Sustainable Digital Print Solutions: Deinkable Inks, Papers, and Optimized Deinking Processes

Nils Miller, Hewlett-Packard
Digital Printing = Growth for Printing, Paper Industries

- What’s driving the growth?
  - Break-even point
  - Creating new digital pages
  - Deconstruction/ Reconstruction of the value chain
  - Environmental considerations

2006 – 2010 CAGR

- Fine Art: 0% to 17%
- Marketing Collateral: 0% to 10%
- Direct Mail: 6.7% to 11%
- Publishing: 3% to 49.2%
- Packaging: 3% to 60%
- Labels: 6% to 32%
- Signage: 2% to 9%
- Photos: -18% to 12%

Source: Analog and Digital Pages per IPG MAP - WW Page Sizing; Total growth per IPG MAP, Digital Growth per IPG MAP except Publishing and Information Prints per GIB analysis; Digital penetration per IPG MAP, IPG MAP WW Pages Sizing version 5.1.

Page data not meaningful, so HW + Supp. Revenue shown.
“Everything that can become digital will become digital. Printing is no exception”

Benny Landa, Indigo Founder

Source: HP Indigo
## HP Inkjet Web Press
Announced at DRUPA 2008 – powered by HP pigment inks & TIJ printheads

### Breakthrough Performance

#### Format Size
- 30 inches (762mm)
- New applications
- More finishing options
- More versatility

#### Productivity
- 400 ft/min. (2600 ipm)
- Much higher capacity
- Turnaround
- AMPV 35M (70M max)

#### Economics
- ‘A la carte’ model
- Below $2.5M acquisition price
- <1c per ltr size 4/0 (30% coverage)
- < 0.15c ltr size 1/0 (5% coverage)

#### Print Quality
- Exceptional inkjet quality
  - Consistent performance
    - Wide range/uncoated media
  - Job to job, day to day
- Bonding agent
  - Vivid colors
  - Bolder blacks

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St. Louis, Missouri, May 31 - June 3, 2009
Analog to Digital Print Transformation
Putting Potential Carbon Footprint Reduction in Perspective

Global comparative abatements
(in millions of tonnes of CO₂)

Ensuring Digital = *Sustainable* Growth

**The Digital Advantage**

- Reduced inventory, spoilage, over-runs – helps reduce carbon footprint
- Targeted, customizable applications ensure high value prints – better use of resources
- Opportunities for greatly reduced VOC emissions
- Highly scalable solutions, well-suited to distributed print models – reduced transportation footprint

**Digital Print Recyclability/Deinkability**

- Digital prints currently very small percentage of total paper stream
- But ensuring a smooth transition for paper recycling / deinking industry toward a ‘more digital print’ future is essential
- The Digital Print Deinking Alliance (DPDA) formed in 2008 to address that responsibility for inkjet press mfgers
  - Current members include HP, Infoprint Solutions Company, Kodak, and Océ Printing Systems
- HP-sponsored independent lab results showing encouraging deinkability results for HP Indigo Electroink (LEP) and HP Inkjet Web Press pigment inks (see next slides)
Fig. 1: Small changes in Lab method = significant impact on ‘deinkability’
(HP black pigmented ink on Xerox Office paper; single flotation)

Key deinking variables:
- Ink elimination [%]
- Filtrate darkening [Delta Y]
- Brightness [ISO]

Data collected by PTS Germany
Fig. 2: Paper design can significantly enhance Deinkability (HP black pigmented ink on Xerox Office paper vs HP ColorLok)

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Measure values (3 key variables):
- Method 11 (Xerox media)
- Method 11 (ColorLok media)
- Exp Method C (pulping at neutral pH + ColorLok media)
Fig 3: HP Indigo EI 4.0 -- Speck contamination after single loop flotation
Ensuring Digital = *Sustainable* Growth

*The digital opportunity for the overall print industry is compelling*

- Digital = Business Growth…for print providers, printer mfg’ers, paper mfg’ers
- Analog to Digital print transformation technologies such as LEP and Inkjet provide opportunity for environmental impact reduction
  - DEP is an important A to D component but does not fully address the market needs
- Data show that HP LEP & Inkjet inks are well-suited to deinking processes in general
- Collaboration is essential to find the optimum overall solution

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**Diagram:**

- Paper Making
  - Brilliant output on recycled grades
  - Digital printing for sustainable growth
- Printer Design/ Mfg
- Deinking/ Recycling
  - Pulp supply should enable high recycled content in various grades
  - Ink, Paper, Deinking – finding pragmatic, cost-effective compatible solutions

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