



HP Indigo digital printing technology

Labelexpo Master Class
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Printing definition

Ability to transform a dirty liquid into a controlled dry shape on a media



The printing technologies evolution



Since its early stages printing requires a
hard surface covered with ink
that will **repeat itself** with contact on a material



The Electrophotography

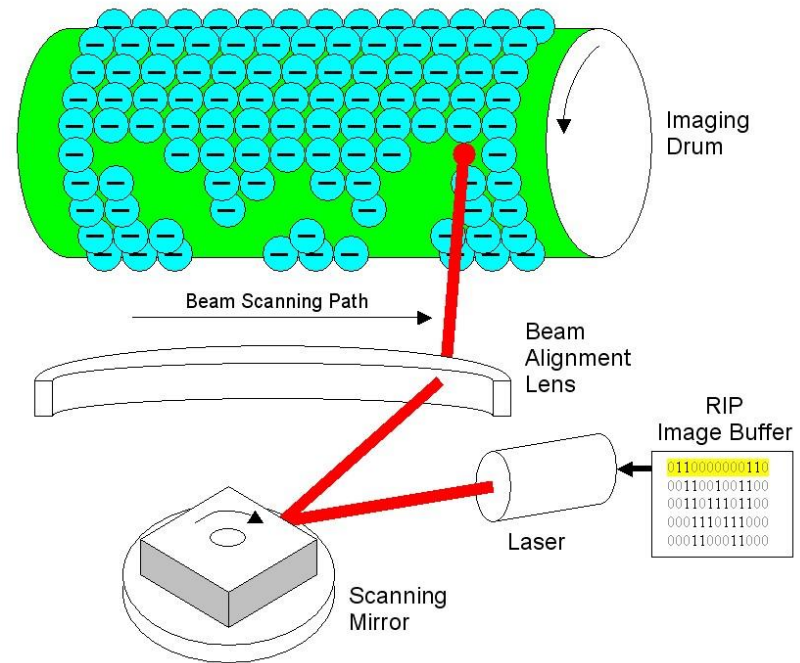


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Electrophotography: the basics

Electrophotography is a printing technology using an electric charge to produce an image on a photoconductive surface acting as a re-usable plate. This allows to print a different image revolution after revolution.

The image is generated by a source of light, commonly laser. The ink will be attracted by electrostatic charges remaining at the photoconductive surface.



HP Indigo in labels and packaging



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The HP Indigo platforms (Ser 2/Ser 3/Ser4)

Similar versions exist in sheet fed

The HP Indigo ws4xx0



The HP Indigo WS6x00



- Fully digital print engine
 - 4, 5, 6, 7 colours
 - 4, 6, 7 process
 - Spot colours
- In / off line converting
- Re-insertion capability
- Any substrate type 12/15-350 μ
 - Filmic
 - Self adhesive
 - Plain paper
 - Cardboard
 - Metallised
 - ...

Allows any
kind of
application



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The large format platforms (Ser 4)

The HP Indigo 20000, 75 cm wide web based
(flexible packaging, sleeves, wrap around, ...)



