Advancements in Digital Textile Printing & The MicroFactory

SEAMS National Networking Conference
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Presented By:
Andy Arkin, Director of Integration, NextWave
Market

- Decorative Textile Market World Wide $165 Billion
- Digital Textile Segment Represents less than 4%
- Info Trend Analysis is calling for Digital to represent up to 40% in 5 years!
Market

Digital to represent up to 40% in 5 years!
Digital Textile Printing
Growing market opportunity

Digital printing is the fastest growing printing technology in the textile market

**FASHION**
Est. Printing Analog/Digital Share

Digital at this moment is about 3-4% of all printed textiles consumed by the Fashion industry, reaching ~ 13% in the Fast Fashion segment.

- Total Textiles ~ 280-300 Bn sqm
- Textile Printing Market ~ 30-35 Bn Sqm
- Digital Textile Market Size ~ 4-5% of Overall Printing Market ~ 1.2-1.3 Bn sqm
- Fashion Digital Printing ~ 70% of Digital Printing Market ~ 0.8-0.9 Bn sqm

Source: EFI elaboration from main market researches (IT Strategies, InfoTrends/KeyPoint, Smithers Pira, etc.)
Fashion continues to dominate all applications in terms of print value in Digital, that enables
- faster fashion seasons
- greater localization
- flexibility in design

Home Textile
- ~ 25% of overall printed textiles globally in terms of sqm
- space for further growth and conversion
- critical role will be played by Pigment to make this segment once more reliable and cost effective

Industrial is expected to see strong growth from a small base, even if with fragmented usage
Rotary Screen
5,000 lin y/hr

1\textsuperscript{st} Generation
100 lin y/hr

2\textsuperscript{nd} Generation
400 lin y/hr

3\textsuperscript{rd} Generation
800 lin y/hr

Start-up
27 lin y/hr

Single Pass Digital
5,000 lin y/hr!!!
Fast Fashion total: 160+ units

Europe 120+ units
  UK 20+ units
  Dubai 12+ units
  Spain - Inditex (Zara) 12 units

Central America 12+ units

Worldwide total
all markets: 600+ units
Key Accounts

DOLCE & GABBANA
GAP
HERMES PARIS
LOUIS VUITTON
GUCCI
INDITEX
GIVENCHY
HARLEY-DAVIDSON
LEONARD PARIS
MANGO
H&M
NIKE
LIBERTY LONDON
adidas
Desigual
IKEA
UNIQLO
SAMSUNG
APPLE
Walmart
amazon
... and more!
**efi® OPTITEX**  
**Key Accounts**

>3,500 Active Customers

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**Leading in 3D**

>600 3D customers

<table>
<thead>
<tr>
<th>Giorgio Armani</th>
<th>Coach Leather</th>
<th>Academy Sports</th>
<th>Roberto Cavalli</th>
<th>adidas</th>
<th>Walt Disney Pictures</th>
<th>Old Navy</th>
<th>Target</th>
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<tbody>
<tr>
<td>Levi’s</td>
<td>Li &amp; Fung</td>
<td>Harley-Davidson</td>
<td>G. Label</td>
<td>Hurley</td>
<td>JAG</td>
<td>Kohl’s</td>
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<td>Asics</td>
<td>Volcom</td>
<td>Tommy Hilfiger</td>
<td>The North Face</td>
<td>Chico’s</td>
<td>Perry Ellis</td>
<td>Patagonia</td>
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<td>Gore</td>
<td>Topson Downs</td>
<td>Speedo</td>
<td>Cirque du Soleil</td>
<td>Victoria’s Secret</td>
<td>Under Armour</td>
<td>Destination Maternity</td>
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## Cost Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>Paper</th>
<th>Ink</th>
<th>Cost/SqFt</th>
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<tr>
<td>2005</td>
<td>Mimaki Sawgrass Inks Beaver Paper (140g Clay)</td>
<td>$0.12</td>
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<td>2009</td>
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<td>$0.04</td>
<td>$0.075</td>
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<tr>
<td>2015</td>
<td>Reggiani Sensient Inks Coldenhove (&lt;57g Cellulose)</td>
<td>$0.035</td>
<td>$0.065</td>
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<tr>
<td>2017</td>
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**Notes:**
- Paper Costs: $0.12, $0.12, $0.08, $0.05, $0.04, $0.035
- Ink Costs: $0.15, $0.12, $0.08, $0.06, $0.035, $0.03
- Cost/SqFt: $0.27, $0.24, $0.16, $0.11, $0.075, $0.065
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Conventional Transfer Printing Cost/SqFt = $0.06
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**Conventional Transfer Printing Cost/SqFt = $0.06**
Cost Analysis

