

Opportunities in Current & Emerging Markets

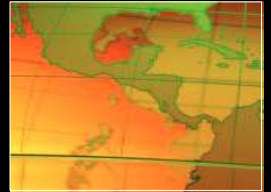
Fespa Summit Hamburg, DE



Ron Gilboa

Director, Industrial printing

February 2017

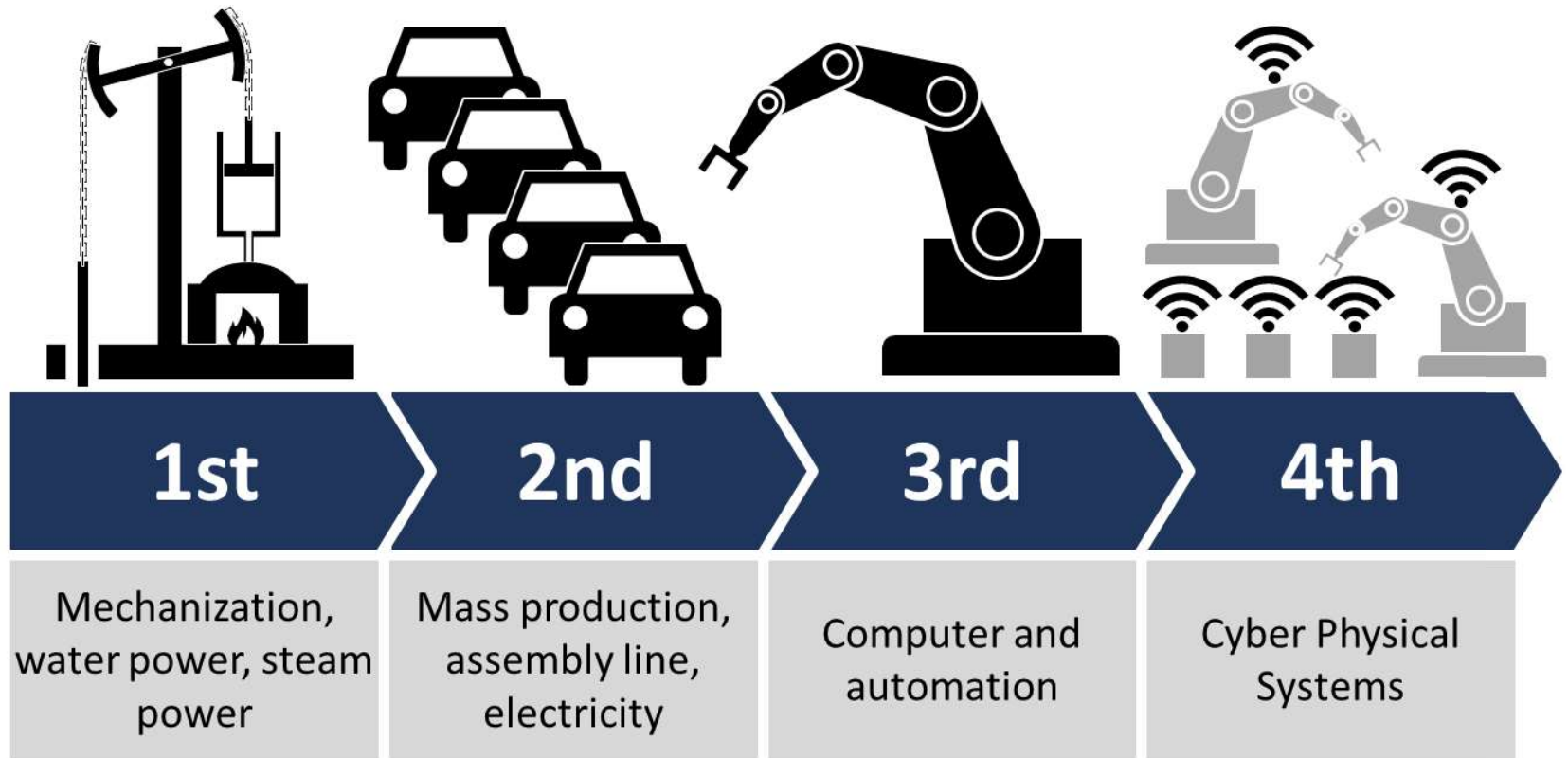


InfoTrends



customer
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fails
certainly
Customers
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driver
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idea
shiny
floor
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need

Industry 4.0



Sample Slide – Agenda

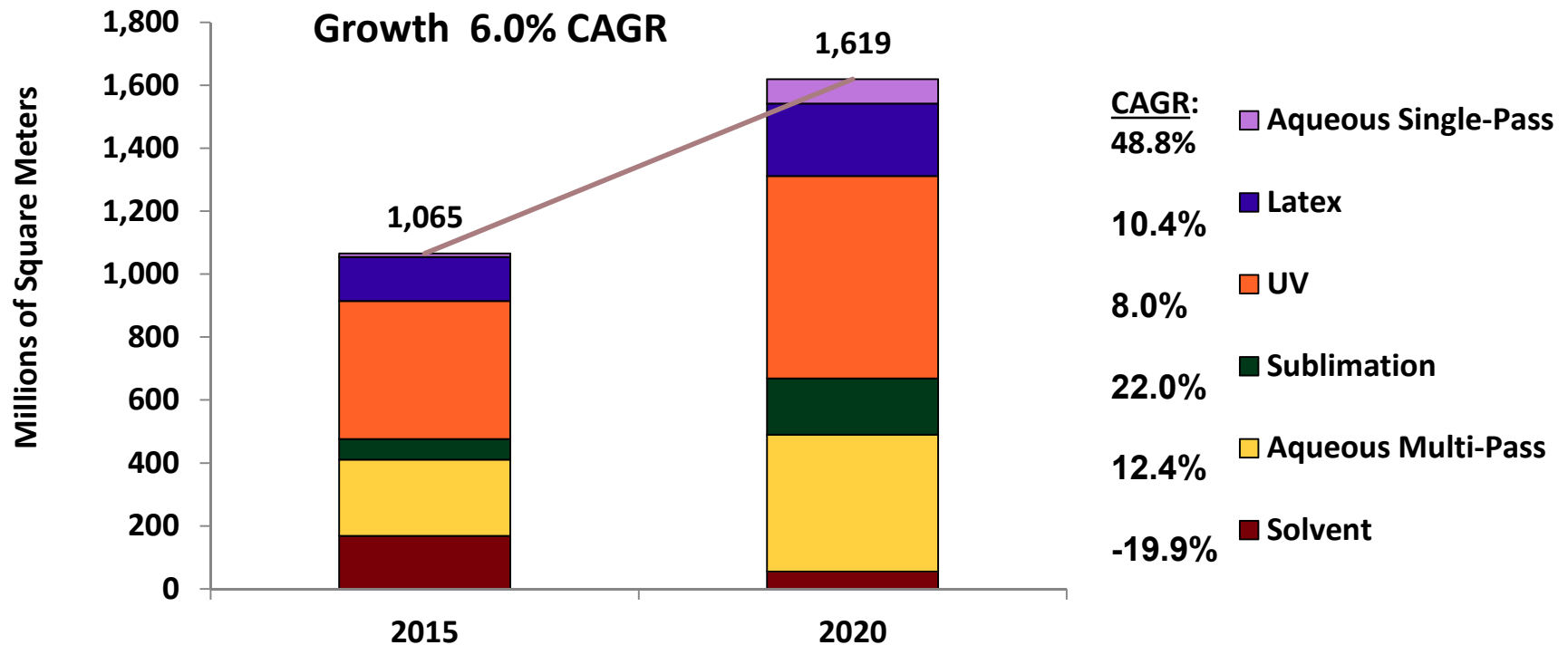
- 1** Sign & display – Expanding Horizons...
- 2** Textile printing – Is it that easy ...?!
- 3** Direct to garment – Beyond the Tee's...
- 4** Corrugated packaging – What's in a box...
- 5** Q&A

Sign & display

Expanding Horizons...

