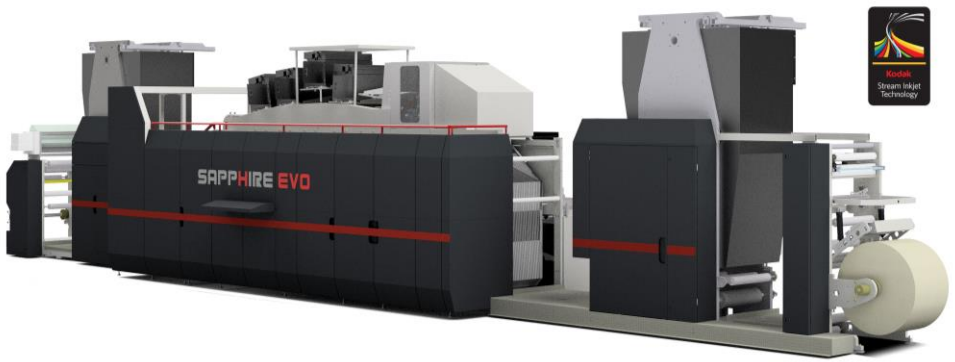
Shaping the Future of Print and Packaging in Asia

Bangkok May 2018

Digital presses for flexible packaging: New emerging trends

Jörg Kullwitz, UTECO CONVERTING, Singapore



The goal

Find a solution for digital printing for flexible packaging that makes sense in terms of printing quality, printing speed and cost per unit……

Business Model: Freedom

Choose your raw materials

Produce as many different packages as you like

Don’t worry about migration

Keep a safe workplace

Contribute to an environmental friendly production

What is the benefit for the user?

- Fastest TTM (time to market)
- Making short runs profitable
- Born for variable data (one to one printing, customized advertising, customer profiling,…)
- Cost effective technology for "out of the box" marketing campaigns
- Safer work environment: no explosion-proof-precautions and related costs
- Healthier work environment: No solvents, no odor
- Significantly simpler and less expensive prepress

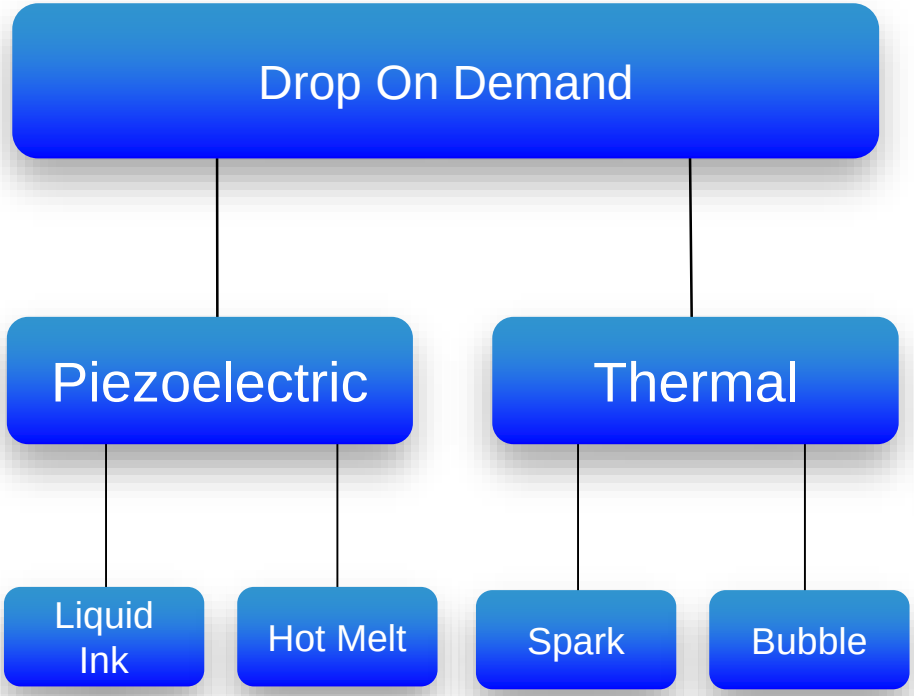
Perfect users of this technology:

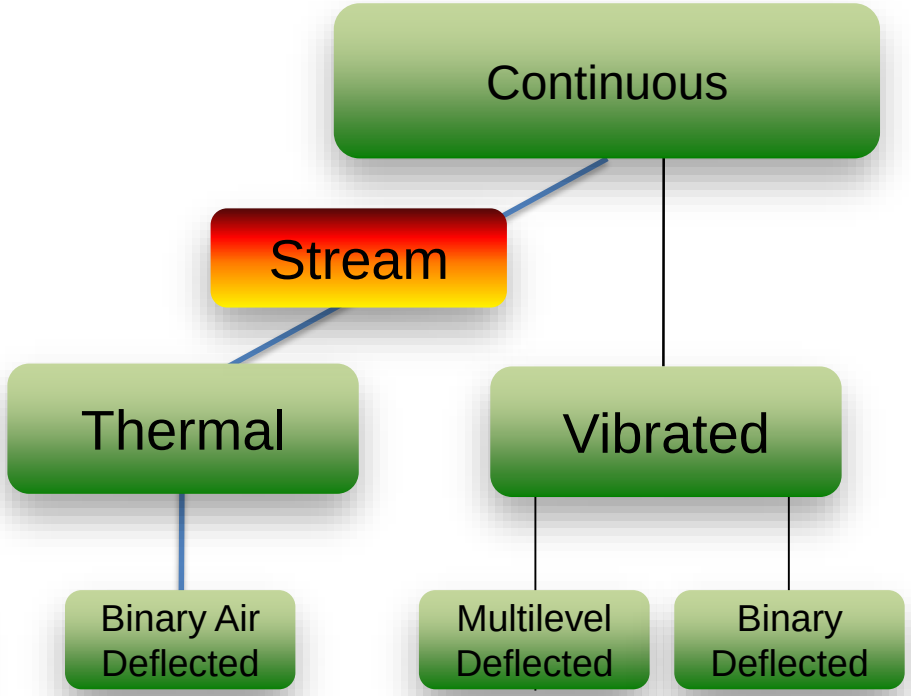
- Packaging printers
- Innovative brands owners
- Short run printers who support large printers focused on long runs
- Printers of pharma packaging
- Pharma industry
- Label printers

What are current limitations of Digital Printing technology for flexible packaging?

- Printing speed
- Cost per unit
- Suitable substrates for digital printing
- Suitable applications for digital printing

