

Digital Label Printing With UV Inkjet Single Pass Printing Technology





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Segment Manager
Label & Package Printing Division

Working at Durst: since 1978

Career steps:

1978 - 1983	Assistant at the Durst Training Center
1984 - 1988	Training Manager
1989 - 1994	Assistant Product Manager Fotofinishing
1995 - 2001	Product Manager Fotofinishing
2002 - 2005	Product Manager Digital Photo Division
2006 - 2008	Segment Manager Digital Photo Division
2009 - today	Segment Manager Digital Label & Package Printing

Durst Phototechnik AG

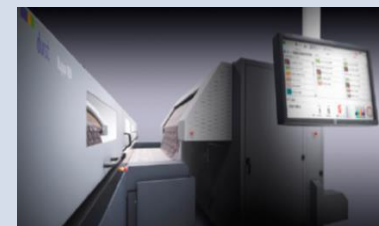
The Industrial Inkjet Specialist



Company Overview

Corporate Overview

Company:	Founded 1936 / Family owned since 80 years
Headquarter:	Brixen, Italy / South Tyrol
Employees:	550
Production Locations:	Italy and Austria
Products:	Digital Industrial Inkjet Printer
Market Segments:	<ul style="list-style-type: none">- Large Format Graphics Printing- Ceramics Printing- Label & Package Printing- Textile Printing- Glass Printing- Functional Fluids
Annual Turnover:	> € 220.000.000
Research & Development:	8-10% of revenue



The Durst Inkjet Research Center in Lienz / Austria

Fundamental Research

- Life Science: Printing of bones, artificial skin (tissue engineering), bio-sensors
- Safety Engineering: Safety Inks (RFID), Smart Labels
- Energy Technology: Solar panels, membranes for fuel cells
- Functional Textiles (Smart Textiles): functionalization for Personal/Wearable Energy,
- Implementation of digital anti-counterfeiting systems

Research Partners/Cooperations

- Christian Doppler Lab at the Leoben University
- Various European universities
- Cooperations with various EU-research programs