EMEA Graphics Production Wide Format Print Volume: 2015 – 2020

Diversity Drives Growth



Technology - What's happening in wide format printing

- **Aqueous is in resurgence due singularly to the actions of HP Latex & Single Pass Pigment.**
- **Dye sublimation for soft signage and exhibition graphics continues at a healthy growth rate.**
- **UV continues to grow at all price band levels, hybrid and flatbeds leading the way.**
- **Tabletop & Benchtop UV have created an interesting low end high margin business great for the franchise and small shop to participate in.**
- **Solvent continues to drop in sales within NA & EMEA Markets at double-digit rates.**

Keep Track on Innovation

Ink

- New generation of water dispersed UV inks
- UV inks elongation range reach 400%
- Inks for dimensional printing
- Water based inks with nozzle anti-clogging properties
- Wider gamut sublimation inks
- Outdoor capable latex inks

Media

- New PET based media as alternative to vinyl
- New lightweight sublimation paper
- Direct sublimation on polyester
- Range of thermoforming media
- Pretreated wood product for inkjet

Keep Track on Innovation

Production Workflow

- Support growing job volume and complexity
- Self calibrating printers liked to color management
- Integration of job instruction with inline robotics & finishing
- Industry 4.0 - integration with MIS or product life cycle management (PLM) systems

Customer Collaboration

- Support cross media collaboration using print, display and web
- Support lights out operation for B2B2C clients
- Web to print integration
- Continued efforts to maintain quality and sustainability standards
- Offering ancillary services (e.g. Cut & Sew, Welding, Carpentry)

New Applications & Automation = Growth



Xerox



KIP



Massivit



Formica



HP

Mimaki



Swiss Q Print



Zund



INCA



Value Add Services = Growth



CNC Routing



Interactive displays



Decor



www.parcsigns.co.uk/

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Diversity = Growth

To press

Digital printing



Digital printing white + varnish



Photo and color copy



Poster print



CAD Plandruck



CD / DVD printing



Scanservice



Textildirektdruck



Flex and flock printing



Hot transfer pressure



Tie

Spiral binding



Adhesive binding



Hardcover with Foliendruckruck



Hardcover with embossing

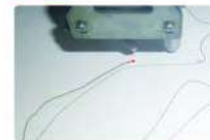


Advertising technology

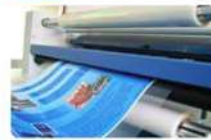
Foil inscription



Laser cutting



Laminate



Laminating



WiesingerMedia.de



www.wiesingermedia.de/

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Graphics, Wide Format Printing ...The Opportunity

- **Democratize access to market for brands**
 - Interdisciplinary approach to new products
 - Market segment focus
- **Supply chain efficiencies**
 - Transition to Mass Customization
 - Total solution strategy
 - Reduce waste and inventory
 - Shorter time to market
- **Production efficiencies**
 - Sustainable production
 - Printing short runs
 - Personalized
 - End-to-end production flow



Graphics, Wide Format Printing ...The Challenge

- **Technology is ubiquitous**
 - Price differentiation may yield a race to the bottom
 - Focus on added value services
 - Which technology to invest in next ...?
- **Quality assurance**
 - Color consistency
 - Defect free print
 - Support discrete digital applications
- **Supply chain**
 - Manufacturing cost
 - Meet supply chain demands
 - Maximize relations with brands
- **Production efficiencies**
 - Workflow automation
 - Managing production capacity
 - Lights out operation



Texile printing



Is it that easy ...?!



The global fashion apparel industry has surpassed the market size of US\$1 trillion since 2013, now it represents nearly 2% of the world GDP, and almost 75% of world's fashion market is concentrated in Europe, USA, China and Japan.

- Business Vibes, 2015

Image Source: PEXELS



Textile industry is one of the top 3 water wasting industry in China, discharging over 2.5 billion tons of waste water every year!