Let's focus on Inkjet Technology



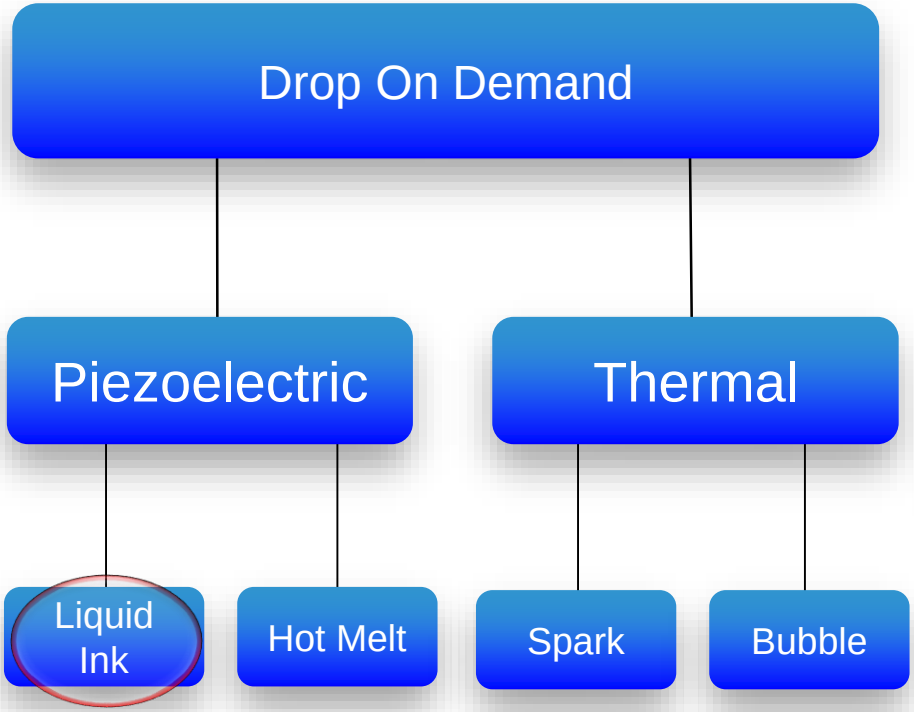


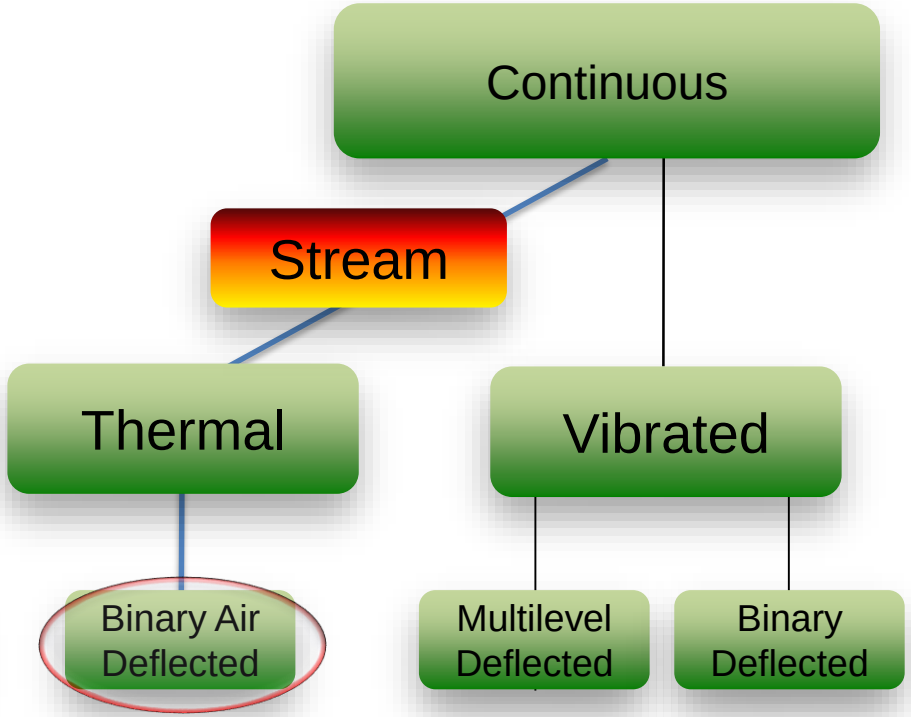
Lower drop frequencies mean fewer drops per second from a nozzle

High drop frequencies and high jet velocity mean more drops and more accuracy of drop placement

Introducing two new technologies

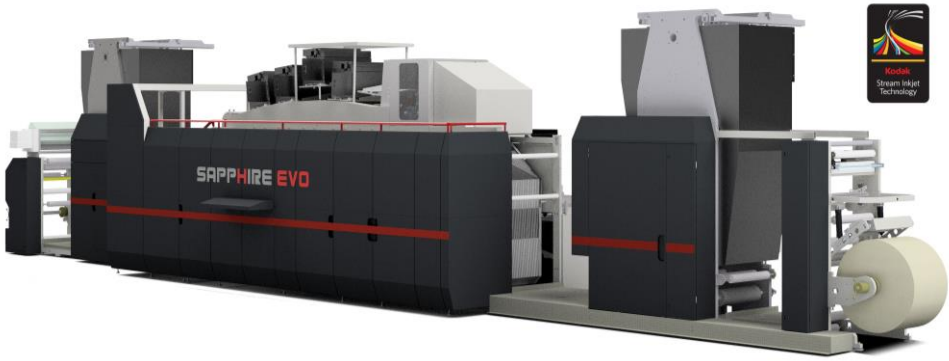
Two different approaches for digital flexible packaging printing





Inkjet DOD piezo
EB curable ink

Continuous thermal inkjet
waterbased ink



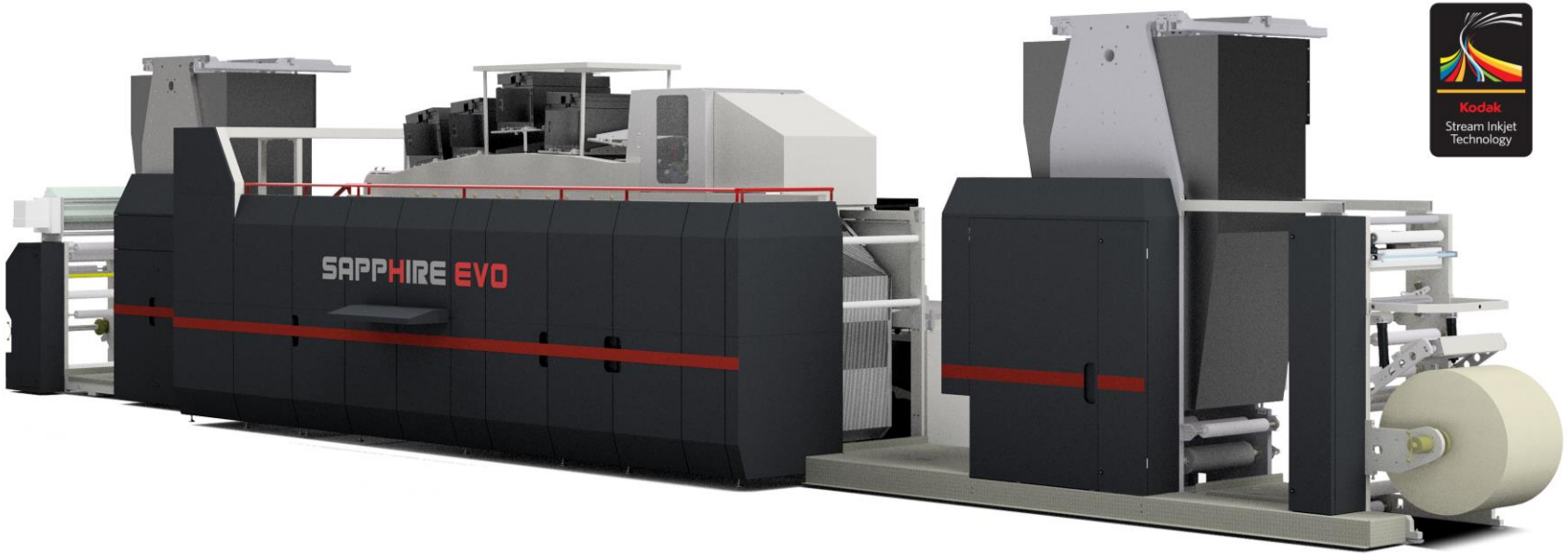
Approach No 1:

High Speed Digital Printing with continuous thermal ink jet technology and waterbased ink

Parameters of the solution:

Hybrid digital and
conventional printing
for the packaging market

	Parameters
Printing width	Up to 650 mm
Max Speed	150-300 m/min
Resolution	600 x 900 dpi (600-1800 dpi)
Colours	CMYK plus 1
Availability	2018
Drying unit	Hotair and IR



The substrates

Plastic films

Paper

Aluminium

The inkjet technology

Continuous Inkjet Technology

thermal 'pinch-off' of continuously jetted fluid streams

apply a computer controlled pulse to heaters surrounding each nozzle

stimulate the ink into breaking into fine droplet

Ink drops not required are deflected away from the substrate and re-circulated to the ink supply.

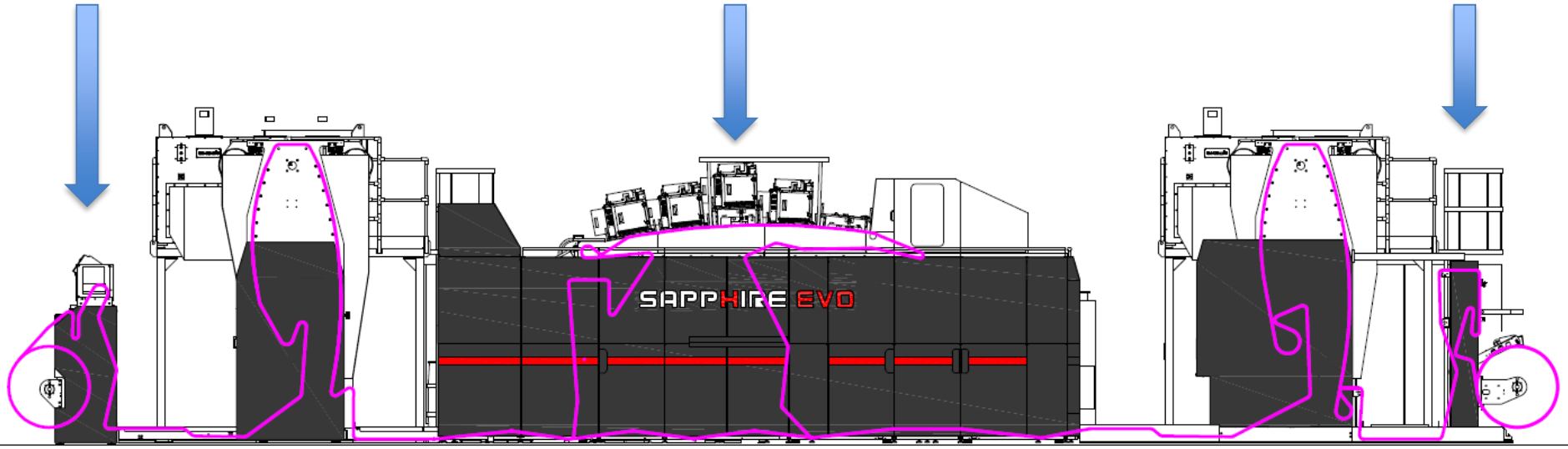
Drop size and pinch-off are regulated by the time between heat pulses, thereby creating a variable drop size.

