eminent legacy digital production print technology.

This is the background to understanding what Indigo stated at their Webinar for 2020 by by introducing an extensive re-positioning of products and extension of technology capability. It is a mix of extended value capability and of evolving technology towards higher production values.

Summary of HP Indigo DRUPA Announcements

Indigo announced four new products & some Evolutions of Existing Products:

- the 7eco A3 entry-level sheetfed document press
- the 100K B2 30%-enhanced-throughput sheetfed 4-color B2 document press
- the 90K, a continuous feed Roll-To-Sheet engine generating B1 sheet output
- the V12, a label press utilizing tandem or single pass imaging rendering Indigo technology speed-independent of multiple color passes and able to utilize the full process imaging speed of the technology – roughly a fourfold increase in throughput for a 4-color print.
- The 7K, 6K, 15K, 25K & 35K are updated version of the 7900, 6900, 12000, 20000 and 30000 presses respectively as described below. These are new branded products but evolved as opposed to anything more fundamental.

Technology Series Backgrounder

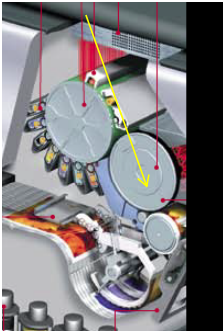
Indigo currently sell four series of differentiated technology as they classify it as follows:

- **Series 3** double-A3 output (7x presses) 13” wide, WS6000p continuous feed Roll-To-Sheet), 6900/6K continuous feed label presses, 8000/8K double-engine continuous feed label presses
- **Series 4** B2 output engines 30” wide primarily for Commercial/Document print markets (12000 sheet Presses, 15K sheet Presses, 50000 sheet Press, 90K sheet Press, and primarily for L&P markets (25K/20000 continuous feed flexible packaging/label presses, 30000/35K sheetfed presses for folding carton)
- **Series 5** B2 sheetfed 4-color commercial/document press 30” wide with 30% enhanced throughput through increased process speed
- **Series 6** in the form for now of the V12 continuous feed 13” wide label press deploying single-pass Indigo technology at greatly enhanced throughputs, fourfold and more over equivalent multi-pass engines.

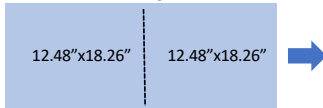
This is a graphic representation of the major process differences between these series:

Series 3 2008
 120 A4 4/0/m
 7,200 A4 4/0/h *~13" wide*

Gen 3 Blanket Diameter
 Doubled surface area allows
 double-size image to be created at
 fixed/unchanged imaging drum
 diameter & speed by exploiting the
 full available imaging drum surface
 area during a drum revolution



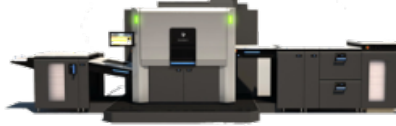
HP Indigo 7900/7eco/7K/7r/
 6900/6K/WS6000p
 Max. A3 Image Frame



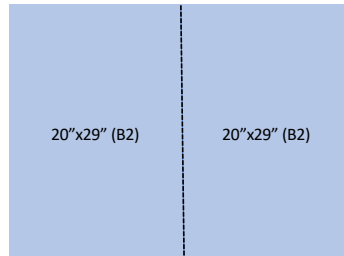
Approx. 2 A3 sheets/sec linear
 = 2 wide x 2 long A4

Series 4 2012
 230 A4 4/0/m
 13,800 A4 4/0/h *~30" wide*

Series 5 2020 Indigo 100K
 30% enhanced throughput
 From increased linear speed



HP Indigo 10000/12000/15K/90K/
 20000/25K/30000/35K
 Max. B2 Image Frame (90K-B1)
 Essentially a wider printed image



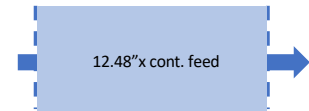
Approx. 4 A3 (or 2 B2) sheets/sec linear
 = 2 wide x 4 long A4

