Greening of US Print Industry

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Printing Industries of America/ Graphic Arts Technical Foundation

What Does EHS Affairs Dept Do?

- Industry Representation
  - Work With Agencies and Not Congress
- Membership Support
  - Help Printers Understand Compliance Requirements
- Consulting
  - Help Individual Printing Companies

What Agencies Are Covered?

- EPA Issues
  - National
  - State

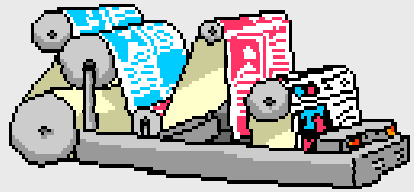
- OSHA Issues
  - Federal
  - State Plans

- DOT Issues

Greening of US Printing Industry

Product

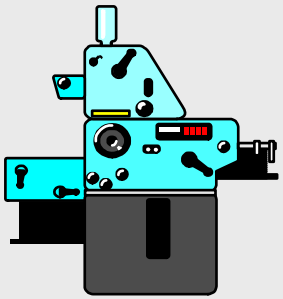
- Paper
  - Recycled Fiber Content
  - ECF,TCF, PCF
  - FSC Certified
- Inks
  - Heavy Metals
  - Vegetable Based, UV, EB
- Coatings and Laminates
- Binding and Finishing



Process

- Prepress
  - Film, Plates, Proof
- Press
  - Inks, Fountain Solution, Coatings, Cleaning Solvents
- Post Press
  - Adhesives, Coatings, Ink Jets
- Energy Efficiency

Greening of US Printing Industry



Technology

- Production Equipment
  - CTP
  - Presses
- Input Materials
- Recycling Equipment
  - Distillation
  - Filtration

Work practices

- Management Commitment
- Best Management Practices
- Employee Training
- Employee Acceptance

Prepress P2 Opportunities

Technology

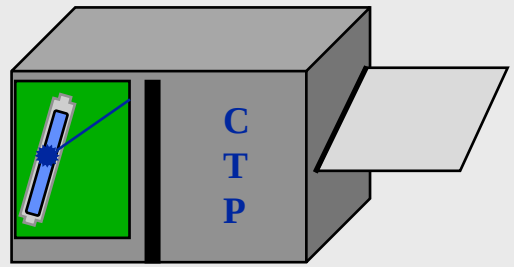
- Install Silver Recovery Devices
- Use Developer, Fix & Washwater Recycling Unit
- Investigate Purchasing Imagesetters
- Use Water-Based Plate Processors
- Investigate Converting To Total Digital Prepress

Work Practices

- Eliminate Chrome-Based Film Cleaners
- Properly Maintain and Adjust Units
- Test Chemistry With QC Devices

Emerging Technologies

- Direct To Plate Systems
  - –Thermal and Laser
    - High pH Effluents and Silver
    - Indoor Air Quality
- Proofing
  - –Water Based Developers
  - –Ink Jet
  - –Die Sublimation
  - –Soft - Computer

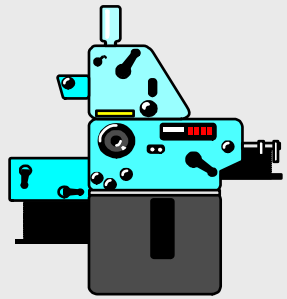


Emerging Technologies

Digital Output Devices

- Dry Toner
- Wet Toner
- Ink Jet
  - Solvent Based
  - Water Based
  - UV

Press P2 Opportunities



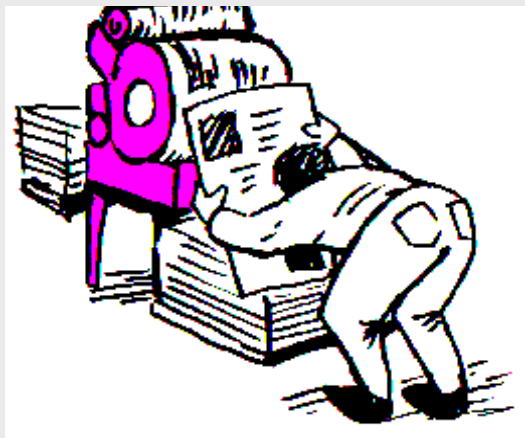
Technology

- Inks
  - Use Vegetable Oil Based Inks If Cost Effective
  - UV or EB Cured (Hybrid)
  - Add-on Controls – Regenerative Oxidizer
  - Pumping/Cartridge Delivery System
- Cleaning Solvents
  - Low Vapor Pressure Cleaning Solutions
    - Vapor Pressure Less Than 10 mmHg at 20°C (68°F)
  - Low VOC Cleaning Solutions
    - VOC Content Less Than 30% By Weight