Roll fed or
sheet fed
application
dependent

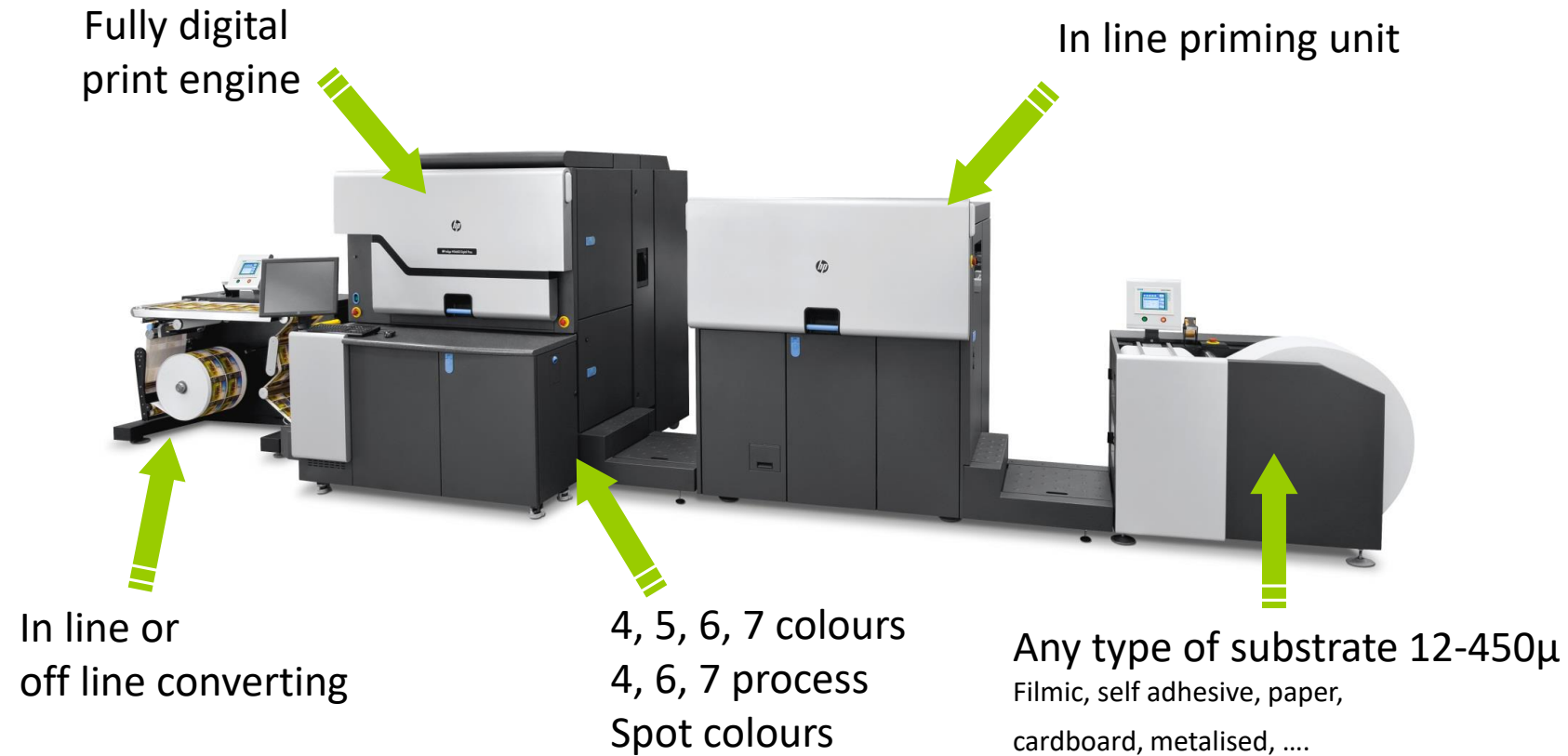


The HP Indigo 30000, B2 size sheet fed
(folding cartons, packs, plastic cards,...)