Series 6 LEPX 2020
 550 A4 4/0/m
 33,000 A4 4/0/h *~13" wide*
 (38 Sq M/m = 2,300 Sq M/h)

HP Indigo V12



Single Pass: no color-pass speed penalty



Commercial/Document Print Sector



This is a table of Commercial/Document Press products referred to by HP Indigo at the DRUPA briefing with core specifications:

| HP Indigo | Commercial Presses | | | | | | | | Mar-20 |
|----------------------|--------------------|-----------|-----------|-----------|------------|------------|-----------|----------|-----------|
| Series | 3 | 3 | 3 | 5 | 4 | 4 | 4 | 4 | 3 |
| Format | CS | CS | CS | CS | CS | CS | CF | CF R2S | CF |
| Stage of development | (ex 7900) | NEW | Unchanged | NEW | EVO 12000 | Unchanged | Unchanged | NEW | Unchanged |
| Segment | Comm. | Comm. | Comm. | Comm. | Comm. | Comm. | Comm. | Comm. | Comm. |
| Product | 7K | 7eco | 7R | 100K | 15K (HD) | 12000 (HD) | 50000 | 90K | WS6800p |
| Positioning | Base A3 | Entry A3 | Refurb A3 | Hi-Vol B2 | Newgen B2 | B2 | B2 2-eng. | B1 Press | Photo |
| sheets/h EPM | | | | 6000 | 4600 | 4600 | | 2300 | |
| sheets/h 4/0 | | | | 4500 | 3450 | 3450 | | 1725 | |
| sheets/h 4/4 | | | | 2250 | 1725 | 1725 | | 863 | |
| A4/m 2-up 4c | 120 | 120 | 120 | | | | 575 | | |
| A4/m 2-up EPM | 160 | 160 | 160 | | | | 1150 | | |
| A4/m 2-up Mono/2c | 240 | 240 | 240 | | | | 2300 | | |
| M/m 4c | | | | | | | | | 30 |
| M/m EPM | | No EPM | | | | | | | |
| M/m 5c | | | | | | | | | |
| M/m 2c | | | | | | | | | 60 |
| DPI | 812 | 812 | 812 | 812 | 812 (1625) | 812 (1625) | 812 | 812 | 812 |
| HDFM | | | | | Available | Available | | | |
| Colors | CMYK+3 | CMYK (+1) | CMYK+3 | CMYK | CMYK+3 | CMYK+3 | CMYK+3 | CMYK+3 | CMYK+3 |

Light Green shading – data from HP; Light Orange shading, ITS interpellations or best assumptions

Commentary

7900/7K/7eco (NEW) /7r

The A3-format 7900 is enhanced to be able to handle substrates up to 550 micron thick, and to be able to generate heat-transfer-capable images, while a 7eco entry level product is introduced without those two characteristics with 4 colors standard and an optional 5th color. The 7eco has no one-shot capability to transfer all colors in one go to substrate and also does not have higher-thickness substrate capability. A further 7r model is offered as a refurb without metallic or premium white ink capability but with up to 6 color capability.

There is still a market for Indigo's baseline commercial print products and its retention with emphasis on lower costs and refurb availability is perhaps an indirect response of Indigo to an increasing presence in the sheet offset market of sub-\$100K MFP dry toner systems from the likes of Xerox, Canon and Ricoh. Indigo is not offering direct competition or product equivalence, but is signaling its intent to offer the majority of sheet offset printers who do *not* have an Indigo a graduated path into the, for them, new market. Indigo would say the way into the new market if you are not already there is not via dry toner MFPs, which indigo would regard as lacking the durability and deep integration suitable to any professional offset print provider.

12000/15K

The 12000 has been the series 4 B2 sheetfed heart of Indigo's commercial/document print offering for the last 8 years. The 15K is essentially a re-branded version now with 600 micron thick media capability, a 5-source media feed and HD or double-resolution capability (from 812 to 1624 DPI) offered as the 12000 is still available and also has HD capability.