Sapphire EVO

unwinder

4 colors (+1)
inkjet printing

rewinder



Gravure unit with
closed chamber

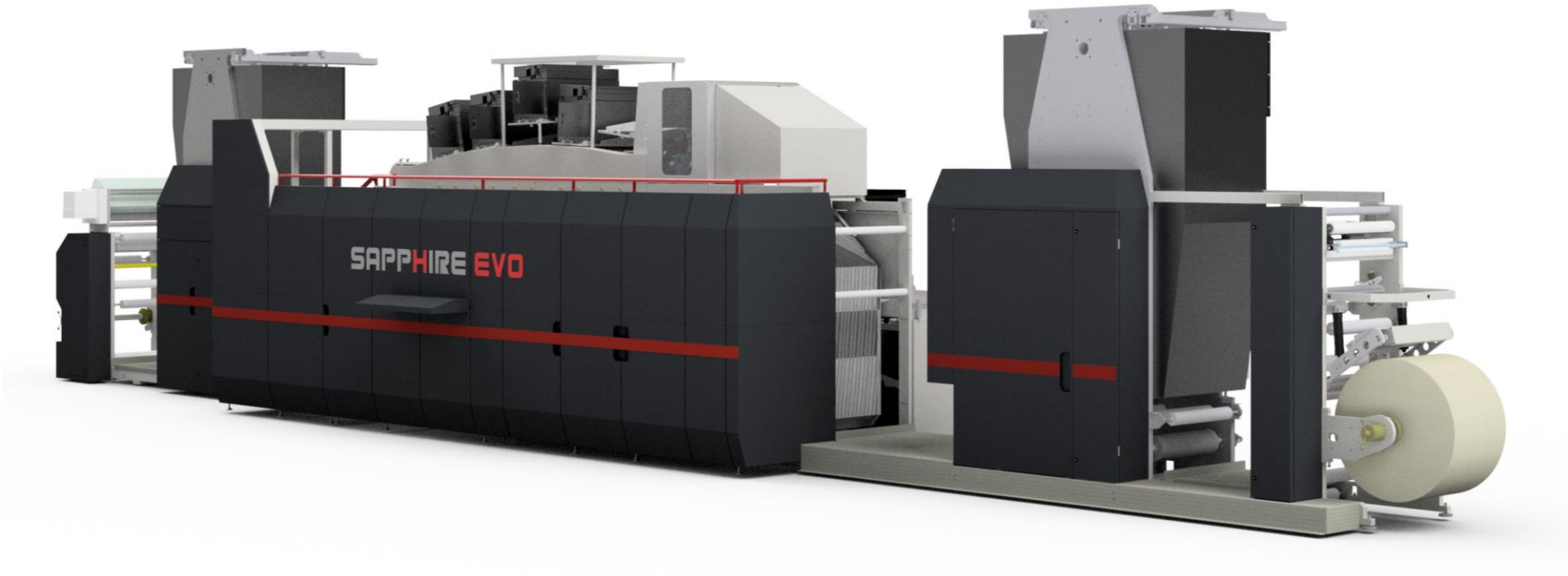
Onyx XS flexo
printing unit

Tailored configuration

Sapphire EVO 041

Tailored configuration

Sapphire EVO 141



Approach No 2:

High speed Digital printing with drop on demand ink jet technology and EB curable Ink

Parameters of the solution:

EB digital printing
for the packaging market

	Parameters
Printing width	400 mm
Max Speed	100 m/min
Resolution	1,200 x 1,200 dpi
Colours	CMYK plus 3
Availability	2018
Drying unit	EB

The substrates

Plastic films

Paper

Aluminium

Non woven

Tissue

Curing: EB

- Manufacturer: ebeam Technologies
- Curing unit: ebeam Compact 80/400, the world smallest ebeam system!
- Minimum footprint
- NO maintenance
- NO vacuum system
- Lifetime of the lamp 8000 h
- NO VOCs
- Minimal heat delivered onto the substrate
- Full curing within milliseconds
- NO degradation: constant performance in time
- Energy consumption minimal (2.7 kW)
- Award winner Label Industry Global Awards for Sustainability

Ink

- EB curable ink
- NO photo initiators
- 7 colors CMYK, OGV
- Compliant for indirect food packaging
- Great adhesion
- Great glossiness
- NO primer or varnish required
- Open system: No exclusive supplier
- Manufacturers: INX (approved), Fujifilm, Kao Collins