Paper and Ink Sqft Cost

- Paper Cost
- Ink Cost

$0.30
$0.25
$0.20
$0.15
$0.10
$0.05
$0.00


Paper and Ink Sqft Cost
Cost Analysis

Digital vs. Conventional

Digital Cost vs. Conventional Cost


Cost: $0.00, $0.05, $0.10, $0.15, $0.20, $0.25, $0.30
Textile Market Transformative

Vision 2020

- Online purchasing
- Supply chain digitalization
- Fast fashion and multiple seasons
- Market consolidation
- Reshoring and near-shoring
- Design agility and personalization
- Productivity
- Lower costs
- Sustainability
Digital Printing Options

Ink  Textile  Finishing

- Sublimation Disperse  Polyester  Heat Fixation
- Direct Disperse  Polyester  Heat Fixation & Wash
- Acid  Nylon, Silk & Wool  Steam, Wash & Dry
- Reactive  Cotton, Linen & Rayon  Steam, Wash & Dry

- Pigment  Variety of Textiles
  Binder  (pre-coat, inline, jet, in ink, post-coat)
Overview of Textile Printing Market

**Traditional Textile Printing***
- 35 Billion m²
- Growth 3%/year

**Digital Textile Printing**
- 1.3 Billion m²
- Growth 20%/year

*(Figures from John Provost’ presentation, Textile conference FESPA 2016)*

**Mark Hanley, President, IT Strategies 2017**
Integration

Next Wave Definition:

To take all parts of the digital textile solution; RIP, printer, ink, paper, fabric, fixation equipment, workflow, etc... and have them consistently work together in unison to create the highest quality textile product efficiently with the least amount of waste and scrap.
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On Demand Digital Textile Apparel MicroFactory

Experience the textile workflow from design to cut and sew

**DESIGN**
EFI Optitex 2D and 3D solutions enable selection and preparation of designs, including patternmaking and avatar draping in a Digital Showroom.

**PRINT PREPARATION**
EFI Fiery systems quickly and accurately convert designs into printing data, with fast data transfer both to digital inkjet printers with superb color fidelity.

**PRINTING**
EFI Reggiani printing solutions offer a digital printing process with a full range of water based inks. These eco-friendly, green production technologies deliver stunning colours, and colour fidelity, for striking fashion and sport designs.

**IMAGE FIXATION**
 EFI Reggiani printers can print using a variety of different inks to support virtually any fabric type for an efficient digital production.

**CUTTING**
A variety of different processes able to fix colour on any number of different fabrics can be implemented into the process:
- calander
- steamer
- stenter

Technology automates the cutting process, thanks to its compatibility with almost any material to prepare fabrics for sewing.
On Demand Digital Textile Apparel MicroFactory

2D and 3D Apparel Design Software
Marker and Grading Creator

Color Management and Image Processor

High Speed Industrial Digital Textile Print Solutions

Heat Fixation Calendar Solutions

Single Ply Cutting Solutions

Manual & Automation Solutions from a variety of suppliers
Why Digital Printing?

The Value Proposition

- **Customization, short run** and up to long runs cost effectiveness
- From 2 months down to **2 weeks lead time** to market
- Unique opportunity in **saving fabric waste** (pattern making /nesting)
- **Green(er) manufacturing**: water consumption, power consumption
- Better, richer, wider **color gamut** reproduction and smooth transitions
- Richer and more **detailed design**
- **Close** to the market/distribution centers, and better inventory management
Why Digital Printing? Operations and Ecological Efficiency

Traditional process    Digital process

SPACE
MAN
POWER
WATER
ENERGY
POLLUTION
2017 - 2020
Innovation in Green

Green Factory of the Future
Our strategy is to develop complete Green Processes

- Water based inks
- No or little water
- No harmful chemistry
- No waste of substrate
- Lower energy
- Lower pollution
ON DEMAND APPAREL
MICROFACTORY
OPEN HOUSE

October 24th, 2017
10am – 6pm

EFI Textile Center of Excellence
NextWave in Buford, Georgia
Atlanta Demo, R&D, Sampling & Training Facility