HP made the following claims about the series 4 B2 product line's success over the past 8 years. This data is assumed cumulative, and pages are assumed to mean A4 pages:



90K - NEW

The 90K is a series 4 B2 engine but configured to print a full B1 image in a Roll-To-Sheet format. It has always been possible for the series 4 engine to print B1 in theory as the imaging drum has a B1-capable surface area. Indigo have leveraged this capability now for those sheetfed offset printers among probably their best customers who have a need for the larger sheet in their normal business, but also for folding carton applications. This is another move in the line of evolving gradually to the emerging needs of the top tier of Indigo's customers. We do not have the exact specifications, but assumed the standard throughput parameters of the 15K engine and halved it for double-sized sheets. The actual full area throughput is assumed the same as the 15K.

100K - NEW

The 100K is a truly new product from Indigo based on the series 4 B2 engine, but so enhanced in throughput capability (30%+) that Indigo are naming it a separate technology series (5). Increased process speed, or the speed at which an image is laid down on the imaging drum, has a great deal to do with this, but does not represent the only technology changes introduced with the 100K. The 100K is a four-color system only as part of a strategy sustaining high throughputs, and is intended for those printers who need B2 as a baseline format, but who really have the kind of volumes that a 15K cannot economically satisfy as well for them as it might have done in prior years.

50000/WS6000p

The 50000 double-B2 continuous-feed engine intended as Indigo's highest-speed communications press remains in the Indigo range even as it is a roll-to-roll system, which format is not always familiar to or popular with the sheetfed offset printer, as does the successful specialized series-3-based WS6000p Roll-To-Sheet system categorized in the document print sector around its capabilities in serving the photo market.

Labels & Packaging



This is a table of Label & Packaging Press products referred to by HP Indigo at the DRUPA briefing with core specifications:

| HP Indigo | L&P Presses | | | | | | Mar-20 |
|----------------------|------------------|---------------------|--------------|-----------------|------------------|------------------|--------------------|
| Series | 3 | | 3 | 4 | | 4 | 6 |
| Format | CF | CF | CF | CF R2S | CS | CS | CF |
| Stage of development | EVO 20000 | (ex 8000) | (ex 6900) | NEW | EVO 30000 | EVO 12000 | NEW |
| Segment | FP/Label | Label | Label | FC | FC | FC | Label |
| Product | 25K | 8K | 6K | 90K | 35K (HD) | 15K | V12 |
| Positioning | FP | Label 2-eng. | Label | B1 Press | FC B2 | FC B2 | Single-Pass |
| sheets/h EPM | | | | 2300 | 4600 | 4600 | |
| sheets/h 4/0 | | | | 1725 | 3450 | 3450 | |
| sheets/h 4/4 | | | | 863 | | 1725 | |
| A4/m 2-up 4c | | | | | | | 550 |
| A4/m 2-up EPM | | | | | | | |
| A4/m 2-up Mono/2c | | | | | | | |
| M/m 4c | 31 | 60 | 30 | | | | 120 |
| M/m EPM | 42 | 80 | 40 | | | | 120 |
| M/m 5c | 25 | | | | | | 120 |
| M/m 2c | | | 60 | | | | 120 |
| DPI | 812 | 812 | 812 | 812 | 812 (1625) | 812 | 1600 |
| HDFM | | | | | Available | | |
| Colors | CMYK+3 | | CMYK+3 | CMYK+3 | CMYK+3 | CMYK+3 | CMYK+3(+6) |

Light Green shading – data from HP; Light Orange shading, ITS interpellations or best assumptions

Commentary

6K/6900 Label Presses

The workhorse Indigo label press the 6900 is being re-branded as the 6K. The 6K has Spot Master spot color calibration capability to less than 1 delta E within 3 minutes and 3 meters of print. Pack ready for Labels is also provided for the 6K using varnishes and varnish additives to achieve certification under FINAT, ASTM and RIT standards. Security printing and brand protection are enabled through design, special inks & substrates, micro-print and VDP capabilities. All these 6K capabilities are backward-compatible to the 6900.

