Computer-to-Plate Lithographic Printing

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Outline

- Traditional Pre-Press
- Computer-to-Plate Technology
- Chemistry and Process-free CTP
- Case Study
- Resources for More Information

Traditional Pre-Press

- Imaging
  - design on computer
  - film negative – silver halide
  - Developed, fixed, and rinsed
- Plate-making
  - aluminum or plastic with a light-sensitive coating
  - film and light
  - developed
  - gum finisher - protection

Plates

- Aluminum plates
  - more expensive
  - durable - large jobs (›20,000)
  - high-resolution printing
- Polyester plates
  - less expensive
  - recent advances

Pre-Press Wastes

Wastewater	Hazardous Waste	Air Emissions	Solid Wastes
❖ Used, treated fixers ❖ Used developers ❖ Used activators/ stabilizers ❖ Plate developer ❖ Rinse water	❖ Chrome-based system cleaners ❖ Non-empty aerosol cans ❖ Discarded-unused or outdated chemicals ❖ Used, untreated fixers ❖ Used shop towels* ❖ Proofing system chemicals	❖ Volatile organic compounds (VOCs) or toxics emitted from film cleaners ❖ VOCs or toxics emitted from proofing system solvents	❖ Empty containers ❖ Developed or out-dated film ❖ Out-dated materials ❖ Used or damaged plates ❖ Used, empty aerosol cans ❖ Used shop towels*

Computer-to-Plate

- Platesetter transfers image to plate
  - visible light
    - images plate chemically
    - many rely on silver halide coatings
    - less-expensive low-energy laser
  - thermal
    - images plate physically
    - not ambient light sensitive
    - higher maintenance/replacement laser

Chemistry- and Process-Free CTP

- Variations of thermal systems
- Chemistry-free
  - no development
  - water rinse
  - widely available
  - higher energy laser and more expensive plates
- Process-free
  - no rinsing
  - technology still evolving – complex & expensive

CTP Plate-making Steps

CTP Type	Step 1	Step 2	Step 3	Step 4	Step 5
Pre-Bake Thermal*	Image Plate	Pre-Bake	Develop Plate	Finish	Print
Visible-Light	Image Plate	Fix or Pre-Heat/Wash	Develop Plate	Finish	Print
Thermal	Image Plate	Develop Plate	Finish	Print	
Chemistry-Free	Image Plate	Water Wash	Print		
Process-Free	Image Plate	Print			

* Can also include two additional steps for long-run printing – between steps 4 and 5 can also have a Post-Bake step and a second Finish step before printing

Modified from, John Zarwan, *CTP Plate Making: Understanding the Real Costs*, Figure 3, Page 4, 2003.

CTP - Benefits

- Increased productivity – fewer steps
- Improved print quality
- Reduced physical space needs
- Reduced chemical use
  - Reduced materials purchases
  - Reduced hazardous waste handling/disposal
- Reduced environmental concerns and improved workplace

CTP - Concerns

- Significant Capital Cost
- Increased Technology Needs
- “Regular” CTP often still requires plate development
  - chemical wastes must be managed
- Thermal CTP can generate air emissions

Case Study – JM Perrone

- Chemistry-free CTP
- Production time reduced ›60 percent
  - 2 hours → 45 minutes
- Chemical use reduced by 205 gals/yr
  - Saves $1,595
- Hazardous waste reduced by 2,370 lbs/yr
  - Saves $9,469
- No silver-based film purchases
  - Saves $80,000

Resources for More Information

- NEWMOA's P2 Profile at: www.newmoa.org/prevention/p2tech
- Presstek: www.presstek.com
  - Hudson, NH
  - Laser imaging with chemistry- and process-free plate technology

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