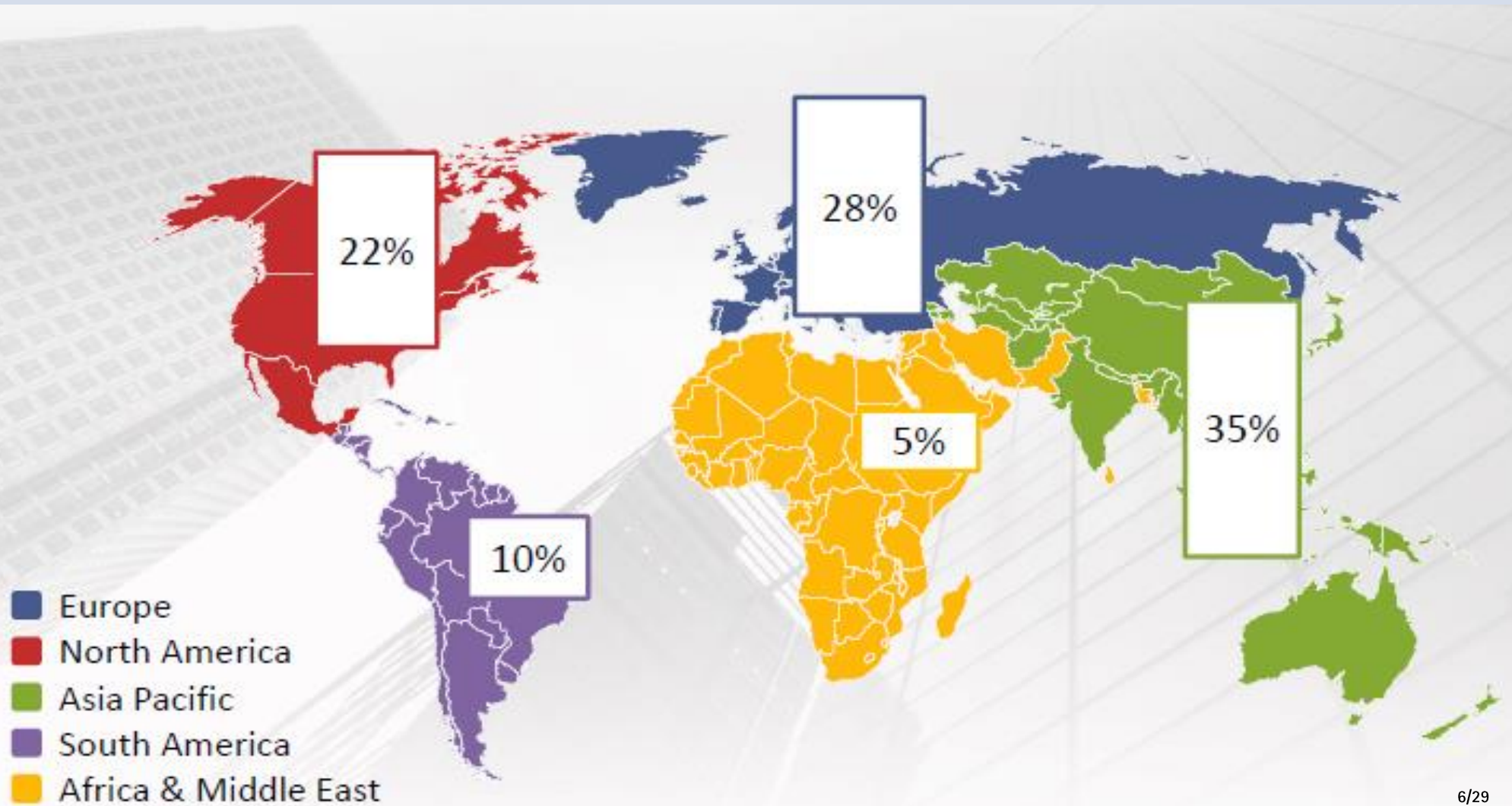


Global Label Demand

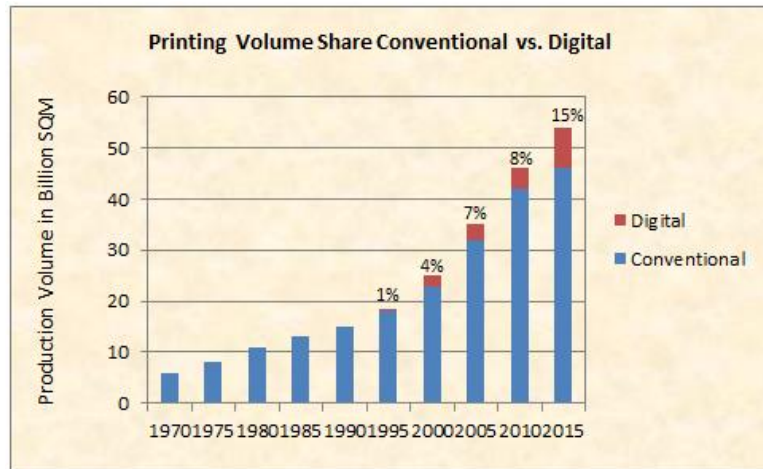
Global Market 2015 => approx. 55 Billion sqm