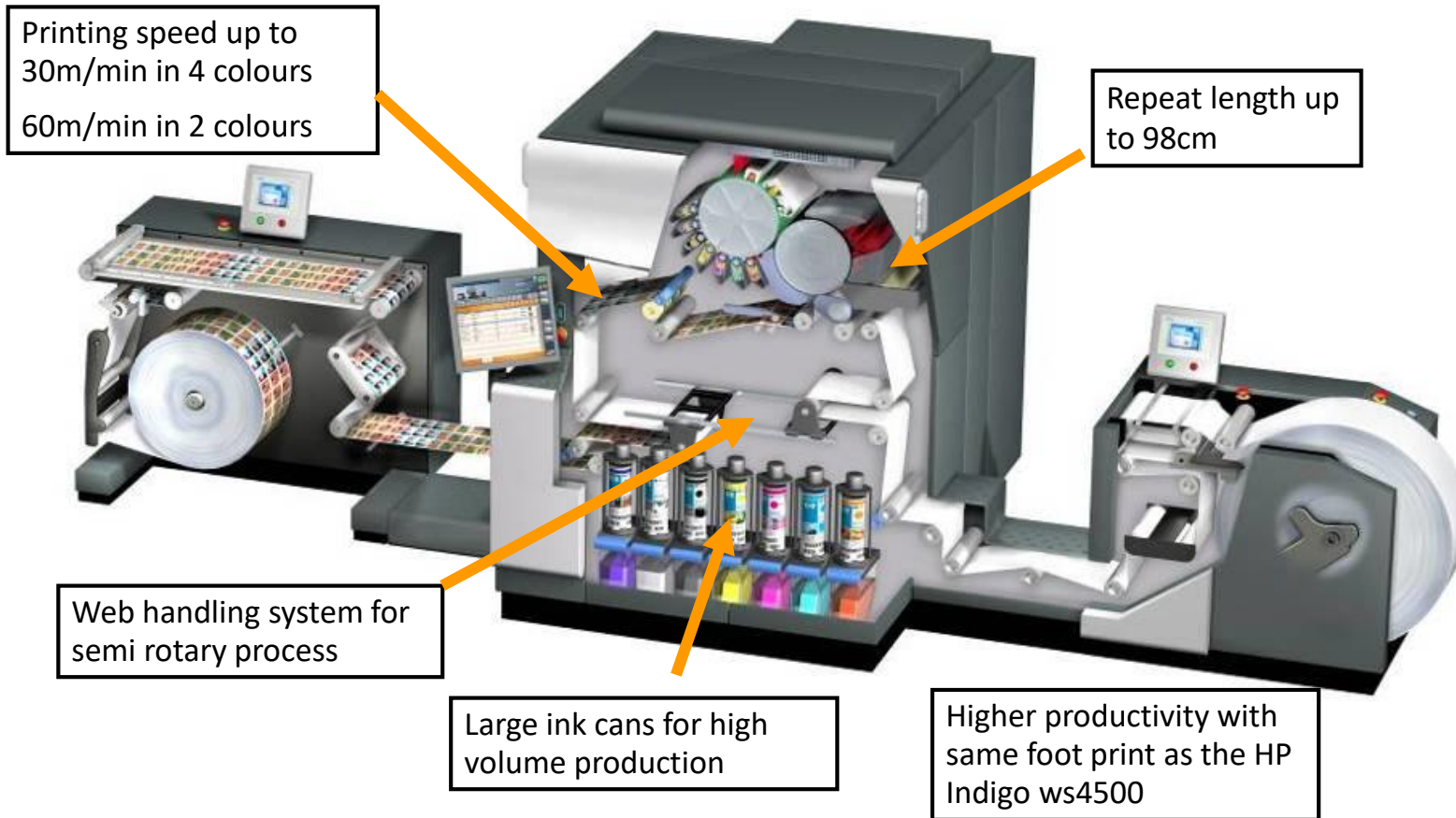
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Liquid ElectroInk: HP Indigo WS6xx0, the components



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Liquid ElectroInk: HP Indigo WS6x00 Digital Press



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Liquid Electroink: ws6xx0 print engine schematic



- Laser generates a separation on PIP by changing surface voltage.
- BID will cover the PIP with corresponding ink.
- At places where the laser light has touched the PIP, the ink will stay.
- That ink (data) is transferred to the blanket.
- The PIP is re-initialised and a new separation is generated.
- All layers of ink are transferred from the blanket to the substrate in one shot.

The HP Indigo Electroink



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What is the HP Indigo ElectroInk?

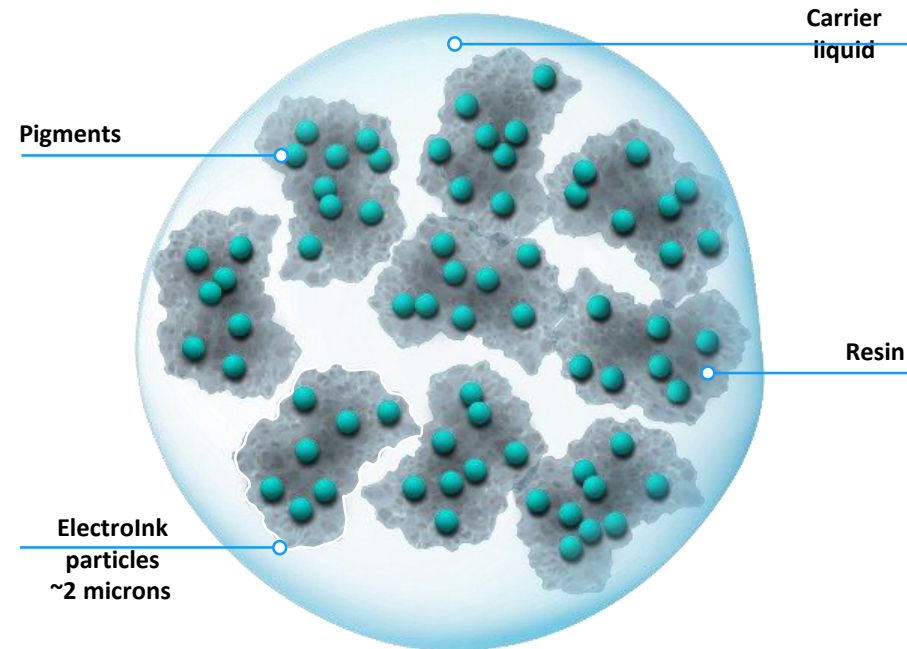


HP Indigo ElectroInk:

Unique liquid ink used in all **HP Indigo presses**.
Contains very small particles (about 1-2 microns)
dispersed in carrier liquid.

The ElectroInk particles:

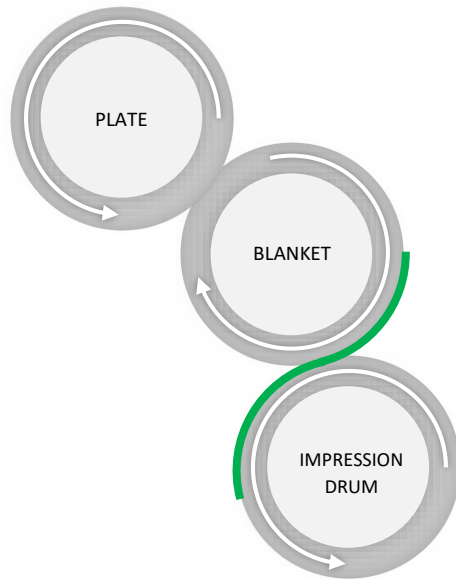
- Contain pigments that are **encapsulated by resin**
- **Electrically chargeable** -electrical fields control their placement to the imaging plate, resulting in high resolution images
- Due to this structure, **pigment dispersion and particle charging** are virtually **not pigment-dependent**



**ElectroInk
structure**

Thermal Offset Transfer

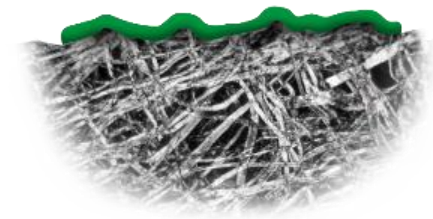
The image is transferred from blanket to substrate as a ready dried film



Upon contact with the cooler substrate, the thin ElectroInk tacky layer quickly solidifies and transfers with no changes in dimension or shape of the image.

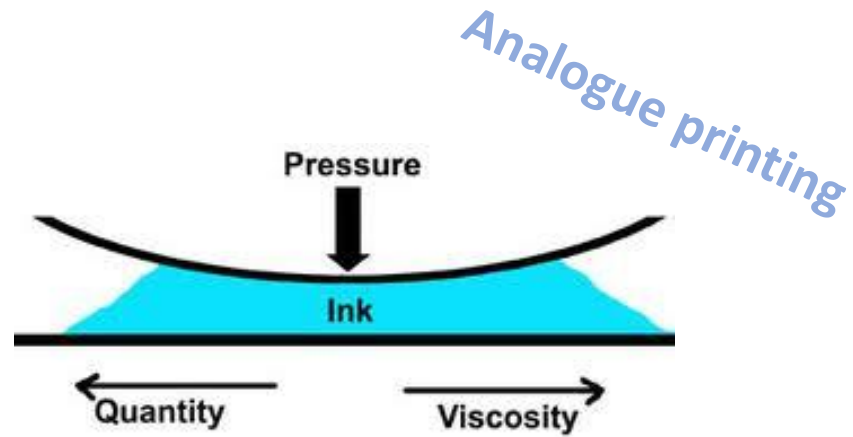
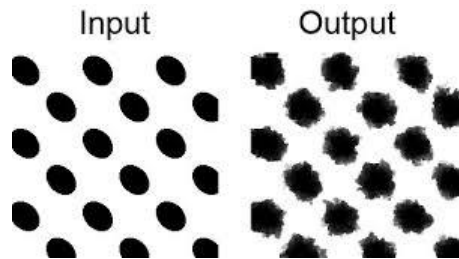


As the blanket is soft and compliant to the media, the thin layer of ink closely follows the topography of the substrate, completely tracing and reflecting its surface.