- Business Vibes, 2015

Image Source: PEXELS

Digital Textile Printing – Application Landscape



Apparel

Fashion
Fast Fashion
Couture
Sportswear

Accessories:
Scarves
Ties

Footwear
Bags
Belts



Décor

Upholstery
Linens
Drapery
Wallcoverings
accessories



Industrial

Transportation:
Automotive
Aerospace
Marine

Military
Medical

Carpets



Direct-To-Garment

T-Shirt Printing
Cut garment
Accessories

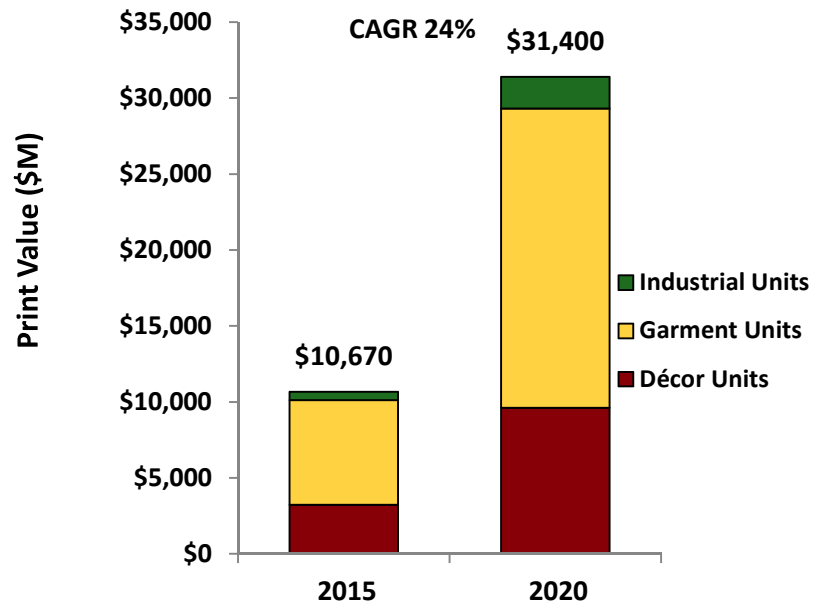


Graphics Communications

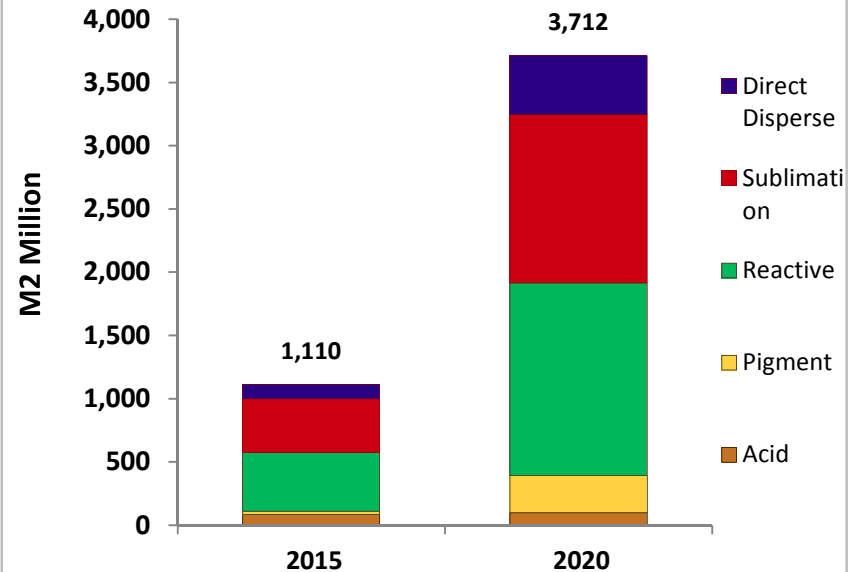
Signs/Posters
Banners
Flags

2015-2020 Digital Textile Print Continued Strong Growth

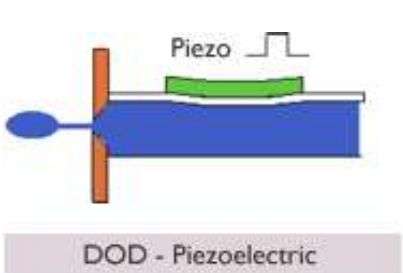
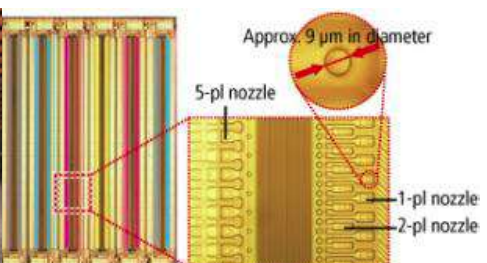
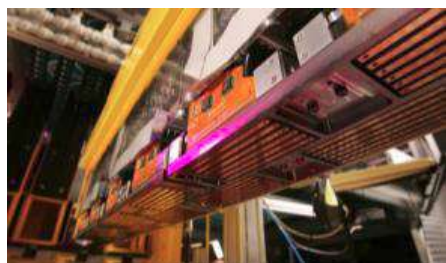
Value of Print



Digital Print Volume



Inkjet In Textile Printing



Print Line

Printhead

Nozzle



Zimmer



EPSON



Mimaki



Roland



SPG Prints



Dover MS



Konica Minolta



Kornit



Aleph



EFI Reggiani



Epson

Scalable Manufacturing Solutions



Source: MTEX

Traditional fabric manufacturing

About €500,000 – ALL IN

Sustainability - Industry Initiatives Drives Action



- **EFI-Reggiani Green Textile Factory** total production from yarn to finished fabric



Source: Miroglia

- **Textile 3.0 initiative by Dover MS**

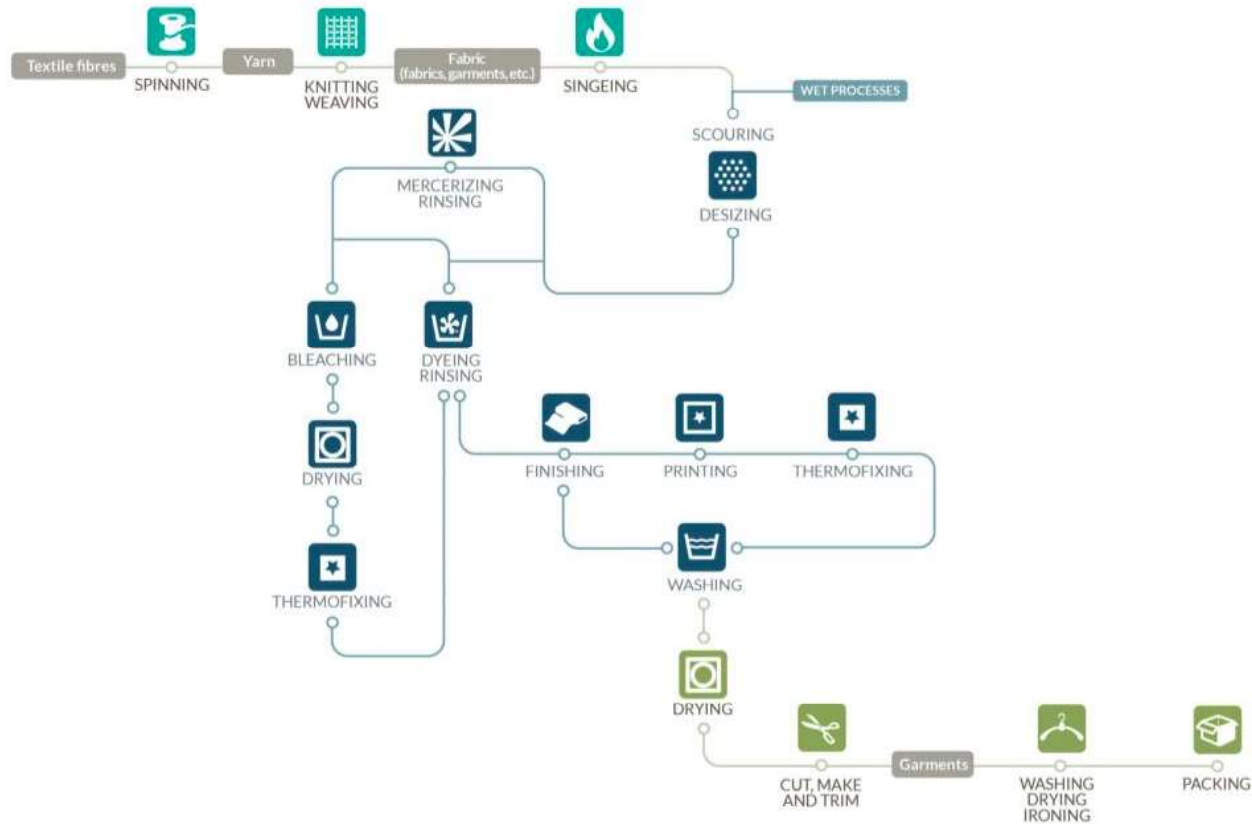


- **Brand owners, designers & printers** are seeking “greener” fabric production **Better Cotton Initiative (BCI)**