Annual Growth => approx. 3-4 %

Highest Demand => Asia/Pacific, followed by EU and NA

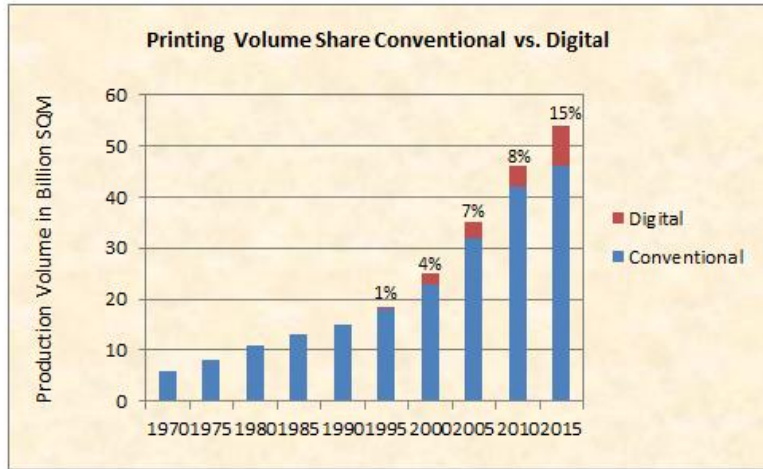


Digital Label Printing Market Development

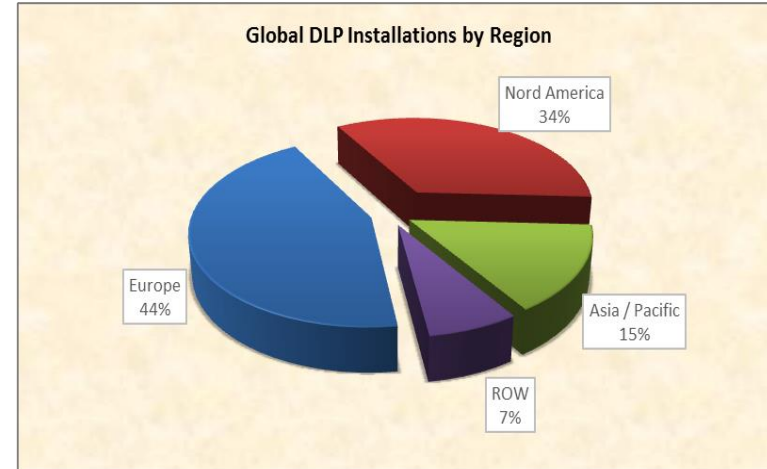


Source: InfoTrends

Digital Label Printing Market Development

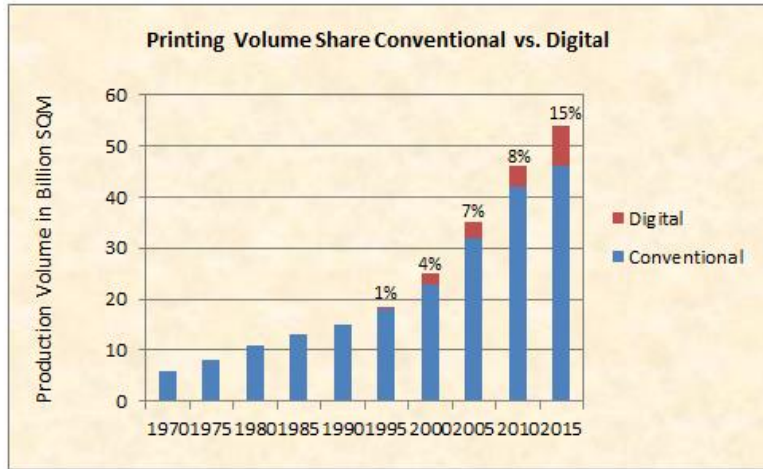


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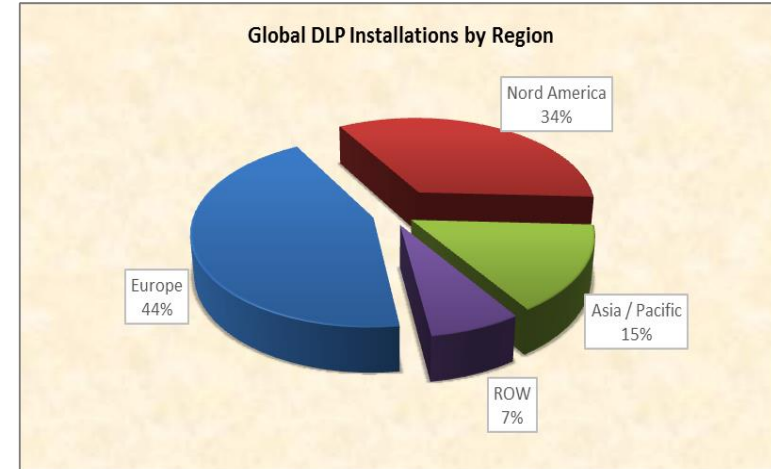


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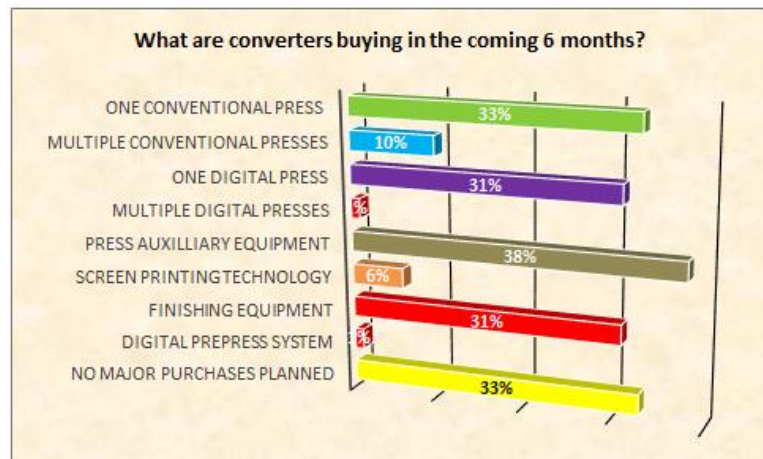
Digital Label Printing Market Development



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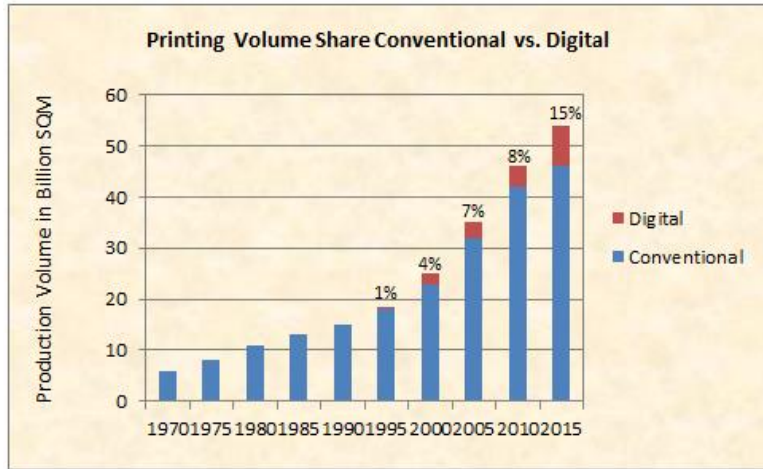