Testimonial: Bauli

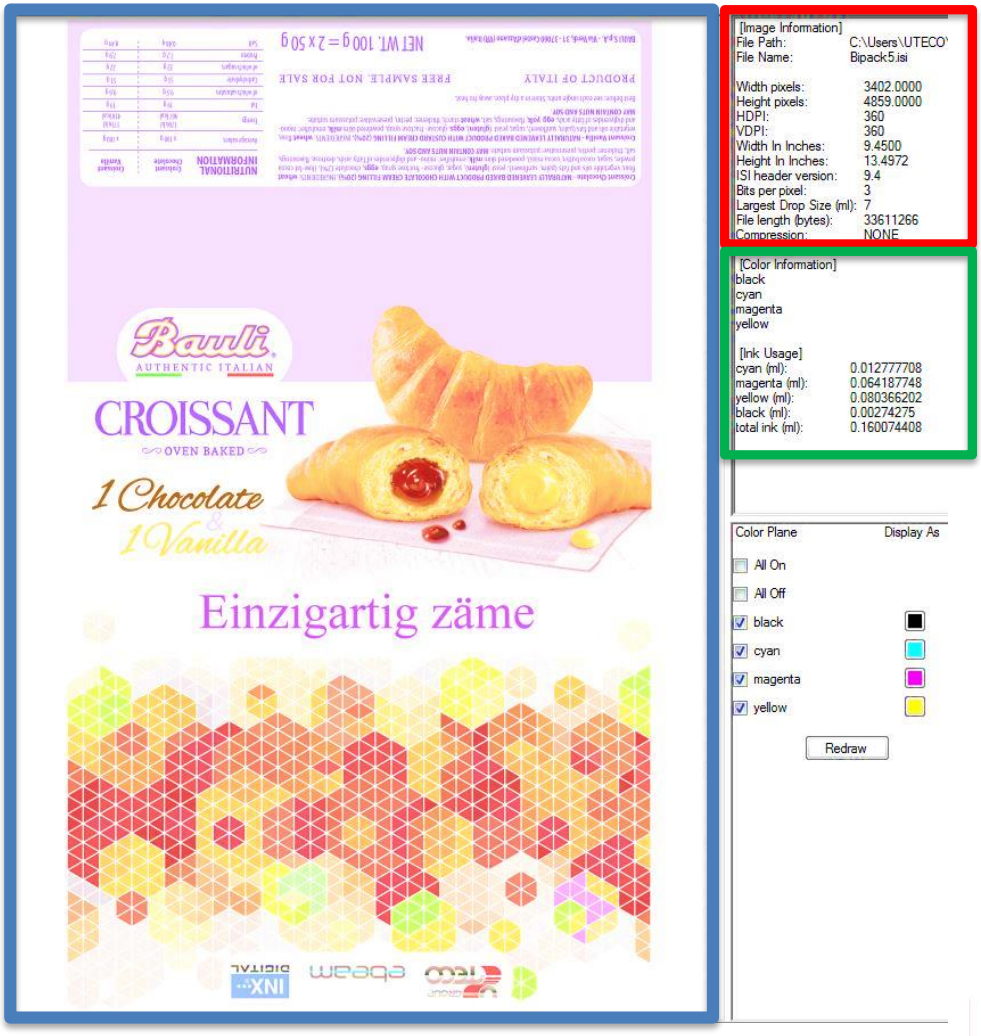
The partner:

- Family owned company, founded in 1922
- Main business in sweets and bakery
- Italian leader in croissants production

Giveaways:

- Secondary packaging containing 2 singularly wrapped croissants
- To be given to selected customers
- Example of digital printing and ebeam curing
- Different languages and different colors

FOOD/FMCG/PHARMA packaging, LABELS and others



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Height pixels: 4859.0000
HDPI: 360
VDPI: 360
Width In Inches: 9.4500
Height In Inches: 13.4972
ISI header version: 9.4
Bits per pixel: 3
Largest Drop Size (ml): 7
File length (bytes): 33611266
Compression: NONE

[Color Information]
black
cyan
magenta
yellow

[Ink Usage]
cyan (ml): 0.012777708
magenta (ml): 0.064187748
yellow (ml): 0.080366202
black (ml): 0.00274275
total ink (ml): 0.160074408

Color Plane | Display As
All On
All Off
black
cyan
magenta
yellow
Redraw

[Image Information]
File Path: C:\Users\UTECO'
File Name: Bipack4.isi

Width pixels: 3402.0000
Height pixels: 5265.0000
HDPI: 360
VDPI: 360
Width In Inches: 9.4500
Height In Inches: 14.6250
ISI header version: 9.4
Bits per pixel: 3
Largest Drop Size (ml): 7
File length (bytes): 36297690
Compression: NONE

[Color Information]
black
cyan
magenta
yellow

[Ink Usage]
cyan (ml): 0.032772402
magenta (ml): 0.042533172
yellow (ml): 0.06290919
black (ml): 0.004963086
total ink (ml): 0.14317785

Color Plane | Display As
All On
All Off
black
cyan
magenta
yellow
Redraw

Not only food packaging

Aluminium: EB guarantees adhesion and scratch resistance without the need of a primer or varnish

Non woven: most of the non woven polymers are EB friendly

Paper for laminates: take advantages from EB excellent gloss and scratch resistance