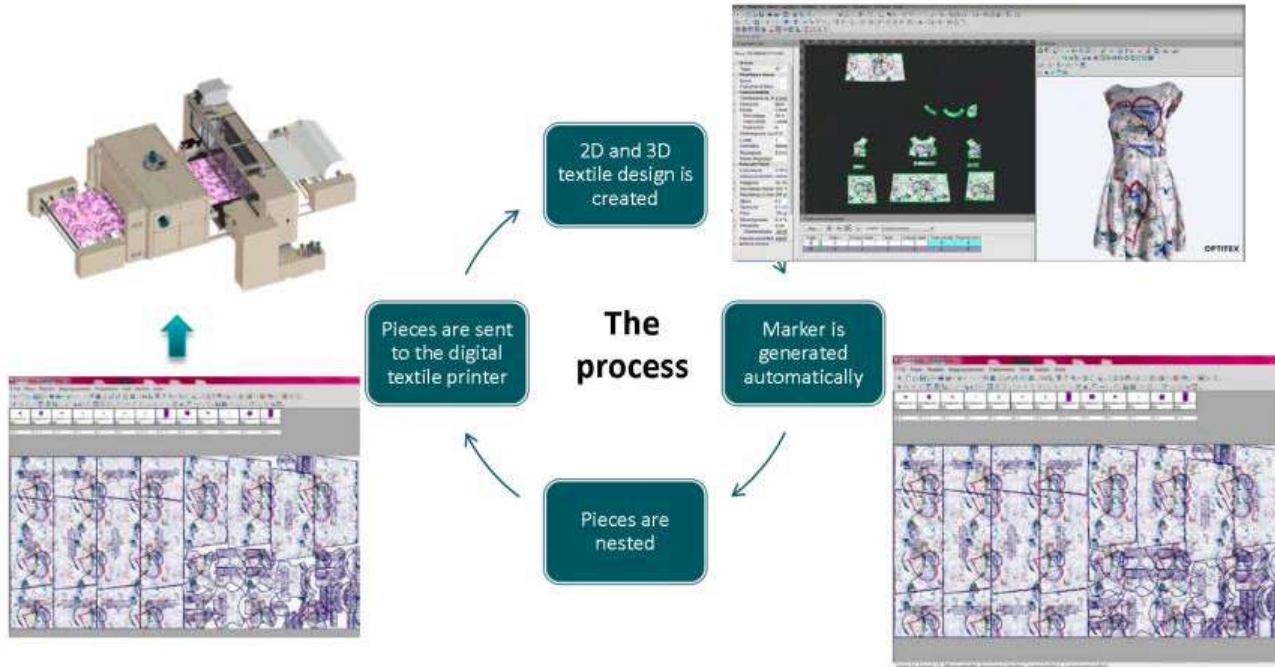
Selection of BCI Supporting Retailers & Brand Owners



Key Stages in Textile Fabrication



Digital Change - Integrated Workflow & Production

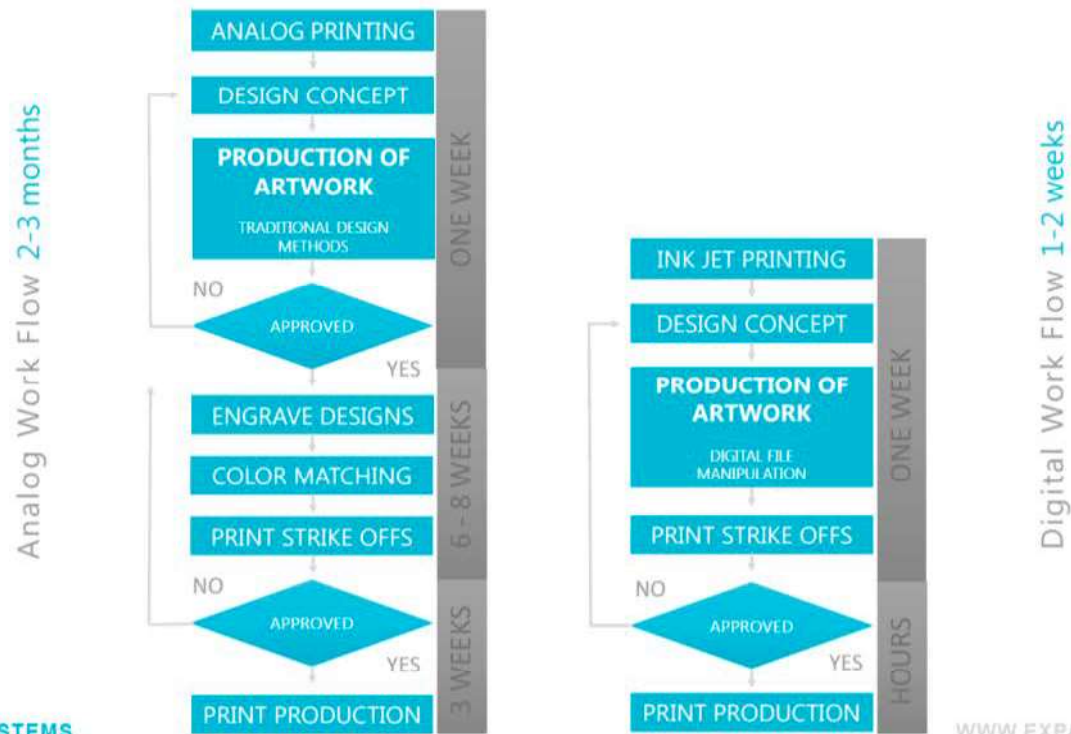


efi | **OPTITEX**

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The Digital Advantage

Conventional Vs. Digital Workflow



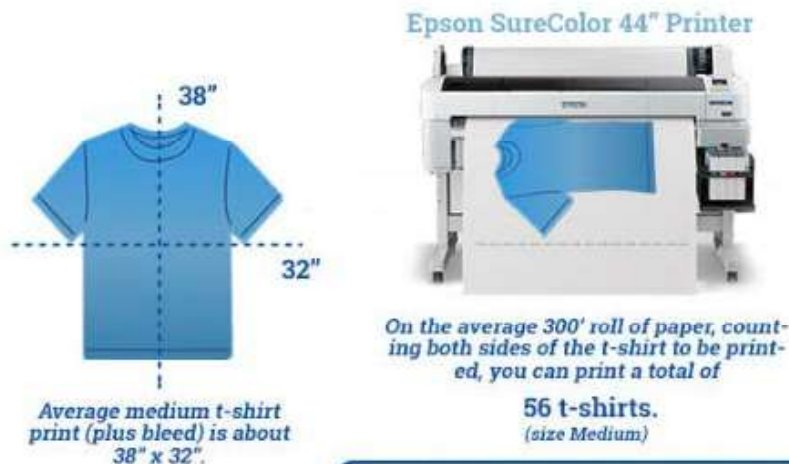
Typical Apparel Price / Cost Structure



Source: Portland Garment Factory

DAVID BADDERS/THE OREGONIAN

Polyester Sublimation transfer Printing Cost



And that's if you don't get smart with nesting!



	Low Estimate	Average	High Estimate
Total Print Size	8.44 ft ² @ 1mL ink		8.44 ft ² @ 1.5mL ink
Print Cost	\$0.97	\$1.21	\$1.46
Media Cost	\$0.29	\$0.33	\$0.36
T-Shirt Blank Cost	\$5.97	\$6.31	\$6.65
Total Cost	\$7.23	\$7.85	\$8.47
Estimated Retail Value	\$25.00	\$32.50	\$40.00
Total Profit	\$17.77 71.1%	\$24.65 75.8%	\$31.53 78.8%

So how many t-shirts to print total to pay off your genius Epson SureColor sublimation printer investment?

Just 324 t-shirts.