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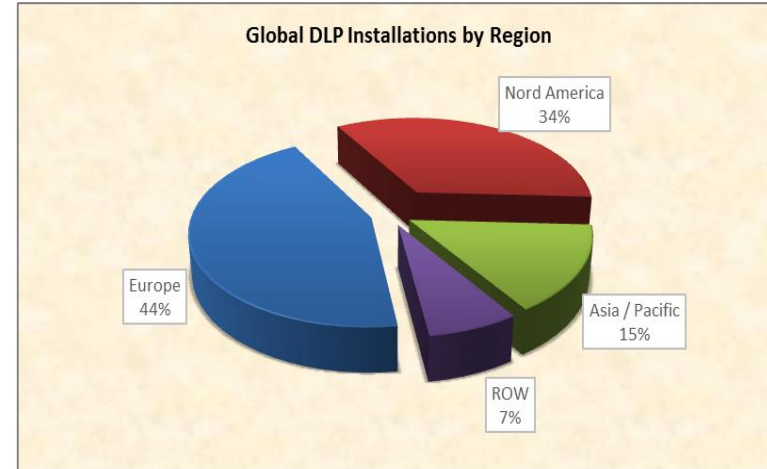


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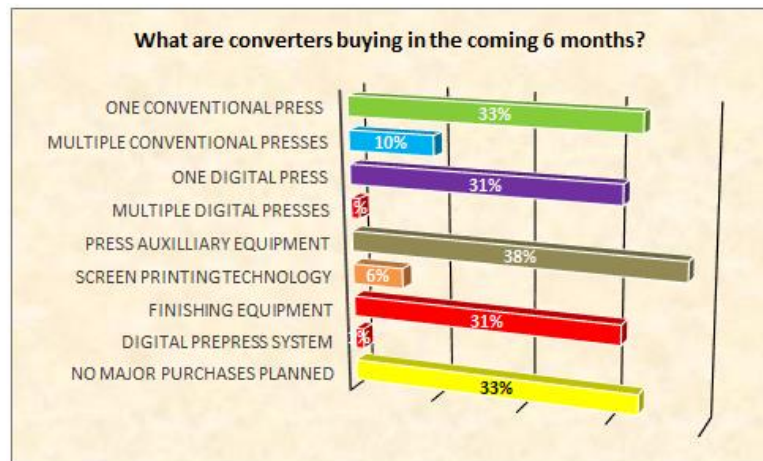
Digital Label Printing Market Development



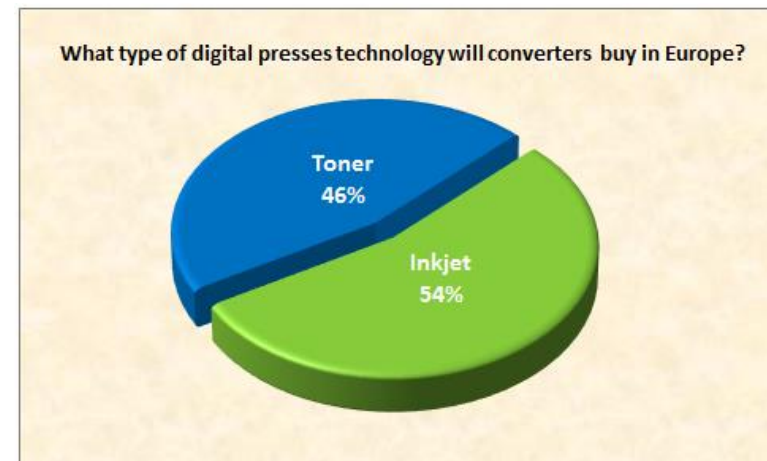
Source: InfoTrends



Source: InfoTrends



Source: Finat Radar



Source: Finat Radar

What are the "Drivers" for Digital Print?

- More competition
- More product launches, versions and OEM's
- From "Mass Marketing" to "My Marketing"
- Growing SKU diversity
- Lead time reductions
- Just in time manufacturing
- Last minute changes
- Forecast corrections
- Reduced stock levels
- Variable data for marketing and/or security reasons

