

## **Transforming Textile Printing**

Project Director:	Steve Adoniou, Director, Consulting
Senior Advisors:	Tim Greene, Director, Wide Format
	Jim Hamilton, Group Director, Production
	Lior Meron, Director, Asia Pacific
Contributors	Masato Atoda, Senior Analyst, Japan
	Barney Cox, Senior Consultant, Wide Format
	Nakul Sharma, Country Analyst, India
	Angela Zhang, Country Analyst, China
Creative Services:	Matt Scott, Desktop Publisher
Editorial/Proofreading:	Mark DiMattei, Corporate Editor

This report is copyrighted by InfoTrends and is made available to a limited number of clients subject to the following conditions:

InfoTrends retains all rights to this report in its entirety.

Reproduction and/or disclosure in whole or in part to parties other than the InfoTrends client to whom the document was originally sent is prohibited without the express written consent of InfoTrends.

This report should be treated as confidential and proprietary for internal use only.

The information is believed to be accurate and reliable, but cannot be guaranteed to be correct or complete.

InfoTrends, Inc. 97 Libbey Industrial Parkway, Suite 300 Weymouth, MA 02189 (781) 616-2100 www.infotrends.com

## **Table of Contents**

Executive Summary	5
<i>Key Findings</i> Market Size and Forecast Digital Textile Print Production Hardware Textile Consumption and Specifications Digital Textile Production Workflow Sustainability	6 6 8 8 8 8 8 8
Recommendations	9
Introduction	11
Objectives	11
Methodology	11
Section 1: Textile Industry Background	15
Textile Industry Size, Digital Printing Market Size Growth Drivers	16 16
Section 2: Market Size and Forecast	19
Textile Industry Size and Digital Printing Market Size	19
Hardware vs. Ink	20
Forecast Shipments Revenues Installed Base Print Volume	21 21 25 27 30
Ink	32
Ink Revenue	33
Retail Value	34
Section 3: Market Trends	35
Analog to Digital Transition Use of Digital Print Needs to Expand Before a Tipping Point is Reached Digital Textile Printing Isn't Ready for the Mainstream Digital Print Enables New Techniques and Applications	36 36 36 37
<i>Technological Advances Enabling Production Speed</i> Textile Printing is Still a Small Piece of the Process More Machines with Faster Throughput	<i>37</i> 37 38
<i>Outlook for Digital Demand</i> Digital Textile Printing in Education Poses a Problem Craft-based Brands May Shun Digital	<i>38</i> 38 38
Adoption Barriers and Pain Points Who Chooses the Fabric? Some Capabilities are Beyond Digital Textile Print's Reach (for Now)	<i>39</i> 39 39

Sustainability	40
Workflow	40
Consumables and Costs	40
Supply Chain	41
In a Textile Supply Chain, Printing Is Not the Main Focus	41
Section 4: Textile Consumption and Specifications	42
Conventional Textile Printing Methods	42
Fabric Selection	42
Cotton and Silk Reign, but Artificial Fibers are Gaining Commodity Prices Contribute to Fabric Choice	42
Innovation and Economics Spur Development	43 43
Regional Preferences Need to Be Considered for Commercial Success	43
Sustainability	43
Printability Issues with Digital Textile Printing Customer Concerns about Consistency	44 44
Ensuring Fabric Consistency is Key	45
A Requirement to Work with Supplied Bases	45
Conflicting Needs of Print Service Providers and Customers in Fabric Selection Aspects of Printed Fabric Use	46 46
-	-
Fabric Recommendations Supply Chain Collaboration for Standardization	<i>46</i> 46
Separate Devices for Different Ink Types	40
Ready for Digital Print Fabrics Are Essential	47
The Importance of Education Impact of Tortilo Additives and Chemical on Indict Ink Chemistries	47
Impact of Textile Additives and Chemical on Inkjet Ink Chemistries Printability Certification Testing	47 48
Section 5: Production Hardware	49
Digital Textile Printing System Vendor Profiles	51
Digital Inkjet Printhead Manufacturers	56
Inkjet Print Head Vendor Profiles	56
Future Market Players	58
Section 6: Digital Textile Printing Consumables	59
Digital Textile Printing Inks and Their Uses	59
Open versus Closed Systems	60
Cost and Quality are Major Barriers to Digital Textile Printing Volume Growth	61
Key Challenges in the Market for Digital Textile Printing Inks	62
Section 7: Digital Textile Production Workflow	63
Supply Chain	63
Risk Ownership	64
The Role of Device Controllers in Color Quality and Ink Consumption	64
The Advantages and Disadvantages of Digital Textile Printing	64
Section 8: Sustainability	66