25K/20000 Label & Flexible Packaging Presses

The 20000 was celebrated by HP this month as reaching an installation count worldwide of 200. This was also the occasion to launch the evolved next version of the 20000, the 25K. The 25K deploys Spot Master discussed above under the 6K analysis. It also can now come with a solventless laminator from Nordmeccanica, and has extended its frame print width by 8mm. Compostable and recyclable substrates are certified for the 25K which is claimed to be capable of up to 95% waste reduction in digital label printing. HP Indigo spoke of a digital pouch factory linking the 25K with the Nordmeccanica solventless laminator or a Karlville thermal laminator with a Karlville pouch maker for under \$3M.

35K/30000 Folding Carton Sheetfed Presses

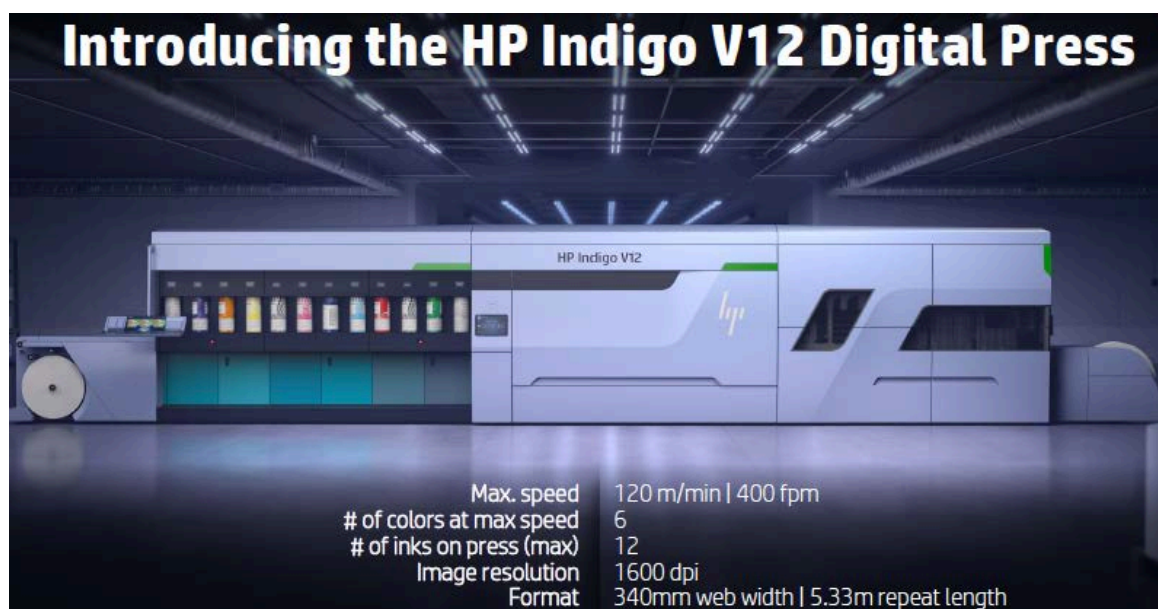
The 35K is an evolution from Indigo's 30000 sheetfed folding carton press. HP Indigo say that the 35K offers a 40% productivity improvement over the foregoing 30000. This seems to be understood to refer to drastic lessening of turnaround times on color matching (utilizing Spot Master with an integrated spectrophotometer – see above), in-line priming, integrated spot coating, Premium White, PrintOS efficiencies, fast change media drawers and high capacity feeder, and other issues including a simpler and more robust substrate path. The 35K is also available with HD at double resolution.

HP has learned from the commoditized folding carton markets that their offering needed to be a very focused mixture of customization capability with extreme process efficiency against industry-specific practices. The 35K represents a detailed response to the hard experience they have picked up over recent years. This is how the label market experience was in the early years with several quite specific refinements of the offering being called for.

V12 Label Press - **NEW**

The V12 is easily the most important announcement HP Indigo made on this occasion. In plain English, Indigo have taken a multi-pass color imaging technology on a single drum and turned it into a single-pass imaging system on a continuous flexible belt. When you don't have to run 4 colors successively onto a drum and you can run all 4 colors in a single pass, well then you have a system that is four times faster – or six times faster if you run 6 colors. The arithmetic is not quite as perfect as that, but the message stands. If it works (and we don't have any reason to doubt it), then Indigo have taken a technology which leads the L&P and document/commercial print worlds in production digital print and have opened the prospect of being able to make it 4+ times faster/more productive.