All Driving Towards **SHORTER RUN LENGTH**

FROM

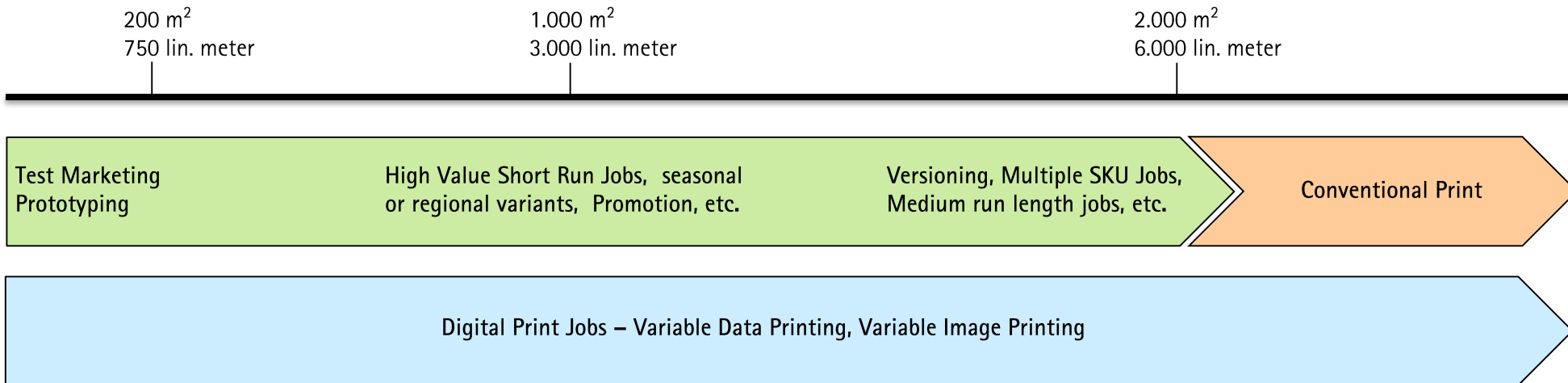


To



Digital Print Jobs – Sweet Spot Run Length

Digital Print Cost Cross Over versus Conventional Print



Who are the players?



Xeikon (Dry Toner – 4C+W)



HP-Indigo (Liquid Toner – 7C+W)



Durst (UV Inkjet – 6C+W)



Jetrion (UV Inkjet – 4C+W)



FFEI Graphium (UV Inkjet – 4C+W)



Epson (UV Inkjet – 4C+W)



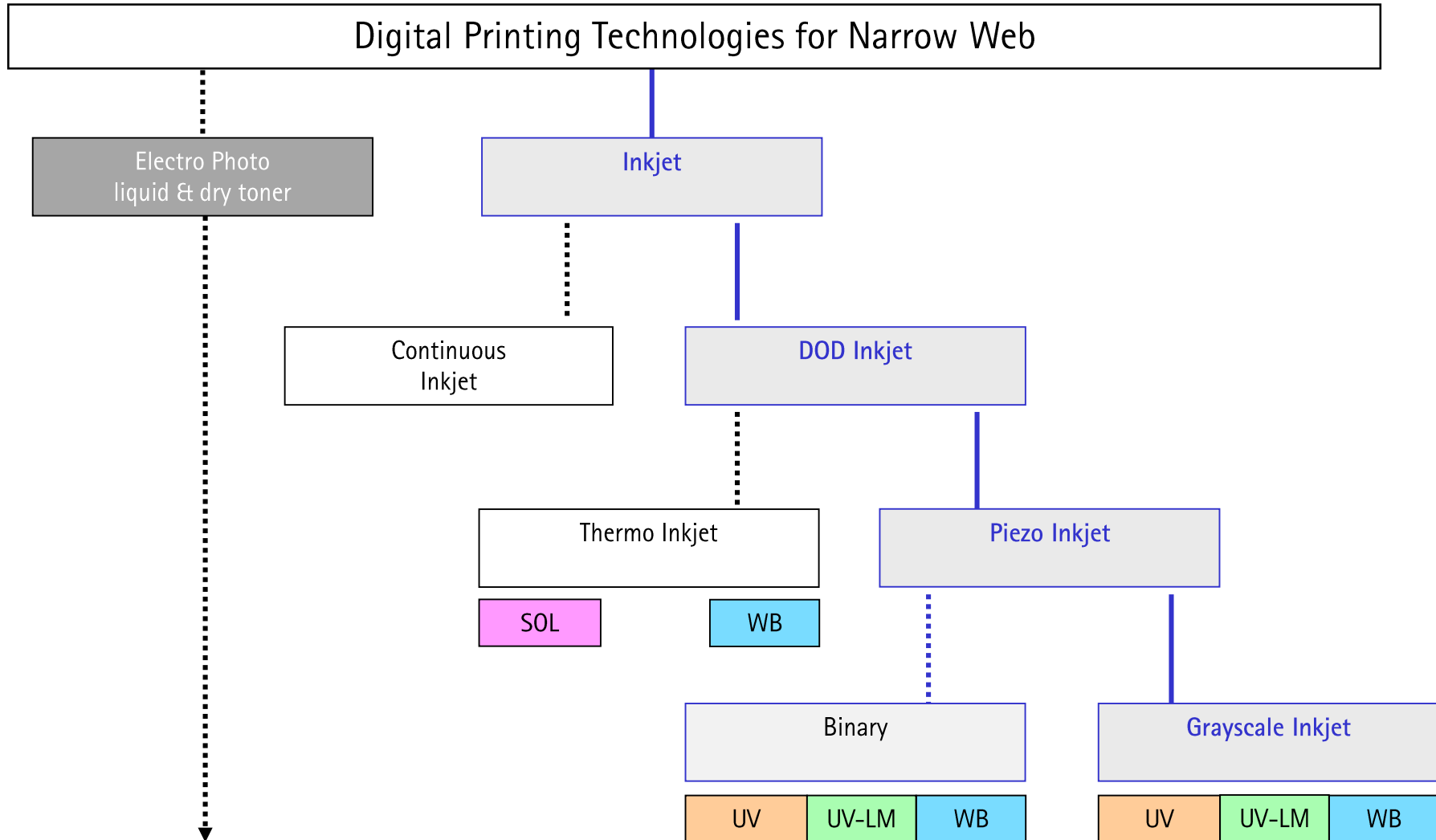
Screen (UV Inkjet – 4C+W)