Source: Coastal Business Current, Kristen Harvey 2015

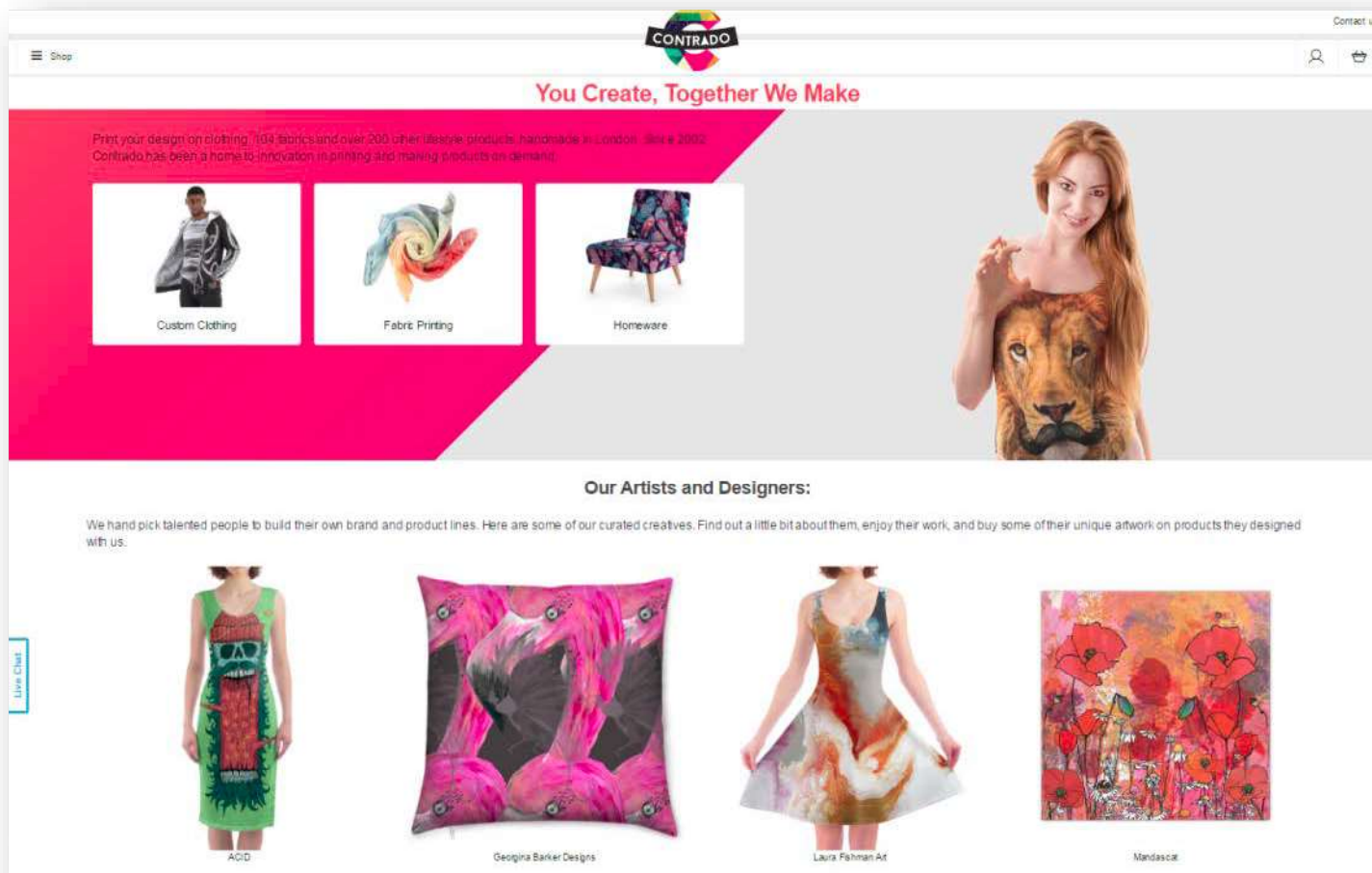
The Challenge...



Hangzhou China

Quality Assurance & Fabric Testing

- **Critical for printed fabrics for garment and décor use is meeting standard testing that ensure the usability and quality of final product**
 - Typically performed by a certified testing laboratory such as Intertek
<http://www.intertek.com/textiles/testing/apparel/>
- **Material testing types**
 - Physical tests – breaking, tearing, bursting, pilling, air permeable, abrasion
 - Chemical testing – color fastness to – sunlight, washing, crocking (rubbing two fabrics together) , frosting, perspiration, dry cleaning, gas / fumes
 - Test source references: American Association of Textile Chemists and Colorists (AATCC) <http://www.aatcc.org/test/methods/>



<https://www.contrado.co.uk/>

Digital Textile Fabric Printing...The Opportunity

- **Democratize access to market for brands**
 - Effective quality output for small & large brands
 - Design flexibility, customization, colorways and complex print designs
 - Support discrete digital applications
- **Supply chain efficiencies**
 - Transition to Mass Customization
 - Fast reaction to changes in fashion trends
 - Reduce waste and inventory
 - Shorter time to market
- **Production efficiencies**
 - Reduced inventories
 - Sustainable Production
 - Printing short runs
 - Prototypes, localized, personalized
 - Simplifying print production process
 - Augmenting conventional printing



Digital Textile Fabric Printing...The Challenge

- **Fabric sourcing and preparation**
- **Fabric finishing**
- **Technology**
 - Printer for each ink type
 - Accessories (e.g. dryer, steam, wash, inspect)
- **Quality assurance**
 - Maintain color consistency
 - Defect free print
 - Support discrete digital applications
- **Supply chain**
 - Manufacturing cost
 - Supply chain demands
 - Market access, brands
- **Production efficiencies**
 - Workflow automation
 - Inventory management
 - Production capacity



Direct-to-Garment Beyond the Tee's...

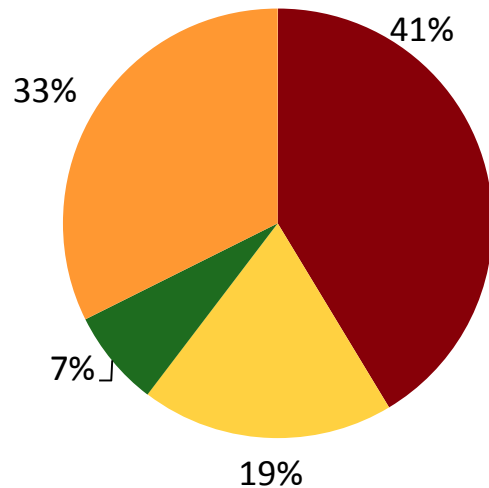
Digital Garment Revenue -Strong growth

Driven by adoption of industrial class printing equipment

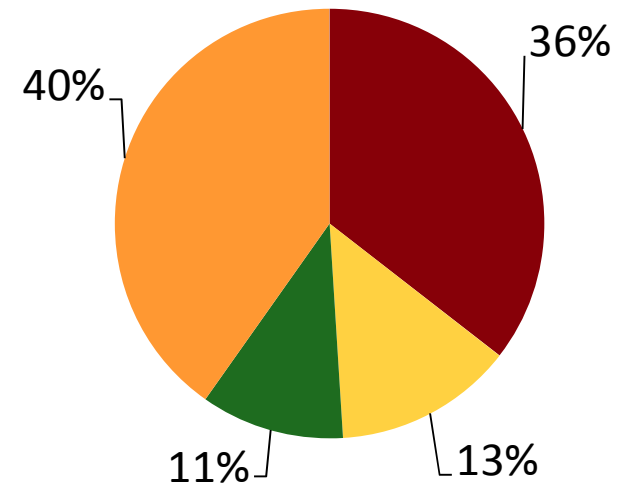
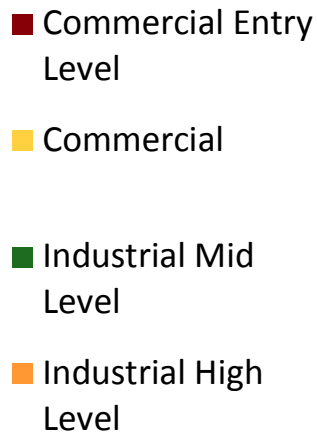
2015