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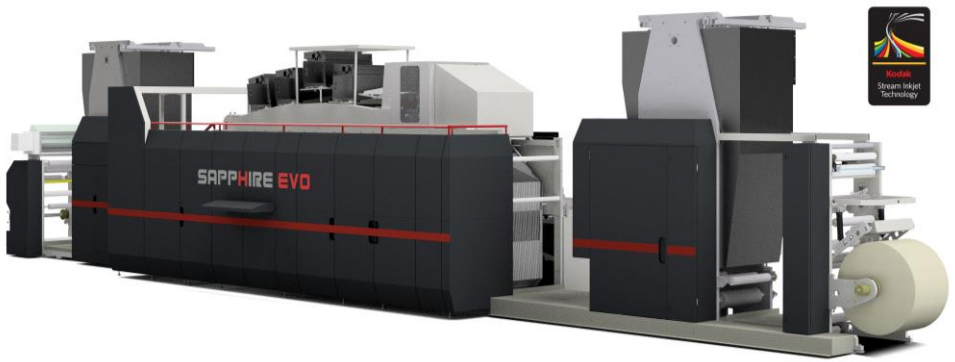
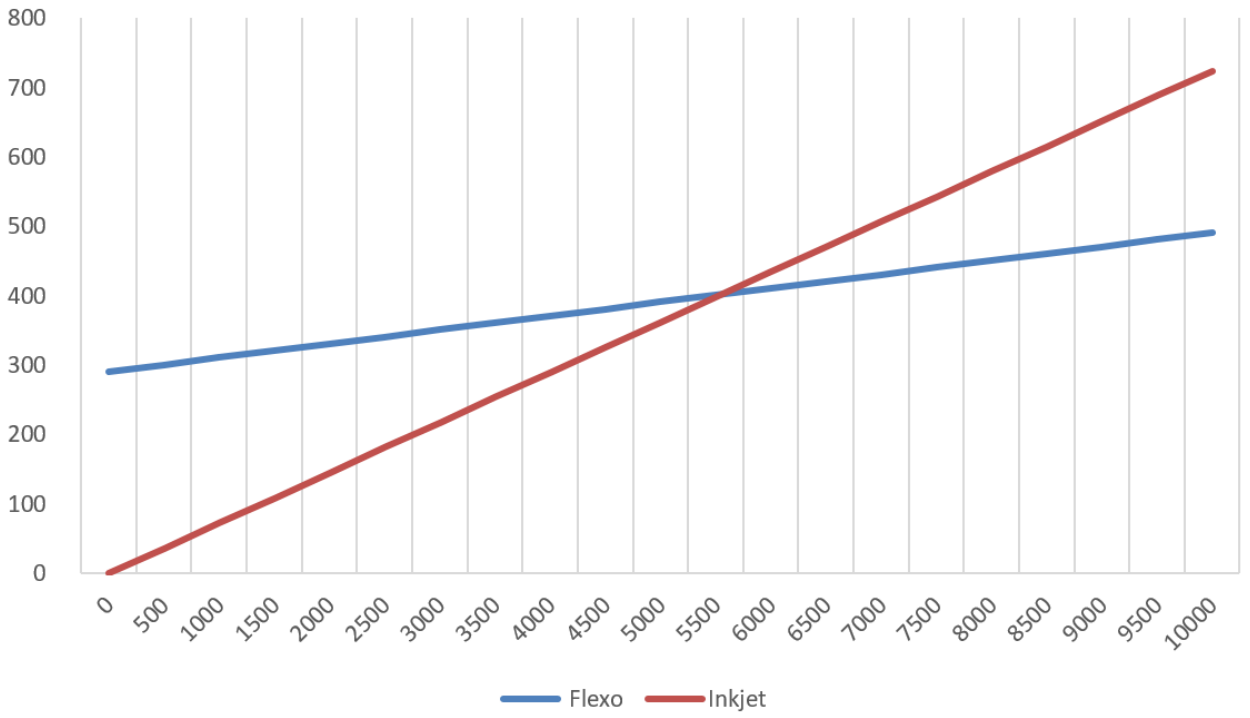
Does it make sense to invest in Digital printing presses for flexible packaging????