Domino (UV Inkjet – 6C+W)



Gallus (UV Inkjet – 7C+W)



- Printing Resolution
- Stitch Handling
- Ink Formulation
- Web Transport
- Software



Inkjet 2006
300 dpi



Inkjet 2007
360 dpi



Inkjet 2014
1260 dpi



Original

Duplication of Printing Speed and Printing Resolution

- 2006 - 2009 24 lin. Meter @ 360 dpi
- 2010 - 2014 50 lin. Meter @ 600 dpi
- 2015 ... 50 lin. Meter @ 1200 dpi (75 lin. Meters @ 600 dpi)

The BIG Advantage:

With Single Pass UV Inkjet, the printing speed is independent from file contents, number of colors and repeat length.

Items to be checked & considered:

- Provide adequate print resolution & allow good print speeds combined with well developed & performing wave-form for accurate dot placement, dot size, drop volume etc.
- Print head alignment is critical (mechanical / electronical) to avoid visible stitching lines.
- Allow jetting of a high pigmented, high opacity white ink, which is essential for label printing applications.
- Provide a wide enough viscosity range to:
 - a) jet additional process colors (O/V/G) for an increased color gamut.
 - b) jet Low Migration UV Inkjet Inks, increasingly important for food & pharmaceutical compliance
- Ink supply architecture with continuous ink circulation to prevent deviated or blocked nozzles thus giving an increased reliability.
- Provide economic print head replacement costs. The more nozzles per print head, the higher the replacement cost.



	XAAR 1002	KYOCERA KJ4A
NPI	360	600
Nozzles	1000	2656
Rows	2	16
Speed in m/min	25	50
Min. drop size	6 pl	3 pl
Grayscale	8 levels - 6 - 42 pl	5 levels 3 - 14 pl
Ink compatibility	UV	Aqueous / UV
Viscosity range	7 - 25 mPas	3 - 10 mPas
Print width	70,5 mm	108,25 mm



	KONICA 1800i	SAMBA 1200
NPI	600	1200
Nozzles	1776	2048
Rows	6	
Speed in m/min	50	50
Min. drop size	3,5pl	2 pl
Grayscale	-	2 - 6 pl
Ink compatibility	Sovent / UV / Oil	Aqueous / UV / Latex
Viscosity range	10 mPas	3 - 10 mPas
Print width	75,14 mm	43 mm

Ink properties

Inkjet inks allow to work with surface tension of a large range of substrates

Color

Inkjet inks provide a wide color gamut to accurately reproduce intended colors in the print and to match high % of Pantone range.

White Ink Opacity

Inkjet provides high pigmented, high opacity white ink, which is essential for label printing applications on transparent or metallic substrates

Performance

Inkjet Inks provide high durability, with properties such as high light-fastness and physical adhesion (chemical & scratch resistance) tailored to the specific application of the finished print.

Reliability & consistency

Inkjet Inks jet reliably, printing high quality work for long periods with minimal intervention, totally consistent, producing the same high quality images and colors in every print, between every manufactured batch.

Economy

Inkjet inks allow converters to run their operations in an efficient and cost-effective manner, providing their customers with high quality print at a reasonable cost.



Migration

Inkjet vendors start introducing **LOW MIGRATION** inks to meet food & pharma compliance.