CAGR 23%

2020



US\$ \$5,593 m



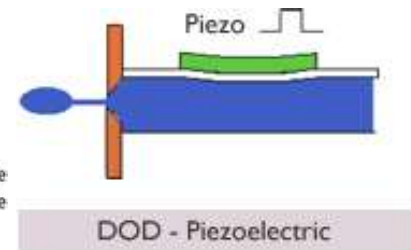
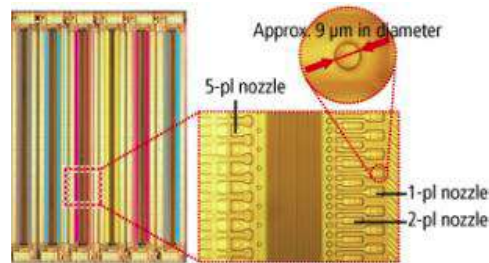
US\$ \$15,800 m

Note : Forecasted at 2015 prices

Source: InfoTrends 2015-2020 DTG Market Forecast

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Direct to Garment Printing



Printhead

Nozzle

Brother GT-3



Commercial
Entry Level

Epson F2000



Commercial

Kornit – Avalanche R



Industrial

Kornit Vulcan



Industrial
High Level

Homer D5 Oval



Industrial
Hybrid

Belquette MOD-1



M&R M-Tex



Polyprint TexJet echo

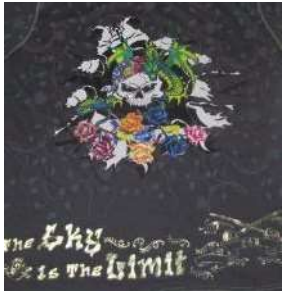


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Beyond the Tee - Range of Applications



Fashion



Accessories



Sports



Natural

Synthetic

Natural & Blends

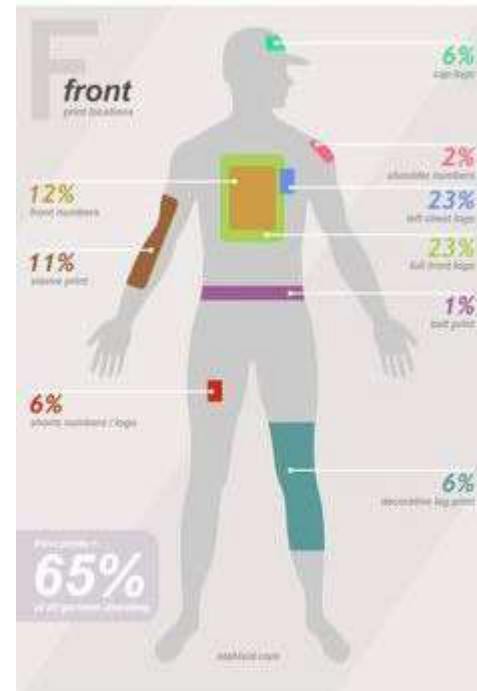
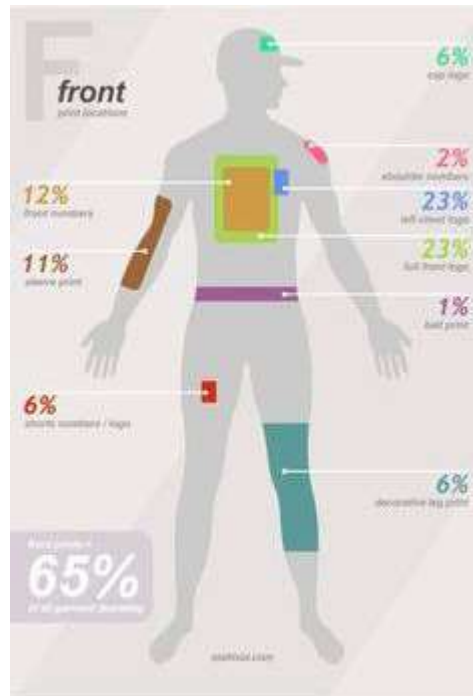
Hybrid Print

Direct Print

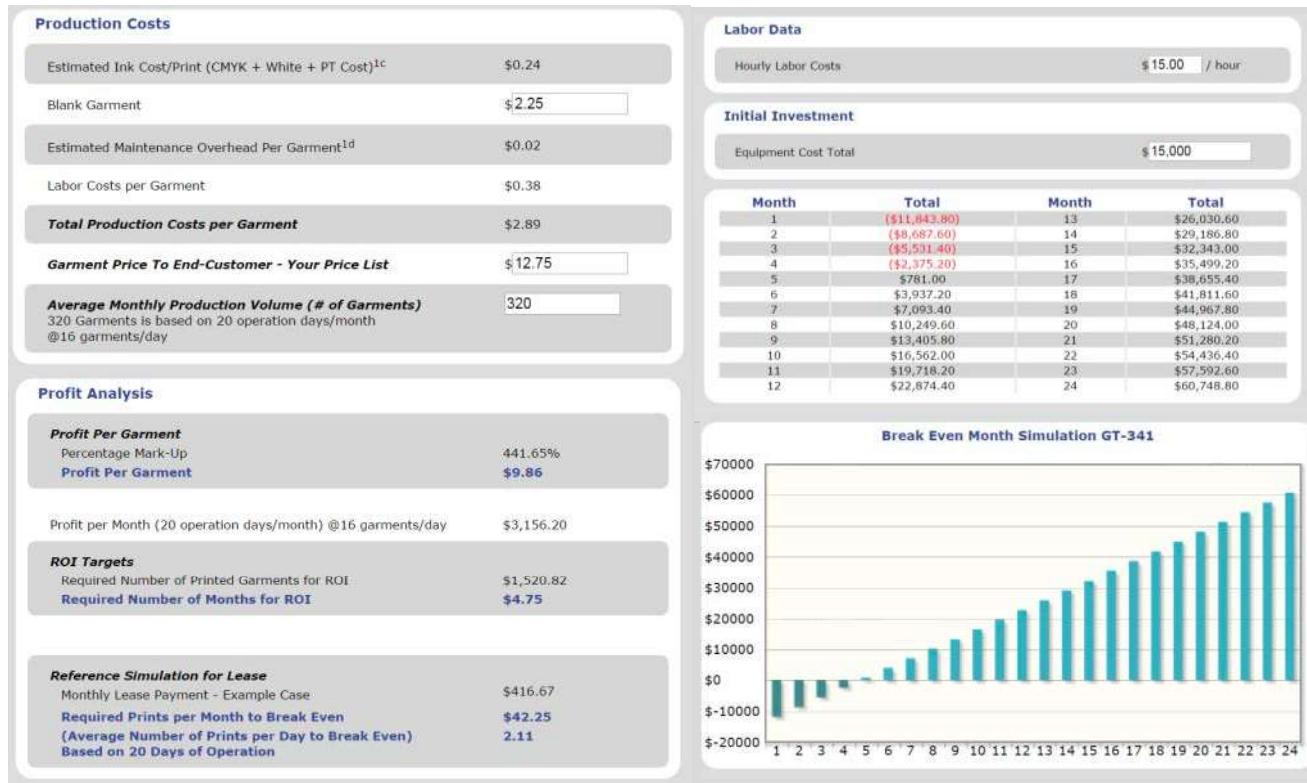
Source : Kornit

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You Want It Where ?!... Popular Garment Decoration Locations