Examples of break even: flexo vs inkjet

Food packaging

m2	Flexo	Inkjet
0	291	0
500	301	36
1000	311	72
1500	321	109
2000	331	145
2500	341	181
3000	351	217
3500	361	253
4000	371	290
4500	381	326
5000	391	362
5500	**401**	**398**
6000	**411**	**434**
6500	421	471
7000	431	507
7500	441	543
8000	451	579
8500	461	615
9000	471	652
9500	481	688
10000	491	724



Costs included:

- flexo: ink, printing plate, energy
- inkjet: ink, energy

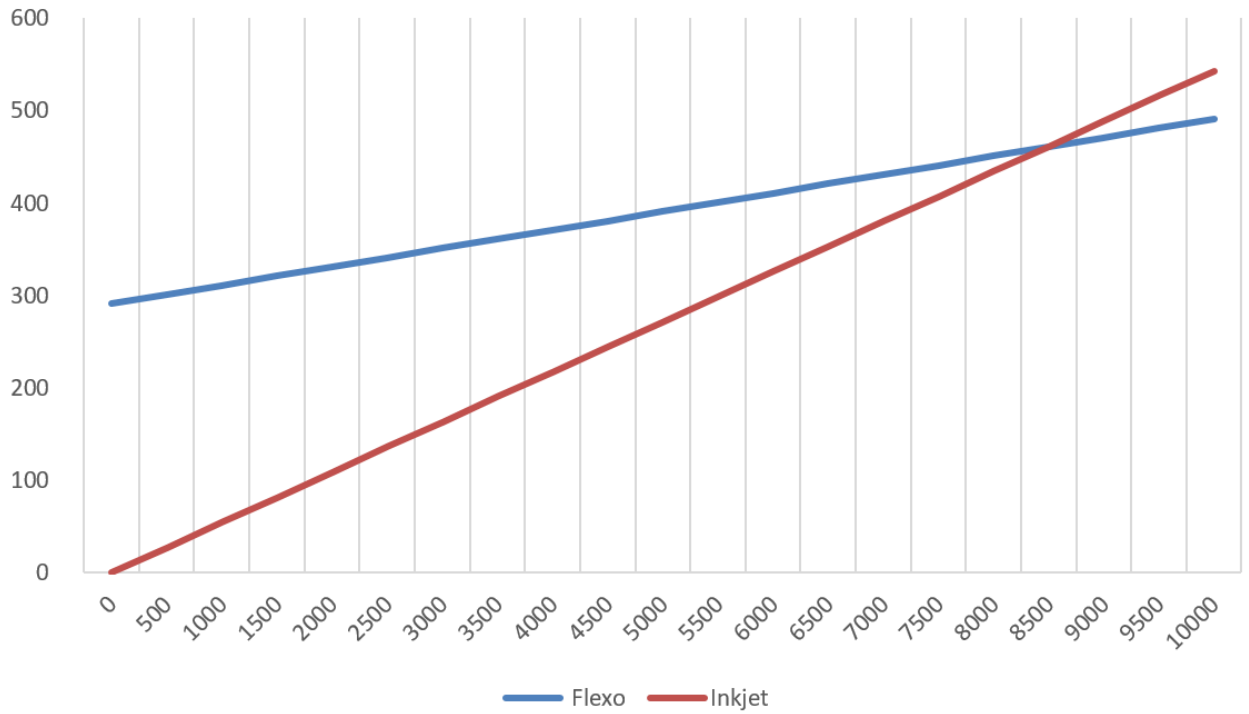
Inkjet ink cost:

X THB / kg

Examples of break even: flexo vs inkjet

Food packaging

m2	Flexo	Inkjet
0	291	0
500	301	27
1000	311	54
1500	321	81
2000	331	109
2500	341	136
3000	351	163
3500	361	190
4000	371	217
4500	381	244
5000	391	272
5500	401	299
6000	411	326
6500	421	353
7000	431	380
7500	441	407
8000	451	434
8500	**461**	**462**
9000	471	489
9500	481	516
10000	491	543



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- flexo: ink, printing plate, energy
- inkjet: ink, energy

Inkjet ink cost:

Y THB / kg

Don’t forget …

… **that in digital printing we do not have the following COST**:

DIRECT

- time for the job change: Printing plate placement and removal on the sleeve and insertion of printing cylinder/sleeve in the press
- time for press start-up: (register, pressures, ...)
- the stickyback
- consumption of anilox, blade and side sealing.
- waste materials (web, ink).

INDIRECT

- Thermal Oxidizer: purchase and feeding
- Printing plate cleaner and mounter
- Anilox/gravure cylinder cleaner and its chemicals
- Cost of solvent reclaimer and its energy consumption
- Solvent: cost of using, handling (insurance, safety equipment, fire-fighting system), and disposal
- Cost, consumption and footprint of a solvent reclaimer
- Cost of sleeve, anilox and printing plate/cylinder storage equipment
- Cost of washing tanks

What's next?

EB digital will be printing at PRINT4ALL
Individual printing trials available in June 2018

PRINT4ALL

More than the sum of the parts.

Printing has a new perspective. From all angles.

Fiera Milano, Rho, May 29 - June 1, 2018

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Water Based Higital High Speed Printing at UTECO open house during PRINT4ALL

Individual printing trials available in June 2018

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