Print pressure for conventional printing

The ink layer being squeezed in between two hard surfaces will tend to expand creating **dot gain**.



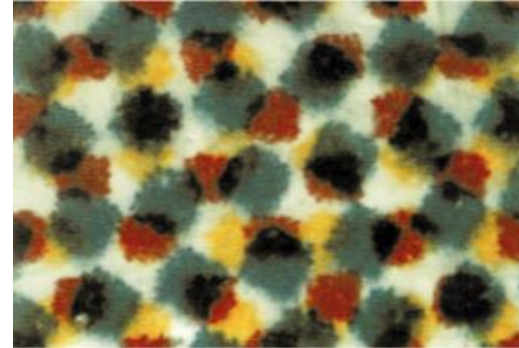
Pressure + substrate absorption = dot distortion



HP Indigo ElectroInk versus offset quality



Indigo



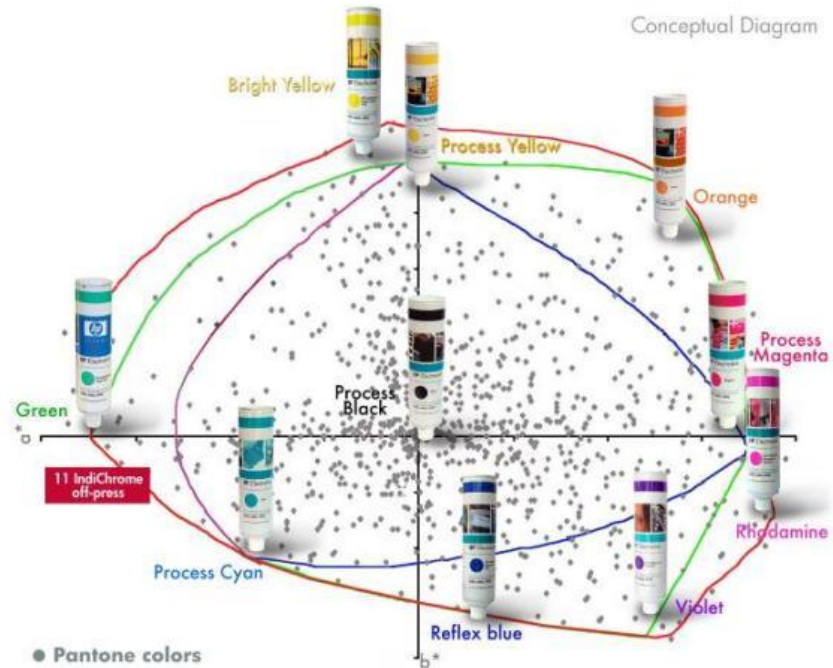
Offset



The Indigo ink layer is solidified when applied on the substrate with a gentle pressure. There cannot be any distortion from the initial laser drawn dot.

Conventional liquid inks will spread and diffuse through the paper surface.

Color world of HP Indigo



Four process colours
Hexachromy
Heptachromy
Spot colours, fluorescent
White, Invisible, metallic ... (*)
Equivalent to analog
to serve the industry needs

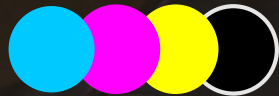


(* platform dependent, not all inks are available on all platforms today)



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Continuous innovation in digital inks



Cyan, Magenta, Yellow, Black



Orange, Violet, Green



White
White for sleeves



Silver



Fluorescent Pink,
Yellow and Green



Light inks: Cyan, Magenta, light
Black, light light Black



Vivid Pink and Green



Fade resistant inks:
Orange, Yellow,
Magenta



Transparent Ink



Invisible Red, Yellow,
Blue



ElectroInk
Primer

Experimental inks:



Easy Release
Scratch off



Thermochromic



Tamper evident



PRfL (Water / Oil)



Note: Not all inks are available on all printing press platforms

Summary

- ➔ Contact technology resulting in better ink control giving top end quality
- ➔ No substrate dependency, allowing endless applications
- ➔ Widest colour and ink gamut, matching analogue standards
- ➔ Various technical and regulatory compliances
- ➔ Easy integration for end to end production solution
- ➔ Up to 7 colours, from 30 to 80 m/min, from 330 to 750mm width, sheet fed or roll fed, finishing in or off line, PrintOS connected



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Thank you!

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