<i>Complying with Environmental Standards</i> ISO 14001:2004 Oeko-Tex Standard 100 and 1000 REACH	66 66 67 67
Compliance with Industry Standards Implications for Market Stakeholders	67 68
Appendix 1 – Interview Guides	69
Producer Interview Guide Section 1: General Business Questions Section 2: Textile consumption/specification Section 3: Printed Textile Production Section 4: Workflow Section 5: Production Section 6: Consumables Section 7: Sustainability	69 69 69 70 71 72 72
Buyer/Specifier Interview Guide Section 1: General Business Questions Section 2: Textile consumption/specification Section 3: Printed Textile Procurement Section 4: Workflow Section 5: Sustainability	73 73 73 73 73 74 75
Manufacturer & Systems Integrator Interview Guide	75
Appendix 2 – Top Producing Country Profiles	78
Brazil	79
China	80
India	81
Italy	82
Turkey	83
Appendix 3 – Glossary of Terms	84

## List of Tables

Table I-1: In-depth Interview Summary	13
Table I-2: Interviews by Country	14
Table 1-1: Key Textile Manufacturing Centers in Rich Countries	16
Table 5-1: Digital Textile Printing Systems Vendors	
Table 5-2: Digital Inkjet Printhead Manufacturers	
Table 6-1: Ink Types Used for Digital Textile Printing	
Table 6-2: Strengths and Weaknesses of Open and Closed Systems	
Table 7-1: Advantages and Disadvantages of Digital Textile Printing	
Table A-1: Country Market Overview (Brazil, China, India, Italy, and Turkey)	

## List of Figures

Figure ES-1: Digital Textile Printing Volume Share by Geographic Region	7
Figure 2-1: Textile Market Overview	19
Figure 2-2: Worldwide Digital Textile Printing Equipment & Supplies Revenue	
Figure 2-3: Worldwide Digital Textile Printer Shipments (Units)	
Figure 2-4: Regional Digital Textile Printer Shipments (Units)	
Figure 2-5: Worldwide Shipments by Speed Segment (Units)	
Figure 2-6: Worldwide Shipments by Ink Type (Units)	24
Figure 2-7: Worldwide Digital Textile Printer Revenues (\$M)	
Figure 2-8: Regional Digital Textile Printer Revenues (\$M)	
Figure 2-9: Worldwide Digital Textile Printer Installed Base (Units) 2011-2016	
Figure 2-10: Regional Digital Textile Printer Installed Base (Units)	
Figure 2-11: Worldwide Installed Base by Speed Segment (Units)	
Figure 2-12: Worldwide Digital Textile Print Volume (M2 in Millions)	
Figure 2-13: Worldwide Digital Textile Print Volume by Major Region (M2 in Millions)	
Figure 2-14: Liters used in Digital Textile Printing Systems Worldwide (in Millions)	
Figure 2-15: Worldwide Digital Textile Printing Ink Revenue (\$M) by Ink Type	
Table 2-16: Retail Value of Digitally Printed Textiles (Garments, Décor, and Industrial)	
Figure 7-1: Textile Printing Supply Chain	63