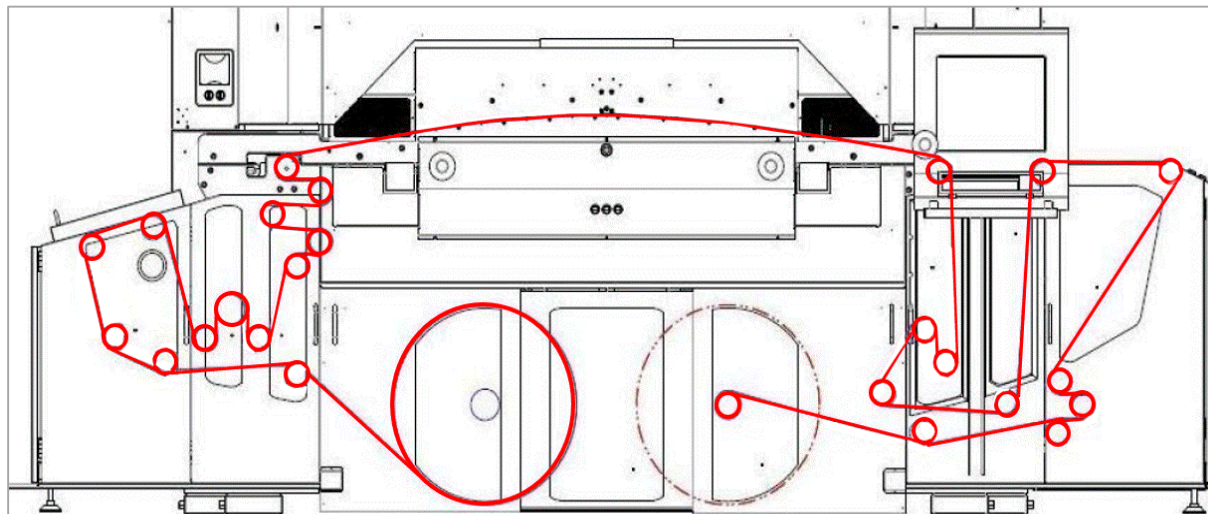
- Designed for primary packaging
- Optimized for image and cure profile on the specific printer
- Meet European Industry standards (EUPIA, Nestle, Swiss Ordinance)
- Migration results ratified and certified by an external test institute

What Level of Migration is Acceptable?

Measured Level	Description	What's Acceptable
< 10 ppb	No Effect Level	Non-Carcinogenic
10-50 ppb	Evaluate Test Results	3 Negative Mutagenicity Tests
> 50ppb	Full Evaluation Needed	Applicable Specific Migration Limit (SML)

Must have characteristics include:

- ❑ 3 zone web tensioning system
 - Highly accurate web tracking (max. +/- 15 micron)
 - High register accuracy (max. +/- 15 micron)
 - Accurate unwinding / rewinding
- ❑ Built-in substrate cleaning (dual/single side) and surface tension correction (Corona)



Must have characteristics include:

- Accurate press linearization
- Ink limiting function to reduce costs
- Accurate substrate profiling
- High speed ripping & dithering
- Accurate color management
- Easy of operation
- Automation & workflow



Each year, inkjet has the ability to go wider, faster and produce better output. This is due to the extensive R&D investment from major players in the inkjet industry.

- Singel Pass Inkjet is fully scalable in print width and speed
- Wide choice of substrates without any particular need for priming
- Inkjet features contactless printing, requiring much less service & maintenance interventions, leading to machine up-time performance between 90-95%.
- Presses can handle a large range of substrate thickness (20 – 500 micron)
- Reliable, consistent and high quality output print to print, day to day, year to year
- Printing of unlimited repeat lengths
- Speed of the market's top inkjet presses exceeds that of toner technology by far
- No need for post press varnish thanks to high resistance performance in regard to light fastness, adhesion and abrasion

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Product Portfolio – Labels & Package Printing

Tau 330 Product Portfolio Overview / Summary

- Tau 330 High Speed – Single Pass – UV Inkjet – 33 cm wide – Labels & Specialty Package Printing Press with up to 7 color capability and printing speeds up to 48 lin. meters/min.
- Tau 330 E – Economic UV Inkjet Label Press, engineered with particular attention to equipment cost and running costs while maintaining highest print quality and printing speed.
- Printing resolution up to 1260 dpi for best possible print quality and reproduction of small type & graphics
- Standard UV Inkjet Ink Set for all industrial and other applications
- Low Migration UV Ink Set for Primary Food & Pharma Packaging
- High Pigmented Inks Set for reduced ink consumption, flexo-like look
- Chill Roller option for unsupported foil applications > 20 micron
- Inert Gas UV Curing chamber for low odor
- In-Line Video Inspection System provides highest production security & consistency
- In-line Laser Finishing System for a complete DIGITAL end-to-end workflow
- Flexible integration with peripheral devices (jumbo winder, 3rd party conventional finishing devices)



Tau 330



Tau 330 E



Tau 330 with
inline Laser Finishing



Tau 330 with
inline Conventional Finishing



Tau 330 with
inline Jumbo Winders

Tau 330 Target Sectors – Narrow Web Application

Label Applications

- Industrial & Security Sign Labels, Household and Chemical Labels thanks to high performance UV inkjet inks
- Versioning Jobs by in-printing on pre-printed labels or printing on pre-die-cut labels with "Inserter"
- Print on "blank labels" with "Re-Insertion" thus eliminating post-press finishing
- Food labels, Pharmaceutical labels, Body care, Health & Beauty thanks to Low Migration inks
- Variable Data Printing



Specialty Package Printing Applications and Others ..