This is big news where many insiders had assumed EP was nearing the end of its useful development life due precisely to throughput limitations.



At this time Indigo have implemented this new single pass technology which they call LEP^x in a 13” wide continuous feed label press with up to 12 color capability called the V12. This press was to be in beta from early 2021 and available to market in 2022, though under present circumstances that date will probably move. The speculation has to be the capability of the LEP^x technology to be applied to other continuous feed and sheet formats in the future. Liquid toner technology is already ahead of aqueous IJ technology in its crucial media capability, and at the new kinds of throughput the potential challenge to IJ is obvious.

8K/90K/15K

The twin-engine Indigo 8000 is now renamed the 8K, and the 90K and 15K (see above) are also put forward as suitable for the Folding Carton market

HP Indigo's Relative Market & Competitive Positioning

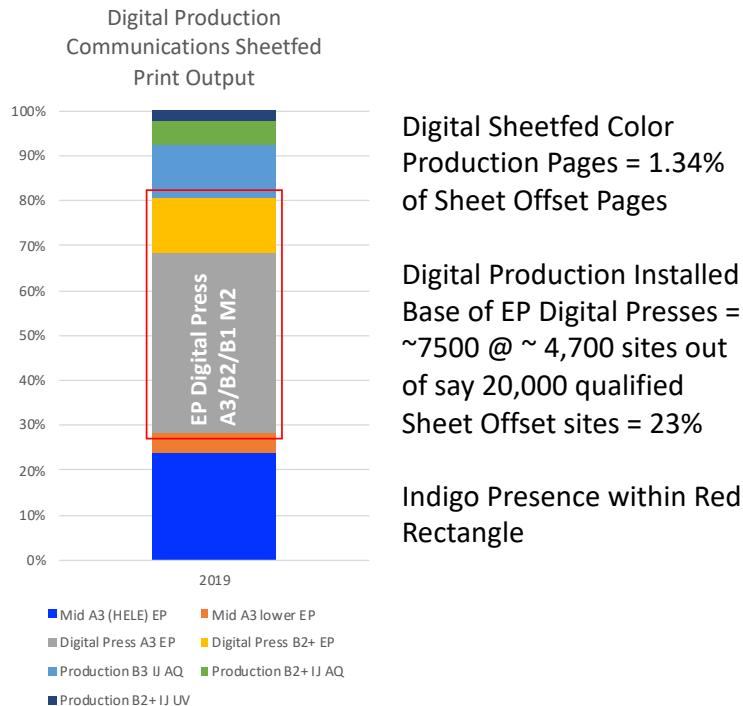
HP Indigo has a leadership position in Digital Production Communications print, Label Print, and has a pioneering position in leading packaging sector Flexible Packaging, and in Folding carton. This is our summary analysis of where they stand and what their opportunity could be:

Commercial/Document Market

Indigo are believed to have a share of the market for sheetfed digital production systems in the communications market of well over 50% with competition from Nexpress (Kodak), Xeikon and Xerox. Kodak and Xeikon are smaller companies with fewer resources and differentiated market focus, while Xerox has lost ground in recent years in market and technology development terms. In technology terms in communications print EP enjoys a large head start over aqueous Inkjet whose capability of print on standard industry-dominant coated papers is still far from universally consistent.

The potential for Indigo is to increase the pages printed on their technology from what is a very low base (1.34% of pages) when compared to sheet offset (the market within which they principally operate). The opportunity is also to introduce more sites to digital production technology (currently only 23% of sites have production EP presses assuming a very conservative number of total sheet offset sites at 20,000).

Indigo's push towards higher volume systems and technology on the foundation of a very solid base in specialist lower volume multi-feature presses in the high value, high-profit-generating (for PSPs as much as for Indigo) micro-run market is a recognition of the slow but inevitable turn of the market to higher digital volumes at lower costs. This is an evolution of a gradual kind, but which Indigo can own if with their new LEP^x technology they can sustain a lead over aqueous Inkjet in speed as much as in media-capability. This is a theory at this time of course.



