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CONTRACT MANUFACTURING OPPORTUNITIES IN PRINTED ELECTRONICS

2013 Edition

A Comprehensive Study on the Worldwide Market for Contract Manufacturing of Printed Electronics

Report Highlights

■ Printed Electronics Technology Analysis
  ◆ Printer Manufacturing Equipment Market Size
  ◆ Electronic Material and Thin Film Market Size

■ Worldwide Printed Electronics Market Analysis, 2012
  ◆ Leading Products and Applications
  ◆ Analysis by 10 Industry Segments
  ◆ Functional Commercial Products

  ◆ 10 Industry Segments
  ◆ 40 Leading Market Applications

■ Company Profiles (185 Printed Electronics Firms)
  ◆ Equipment Companies/Suppliers
  ◆ Materials Companies/Suppliers
  ◆ Solution/Integration Companies/Suppliers
The worldwide printed electronics (PE) market has been over-hyped and inaccurately forecast for over a decade. Yet PE still holds much potential and is now starting to show promise and commercialization. New Venture Research (NVR) has been following this emerging market for the last five years and the contract electronic manufacturing services market for more than 20 years. As a result of our extensive industry contacts and recent field interviews in PE, NVR is in a position to put a realistic stake in the ground with regard to the leading PE market applications and their potential for future growth.

This latest report - *Contract Manufacturing Opportunities in Printed Electronics - 2013 Edition* — is a comprehensive market analysis of emerging PE technologies and applications, and leverages our in-depth database of contract electronics manufacturing services (EMS) suppliers and markets built up over the past two decades. EMS suppliers are the best positioned to capitalize on the most promising PE opportunities, of which we have identified over 40 leading application areas. This report analyzes the highest potential products by end customer that stand to win out over traditional semiconductor and material technologies. This is because PE is creating a standalone market of its own as well as displacing some traditional semiconductor electronics. Certain market applications have clear economic and commercial advantages over the next five years (the only period that can be reasonably forecast).

Chapter 3 begins with a technical analysis of the most popular material technologies including organic and inorganic thin film transistors and other forms of printable circuits. The chapter moves on to discuss the various kinds of equipment that are used to print and layer these thin films, especially ink jet and screen printer technology which are used for the majority of PE applications today. A summary of the total equipment market by revenue is provided for 2012. The section concludes with an examination of substrates and the field of e-paper and related displays.

Chapter 4 explores and analyzes the PE market for conductive inks and thin films. Currently, the vast majority of conductive materials are composed of silver flake along with corresponding dielectrics for insulation. Other materials such as carbon/graphene, copper, gold, platinum, and carbon nanotube/silver/copper nanowire are explored. A table of all the worldwide conductive inks is summarized in terms of revenue for 2012 along with a table of conductive inks by industry segment.

Chapter 5 identifies and explores the leading product applications for PE products among ten industry segments and in context with the entire contract manufacturing market. Leading product applications are analyzed for both traditional electronics assembly and advanced PE manufacturing production.

Chapter 6 forecasts the future for PE products for 40 different product applications, contrasting the highest potential PE products against traditional semiconductor electronics. All PE product applications are summarized in the final chapter, including a ranking of the strongest markets in descending order of growth. The highest growth markets are projected to expand over 125% CAGR, while others are as low as only 5% CAGR, from 2012-2017. Overall, the market for PE products will triple over the next five years, reaching nearly $10 billion in assembly revenue value by 2017.

Chapter 7 analyzes the leading PE companies and suppliers in three ways – equipment manufacturers, advanced materials/thin film providers, and solution/integration companies that develop technical solutions or can successfully integrate one or more PE technologies. In all, 185 PE companies are profiled in this report and are organized according to category.

*Contract Manufacturing Opportunities in Printed Electronics - 2013 Edition* is the product of hundreds of hours of research and sells for $2495 with a single-user license (additional licenses are $250, corporate licensing is $1000). This report is available in PDF format only and is delivered by email. An Excel spreadsheet of all data and tables is available for an additional $750.