- Primary food packaging printed on unsupported, heat sensitive film and foils thanks to food compliant LM inks and built-in Chill Roller
- Aluminum Foil Printing for Blister Packs, Aluminum Lids (Yogurt, Cosmetics, canned food, etc.)
- Printing on multi layer laminates for tubes (cosmetics, body care, food, etc.)
- Cardboard Applications thanks to the broad range of suitable substrate thickness < 500µ.
- Folding carton applications
- Dual side printing applications such as tags & tickets



Tau 330 Installations & Reference Sites

World Wide Installations: Tau 150 / Tau 330 ~ 88 units, 7 clients with multiple machines



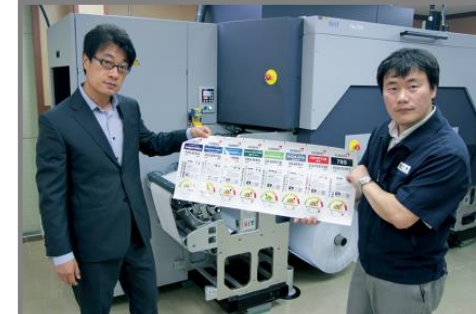
The Label Makers / UK (2 units)



RAKO Etiketten / D



Rospil / E



Serom / KR (2 units)



Techmay / F



SungChang / KR (2 units)



Practimax / MY



InnovaStore / B



TLF Graphics / USA



Omnilabel / NL (2 units)

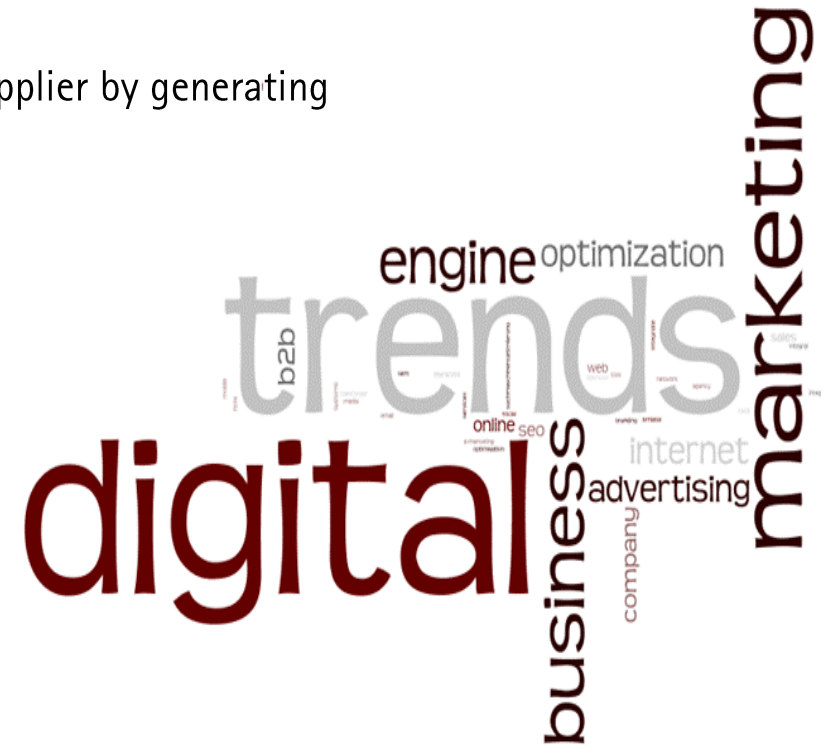


Lunaxe / F



Druckmaus / A

- Master the increasing number of short & medium runs more cost effective.
- Use VDP as a powerful tool to engage the consumer and supplier by generating physical and virtual consumer experience .
- Produce customized ideas & marketing messages quickly.
- Meet customer's needs with "On-Demand-Printing"
- Improve inventory management and cost control.
- Reduce time-to-market cycles.
- Improve quality control – run by numbers.
- Reduce production costs (less variable, no plates, less material waste, shorter setup times, reduced personnel costs)
- Create free capacity on conventional printing presses for profitable, longer runs



4 messages at the end ...

1

Digital is here to stay! Digital Technology is mature and print quality is accepted. Ink Jet will dominate the future market place ...

2

Digital Print offers beside cost savings innovative added value opportunities for growth ...

3

Digital expands your ability to respond to new customer requirements, and it increases your competitiveness ...

4

We, as a supplier to this industry, are here with our local partner offering a valid digital solution and the required technical support

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Thank you!

Helmuth Munter

Durst Phototechnik AG

Segment Manager

Digital Label & Package Printing

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