

Trends in Current Print Technologies

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Topic Summary

- ▶ **Print Industry Trends**
 - Emerging standards and specifications
 - Economic factors impacting print technologies
 - Value of print
- ▶ **Key print technologies**
 - The technologies driving the current and future state of the industry

Standards & Specifications

- ▶ CGATS and ISO have been creating standards for all industry segments
 - ▶ CGATS TR 011 Packaging Development Workflow
 - Design concept through production
 - ▶ CGATS TR012 Packaging Workflow
 - Color characterization, press control, etc.
- ▶ PDF/X Standards
 - PDF/X1a, PDF/X2, PDF/X3, PDF/X Plus

Enabling Cross-media

- ▶ Asset Management
 - Key to enabling repurposing of data
 - Integral to all forms of production
- ▶ PDF/A
 - Specified format for PDF archiving
 - ▶ ISO 19005 standard for long-term preservation

Print Industry Trends

- ▶ Globalization
 - Increasing dispersion of manufacturing
 - ▶ Long runs often more cost-effective overseas
 - ▶ US-made raw materials may still be utilized
 - As product manufacturing travels overseas, print and packaging travel with it
 - ▶ Print is often not counted in

Print Industry Trends

- ▶ Consolidation & Acquisitions
 - Large printers and smaller niche print shops dominate print production landscape
 - ▶ Mid-size printers are fastest shrinking population
- ▶ Vendors follow suit
 - Only a handful of large paper companies left
 - ▶ Resulted in less variety of materials offered and reduction in research and testing of new materials

Print Industry Trends

- ▶ Acquisitions & Diversification
 - Trend to provide all services
 - Print providers shifting to being full-service providers, including design services through distribution via in and outsourcing
 - Vendors partner to do the same
 - ▶ Fujifilm's Enovation provides one stop shopping

Print Industry Trends

- ▶ Kodak PolyChrome Graphics (KPG)
 - Acquired Horsell-Anitec, Imation, Encad, Scitex Digital Printing, RealTimeImage, NexPress, Heidelberg Digital
 - Partnered with Screen (for CTP), Presstek, LexMark and others for OEM and distribution

Print Industry Trends

- ▶ Acquisitions & Diversification
 - HP Acquires Indigo
 - ▶ Provides financial resources for development
 - ▶ Streamlined product offerings
 - FedEx Acquires Kinkos
 - ▶ Expands distribution network
 - ▶ Provides for a variety of potential business models

Print Industry Trends

- ▶ Back to Basics
 - Heidelberg to focus on sheetfed only
 - ▶ Sells web division to Goss
 - ▶ Sells digital interest to KPG
- ▶ What's the future role of conventional print?

The Value of Print

- ▶ How Do You Make Money With Print?
 - If print is a commodity, profits remain low
 - ▶ Print prices declined 5%-10% for many in 2003
 - Seen as “competition for bankruptcy”
 - ▶ Gain in profit can only come via reduction in costs
- ▶ If print is “value-added,” profits can be, by definition, much higher
 - Non-print services add value

Advances in Current Technology

- ▶ Conventional Print Continues Slow Decline
 - Litho, flexo, gravure and screen print are all expected to slowly decline, but. . .
- ▶ Growth comes by application
 - Waterless (litho) has had significant growth in the pressure-sensitive label market
 - ▶ This market has seen rapid growth in the past 10 years with industry usage up from 5% to 70% today

Advances in Current Technology

- ▶ Waterless Advantages (once mastered)
 - Reduced spoilage
 - More consistent color
- ▶ XtremeEngraving for Gravure
 - Electromechanical engraving system for the Helioklischograph
 - ▶ Rivals laser etching systems for quality but can be less expensive

Advances in Current Technology

- ▶ Computer-To-Plate
 - Market beginning to mature
 - ▶ Install base has steadily increased
 - ▶ Films sales steadily declining
- ▶ Other trends helping growth
 - Stochastic screening
 - ▶ Better process control
 - ▶ Reduced issues with moire

Developments in Workflow

- ▶ Emphasis on Streamlining Process
 - JDF and process automation
 - ▶ Job Definition Format is an XML-based mechanism designed to connect most components of the production system to enable automation
 - This year's Drupa show in Germany has been hailed as the JDF show with many major vendors releasing JDF-compliant equipment

Developments in Workflow

▶ Color Management

- ICC-based color management solutions rely on tight control of process variables
 - ▶ System works well in closed-loop environments
 - ▶ Once enabled, allows for easy repurposing of materials and color matching between mediums
- Troubles in implementation
 - ▶ Range of variables hard to control

Developments in Workflow

▶ Color Management

■ Where it works

- ▶ Output systems that use consistent materials and utilize measured process control

■ Where barriers remain

- ▶ All variables leading up to platemaking

- File creation, image processing, calibration, etc.

Developing Print Technologies

- ▶ Digital Print: Toner-based Systems
 - Systems include dry and liquid toner technologies
 - Major players include Xerox, Kodak, Canon, HP-Indigo and others

Developing Print Technologies

- ▶ Digital Print: Toner-based Systems
 - Recent developments include higher quality, wider webs, faster speeds, higher resolution and advances in substrates and coatings
 - Advantages are economies of scale (short run) and variable print capability
 - ▶ Break-point vs. offset is nearing up to 5000 copies
 - ▶ Variable print is in its infancy

Developing Print Technologies

- ▶ Digital Print: Continuous Inkjet
 - In production print, used for addressing and other variable data print applications
 - ▶ Can keep pace with conventional production speeds
 - ▶ Best for lower resolution one-color applications
 - Expect advances here to allow for higher resolution continuous tone printing

Developing Print Technologies

- ▶ Digital Print: Drop-On-Demand Inkjet
 - Thermal heads dominate applications requiring higher production speeds
 - ▶ Production speeds are measured in feet/minute and are slow compared to offset
 - Advances here are in substrate availability and ink development (solvent, eco-solvent, etc)

Developing Print Technologies

- ▶ Digital Print: Flatbed Inkjet
 - Variation of DOD inkjet technology, flatbed inkjets print directly onto a wide range of rigid media including foamcore, wood, ceramic tile, plastic, metal, glass, etc.
 - Inks may be solvent (or eco-solvent) based or UV-cured (cured immediately after contact)

Developing Print Technologies

- ▶ Digital Print: Flatbed Inkjet
 - Technology currently serves primarily signage and display markets, but applications are growing as customers push for innovation
 - Developments include additional inks (CMYK plus white and spot colors), more flexible inks (allows for forming after printing), and on-going testing of substrates and coatings

Developments in Ink

- ▶ RFID Tags and the Next Generation of Print
 - Passive RFID Labels
 - ▶ Energy received from reader is used to operate circuitry on label for retransmission
 - Smart Active Labels (SAL)
 - ▶ Has own power source (battery) and is able to work in more environments (metal casing, production environments, etc)

Developments in Ink

- ▶ RFID Label Applications
 - Security and anti-theft devices
 - Safety for hazardous materials or to monitor temperature sensitive foods, chemicals, etc
 - Supply chain management and inventory count
 - Traceability of products for recall or to prevent them from illegal trade
- ▶ Applications for printed electronics will expand
 - Printed displays for point-of-purchase just the start

Summary

- ▶ Technology only solves part of the problem
 - Per unit cost of print will continue to go down
- ▶ Service and innovative applications allow value and profits to go up
 - Consider applications of existing technologies
 - Successful printers must see themselves as “solution providers” rather than manufacturers