Labels & Packaging Market

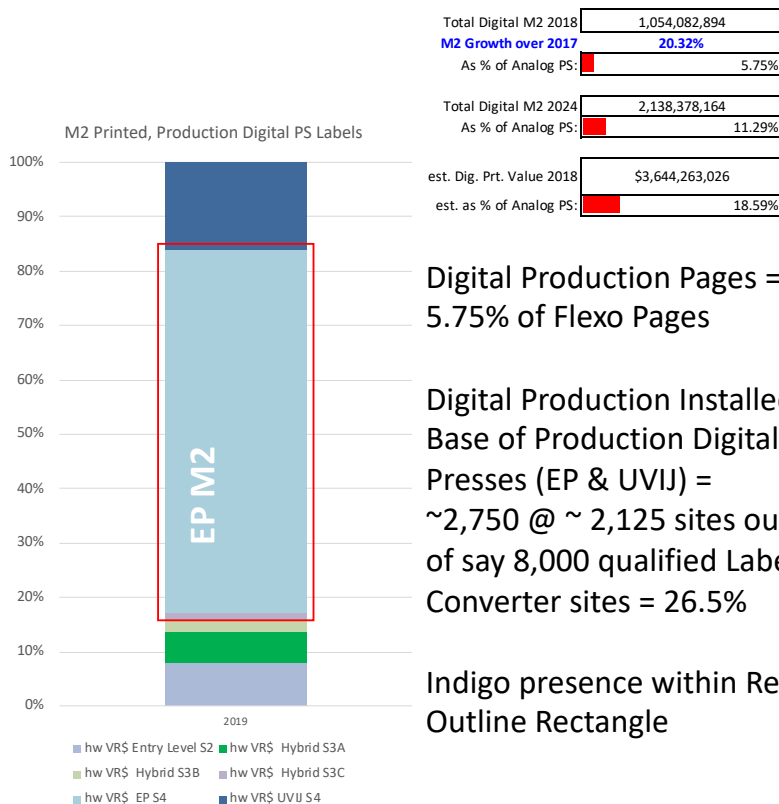
Indigo have a leadership position in the established market of pressure-sensitive labels similar to the kind of share they enjoy in document print. Despite the strong positioning in the labels market there is growing competition from UV Inkjet and from production true hybrid systems combining analog and digital production technology.

In the PS labels market, just as with the communications print market, there is a major opportunity to evolve from a low-volume high-value micro-run market into a higher-volume market with a larger coverage of available sites.

In packaging markets, where Indigo is active in Folding Carton and Flexible Packaging, in both cases the initiatives of Indigo are pioneering at a market development stage with share relative to the underlying analog markets being very small. Indigo has found (not surprisingly to us) the Flexible Packaging markets to be more receptive and able to see value than perhaps the Folding Carton market. But in both areas perseverance over the long-term is beginning to bring rewards. Successes like E-Pac in the US who have hit a production record with the HP Indigo 20000 digital press, reaching over 20 million B1 impressions at 10 sites cumulatively on about 20 systems (according to HP). This is by the way a good example of paralleling the existing industry rather than penetrating it.

As with communications print LEP^x technology in a large sheet format (not offered by Indigo at this time, but speculated upon by us) could offer a strategic challenge to Inkjet technology whose progress

in printing on film and within the packaging industry is slow despite ten years plus of market development at a production level.



Bottom Line for HP Indigo

The essential message from HP Indigo in this DRUPA year (anyway, as was) is strong evolved control of large market positions in Communications Print and PS labels, pioneering leadership in Folding Carton and Flexible Packaging, and a strategic potential with LEP^x technology to take the fight to the volume markets, which have been thought to be Inkjet's unique domain. We will be surprised if anything as potentially significant as LEP^x will be seen from the competition this year. Now HP have to show that LEP^x works, and nothing happens overnight either!