**About the Author**

Randall Sherman is the principal analyst and president of New Venture Research Corp., a technology market research and business consulting firm focused on the EMS and OEM electronics manufacturing industries. Mr. Sherman has more than 25 years’ experience in technology and business research. He began his career as a telecom network design engineer and he holds an undergraduate degree in Astrophysics. He also holds two master’s degrees – an MSEE from the University of Colorado and an MBA from the Edinburgh School of Business. Before NVR, he held senior positions at various market research firms including Creative Strategies, Frost and Sullivan, and BIS Strategic Decisions.
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- Methodology

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- PE Industry Market Forecast
- PE Market Application Forecast

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  - Inorganic Materials and Composites
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  - Gravure
  - Inkjet
  - Off-set Lithography
  - Screen printing
  - Substrates
- E-Paper and Displays

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**Equipment Companies**
- Agfa-Gevaert
- AIXTRON AG
- Applied Materials
- Canon
- CERADROP
- Conductive Inkjet Tech.
- Dainippon Screen Printing
- DEK Printing Machines
- Dialog Semiconductor
- FUJIFILM Dimatix
- Fuji Xerox Co.
- Goss International Americas
- Haiku Tech
- Hewlett Packard
- Hisense
- Johnson Laminating & Coat
- Kammann Machines
- KIWO
- Konica Minolta
- Landa Corporation
- MacDermid Printing
- MAN Roland
- Mark Andy, Inc.
- Merck Millipore
- Midori Mark Co., Ltd.
- MuTracx
- NovaCentrix
- NXT PLC
- Ohio Gravure Technologies
- PixDro BV
- Preco, Inc.
- Printcolor Screen Ltd.
- Printtechnologies
- Roth & Rau
- Schreiner PrinTronics
- Seiko Epson
- SiPix Imaging, Inc.
- SonoPlot
- Speedline Technologies
- ST Microelectronics
- Sung An Machinery
- Taiyo Ink Mfg. Co., Ltd.
- Thieme GmbH & Co.
- Tokyo Electron, Ltd.
- Toppan Printing Co.
- UniJet
- Universal Display Corporation
- Veeco Instruments
- Xaar
- Xerox Corporation

**Materials Companies**
- 3M
- Advanced Nano Products
- Agfa-Orgacon
- Applied Nanotech
- Asahi Glass Co.
- Asahi Kasei
- BASF
- Beneq
- Blue Nano
- Cabot
- Cambrios
- Carestream Advanced Materials
- Cima Nanotech
- Corning
- Creative Materials
- Dai Nippon Printing
- DayStar Technologies
- Delta Optoelectronics
- Dow Chemical
- DuPont Microcircuit Mat.
- Eastman Kodak
- Electric Vinyl, Inc.
- Electronic Paper and Tech.
- elumin8
- Ercon
- Ferro Corp.
- FUJIFILM Holdings Corp.
- Fujikura
- Gwent Group
- H. C. Starck
- Heliatek GmbH
- Henkel
- Heraeus
- Hitachi Chemical
- Indium Corporation
- Infineon Technologies
- Intkec
- Intrinsic Materials
- Kimoto
- Konarka Technologies
- Kovio
- LG Philips LCD Co., Ltd.
- Liquid X Printed Metals
- Litrex
- Luminous Media, Ltd.
- MEMC Electronic Materials

**Solution/Integration Companies**
- Add-Vision
- Ascend Solar
- AVANCIS
- Aveso
- Blue Spark
- Bosch Solar
- Calyxco
- Cambridge Display
- Canadian Solar
- China Sunenergy
- Cymbet
- Durel

**Solution/Integration Companies (cont.)**
- E Ink
- eMagin
- Energy Conversion Devices
- Enfucell
- EV Group
- Evonik
- Excellatron
- First Solar
- Flexcell
- Front Edge
- Frontier Industrial Technology
- Fuji Electric
- G24 Innovations
- Global Solar Energy
- GSI Technologies
- Imprint Energy
- Infinite Power Solutions
- InnovaLight
- ISORG
- Kaneka
- KSW Microtec
- Liquavista
- Memtron Input Components
- Nanosolar
- NRG Solar
- Ormet Circuits, Inc.
- PARC
- Parelec
- PChem
- Plastic Logic
- Power Paper, Ltd.
- PragmatiC Printing
- ReneSola, Ltd.
- Semprius
- Sensorsmatic
- Sharp Corporation
- Si-Cal
- SMARTAC
- Solarmer
- Solar Frontier
- Solexant
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- Sumation Co., Ltd.
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