DTG – ROI Brother GT -341 Example



Source: Brother – Light color shirt

© Keypoint Intelligence, InfoTrends



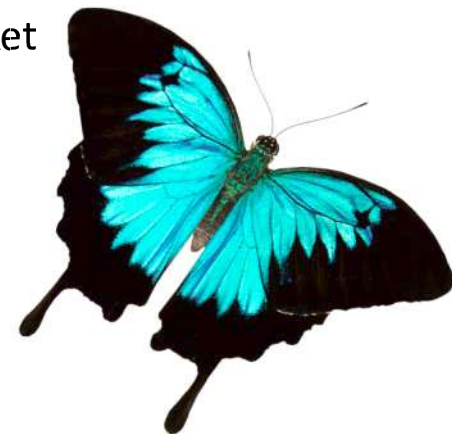
MAD IN BERLIN



<http://www.mad-in-berlin.de/>

Direct-to-Garment...The Opportunity

- **Growth as main or incremental business**
 - Range of solution to meet production needs
 - Design flexibility
 - Support range of applications from garments to decorative items
- **Supply chain efficiencies**
 - Purchase activated manufacturing (PAM)
 - Portable solution that can go on the road- Shorter time to market
 - Enabled B2C or B2B2C business models
- **Production efficiencies**
 - Printing short runs
 - Localized, personalized
 - Simplifying print production process
 - Augmenting conventional printing



Direct-to-Garment...The Challenge

- **Quality assurance**
 - Maintain color consistency (Humidity control)
 - Defect free print (Recirculating print heads)
 - Support discrete digital applications
- **Supply chain**
 - Manufacturing cost
 - Supply chain demands
 - Market access (B2C a competitive segment)
- **Production efficiencies**
 - Workflow automation
 - Flawless personalization
 - Production capacity



Corrugated packaging

What's in a box...

Someone to Keep in Mind....



What Retail Stores Look Like, to Lynn Milos



Her Life So Far: SKUs Up 4X

USA Supermarkets:

Average SKUs, 1975: 8,948

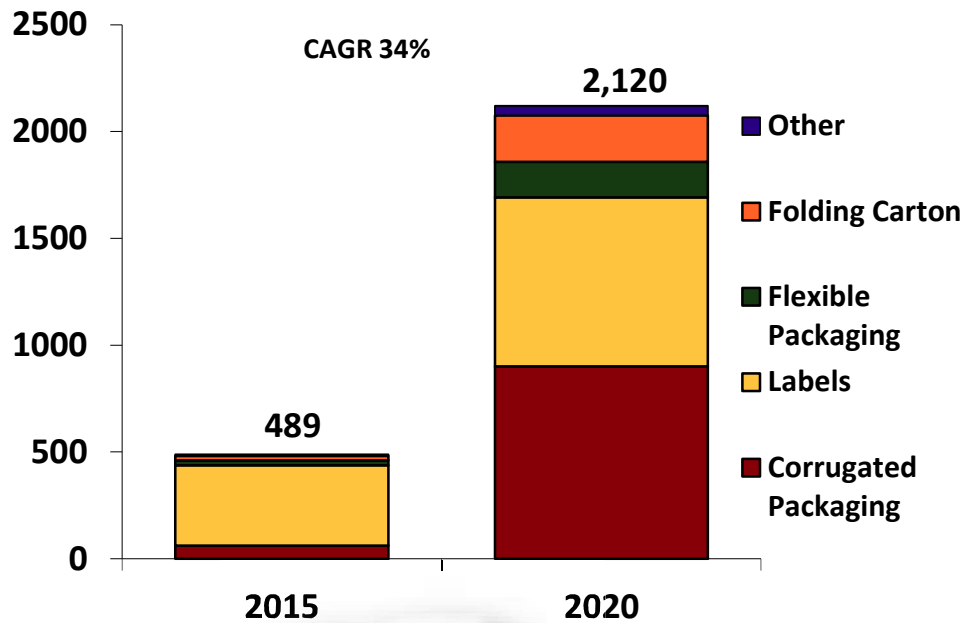
Average SKUs, 2014: 42,214

Source: Food Marketing Institute

Color Digital Print Volume in EMEA

By Key Application

Millions /M²

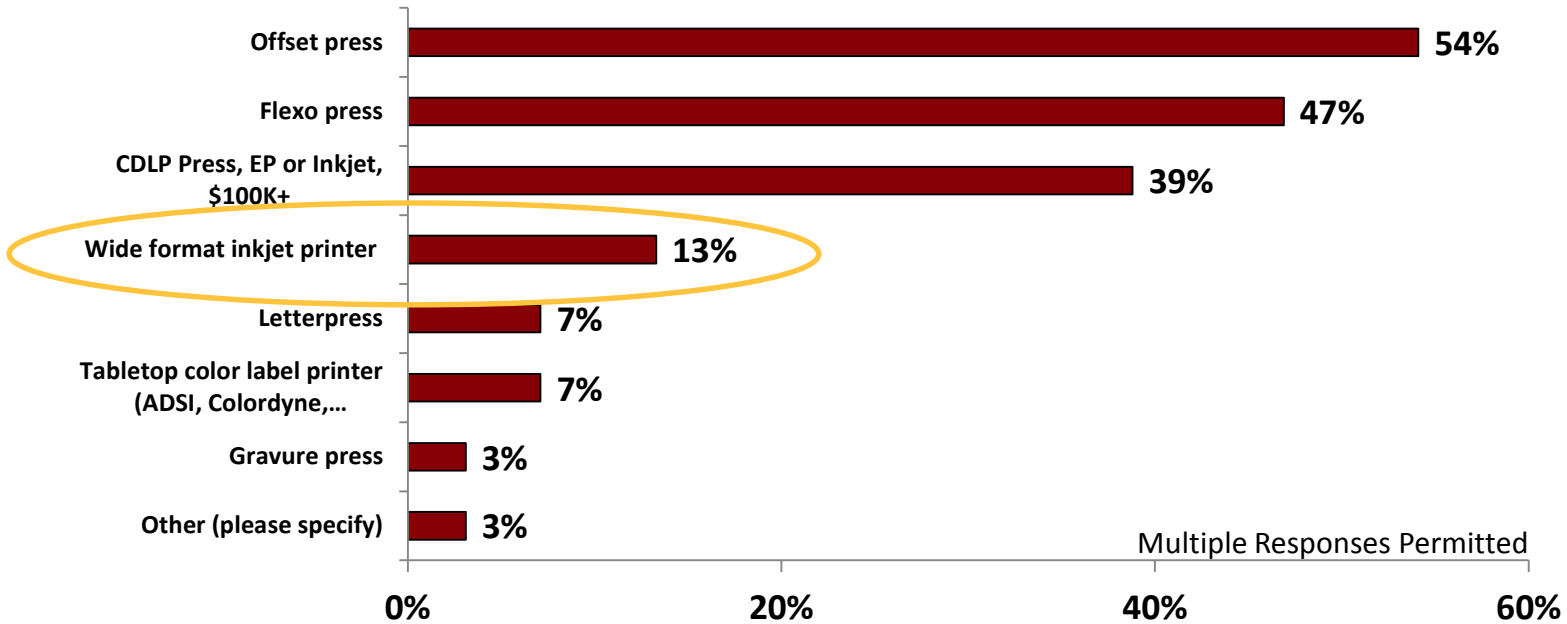


- **Folding Cartons**
 - Many EP presses for FC were operating in EMEA in 2015
 - Newest B2 presses drive most growth in FC print volume
- **Flexible Packaging**
 - HP Indigo 20000s have been big contributors in FP
 - Coming: inkjet presses for FP printing, based on aqueous inks
- **Labels**
 - EP label presses are long established but still growing
 - Inkjet = younger tech; many options; improving quality
- **Corrugated Printing**
 - Over 100 corrugated printers were operating in EMEA in 2015
 - High speed single pass systems will re-make the market by 2020



Technologies Used to Print Main Application

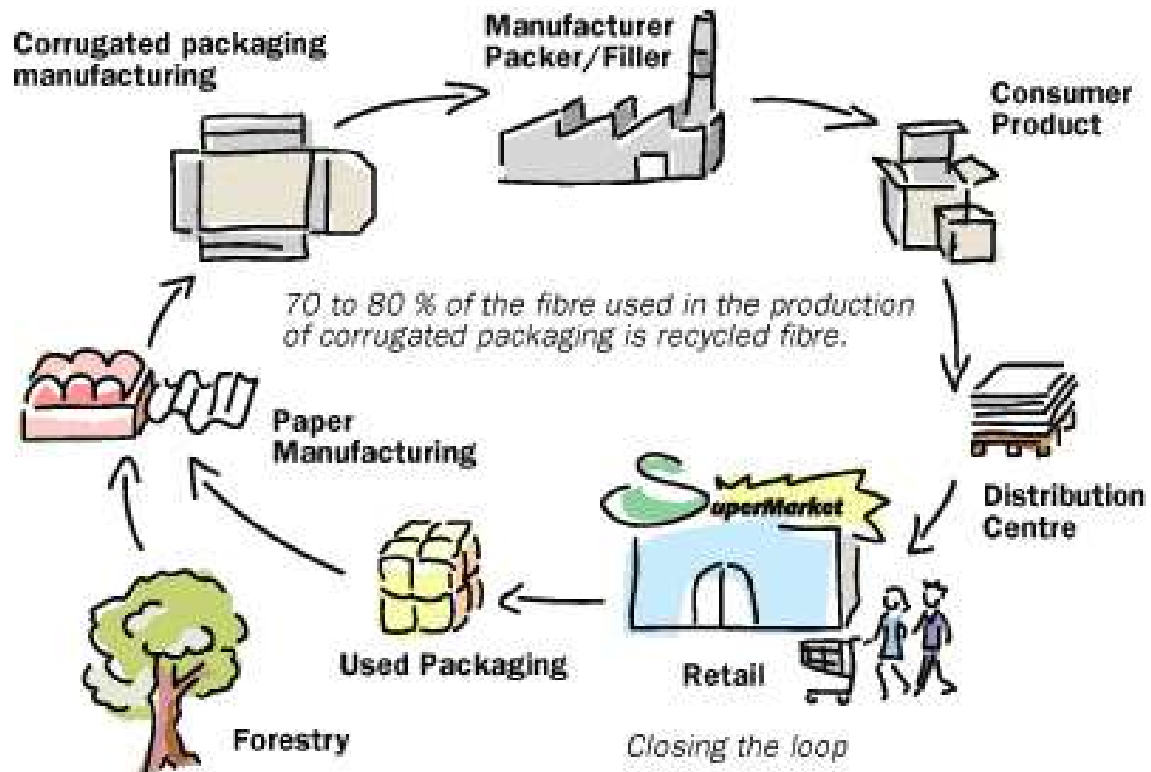
Q4: Which of the following print technologies do you use to print your main print application?



N = 98 Respondents

© Keypoint Intelligence, InfoTrends

Corrugated Packaging Life Cycle



Source: IDG.com

© Keypoint Intelligence, InfoTrends

Corrugated Materials

Types of Corrugated Printed Boards

- **Direct printing (a.k.a. Post Print)**
 - Printing directly onto the corrugated material typically using flexography or digital printing
- **Pre-printing**
 - Printing on sheets of rolls of paper using high quality output and substrate. After printing the paper is laminated to the board.

Types of Corrugated Boards



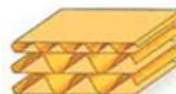
Single-faced corrugated board (corrugated rolls) consists of liner paper and fluting



Single-wall corrugated board is made of an outer liner, the fluting and an inner liner

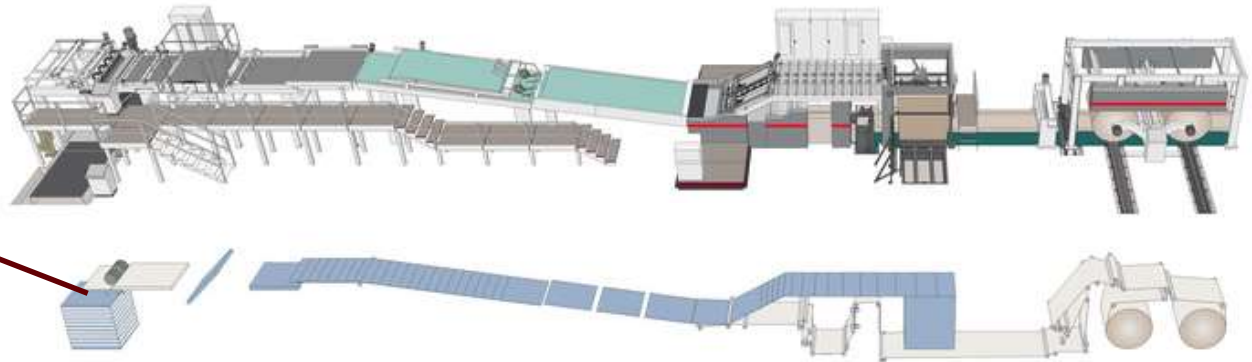


Double-wall corrugated board is created by gluing two single-faced corrugated webs together and laminating them to a liner web.



Triple-wall corrugated board consists of three single-faced corrugated boards with different types of fluting and an inner liner.

Corrugated - Pre-Print Litho Lam Process



Corrugated - Direct Printing



Bobst



HP



INCA



Durst



EFI



Xante

Digital Adding Value: Corrugated



Beer packaging, which represents a V8 Scania engine, was used for the first time at the Trucker Festival in Interlaken. The strong double flute gives the necessary stability, while digital printing enabled the image to be amended as required at no additional cost.

Produced by Model

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Digital Simplify Supply Chain: Corrugated



Retail ready packaging printed digitally reduce waste, shorten turn around time, and reduce make-ready. Delivering value on demand.

Produced by Bennett

Color Digital Print...The Opportunity

- **Democratize access to market for brands**
 - Effective quality output for small & large brands
 - Design flexibility
 - Support discrete digital applications
- **Supply chain efficiencies**
 - Reduce waste and inventory
 - Shorter time to market
 - Product security
- **Production efficiencies**
 - Printing short runs
 - Prototypes, localized, personalized
 - Simplifying print production process
 - Augmenting conventional printing



Color Digital Print...The Challenge

- **Quality assurance**
 - Maintain color consistency
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- **Supply chain**
 - Manufacturing cost
 - Supply chain demands
 - Market access
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 - Workflow automation
 - Flawless personalization
 - Production capacity





Big thinking precedes great achievement.

Wilferd Peterson