Press P2 Opportunities

Technology

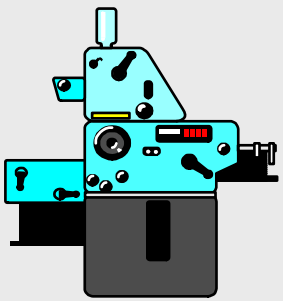
- Active Solvent Recovery For Shop Towels
  - Wringers, Centrifuges, Self-Contained Systems
- Fountain Solutions
  - Use Isopropyl Alcohol Substitutes
    - 3-5% VOC Content As Applied
    - 1-3% VOC Content As Applied
  - Isopropyl Alcohol
    - Refrigerate Dampening Solution
    - 5-10% VOC Content As Applied



Press P2 Opportunities

Technology

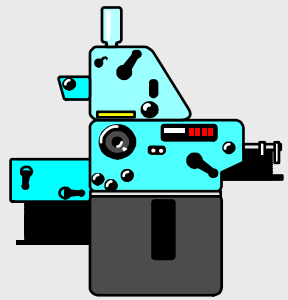
- Computerized Ink Mixing for PMS
- Recycle Used Inks Into House Colors
- Use UV, Water Based Coatings and Adhesives
- Distillation Units for Waste Solvent Recovery



Press P2 Opportunities

Work Practices

- Perform Proper Equipment Maintenance
- Use Closed Containers for Ink and Solvents
- Gravity Draining for Shop Towels
- Change Cleaning Practices
  - Use Squirt Bottles For Hand Washing Solvent
  - Reduce Volume Used Per Cleaning
- Establish Waste Tracking System
- Properly Maintain and Adjust Units



Post Press P2 Opportunities

Work Practices

- Perform Proper Equipment Maintenance
- Recycle Waste Paper Scraps
- Recycle Other Solid Wastes - Corrugated, Etc.

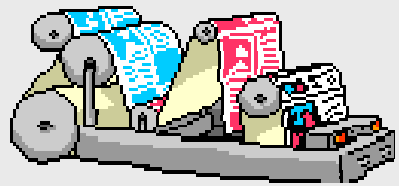
Technology

- Use Low VOC\Water Based Glues& Coatings
- Use Water Based Ink Jet Inks
- Use Water Based\Solid Lamination Techniques
- Install Control Devices
  - Cyclones, Bag Houses, Filtration Devices

Emerging Technologies

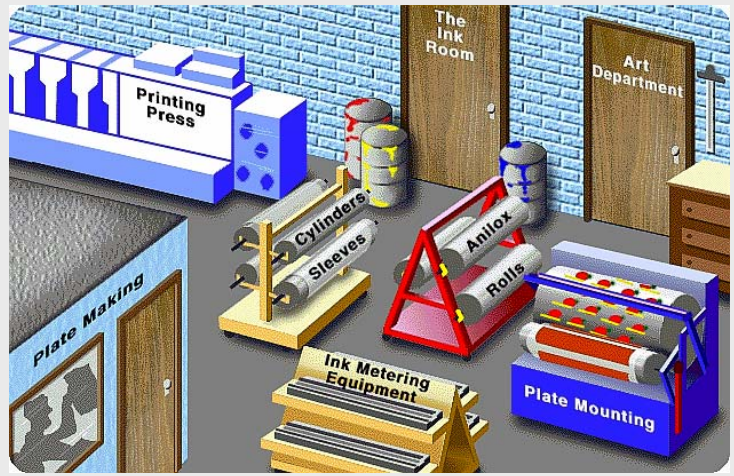
Press and Post Press

- Computer Integrated Manufacturing
  - CIP3 and JDF or CIP4 to be released in near future
- Closed loop color
- CIP3
  - Allows ink key presets
  - Allows ink film recovery to even state
- CIP4
  - Ink presets
  - Presets for feeder, cylinders, delivery, folder, stacker, reel stand
  - Postpress – Presets for stitcher and cutter



Flexographic P2 Opportunities

- Prepress
  - Perchloroethane alternative solvents (PASs) plates
  - Water washable flexo plates
  - Dry process plates
  - Digitally imaged flexo plates
- Press
  - Enclosed Doctor Blade
  - Water-Based Inks and Coatings
  - UV Cured Inks and Coatings
  - Solid and Water-Based Laminates
  - Automatic Anilox Roll Cleaning System



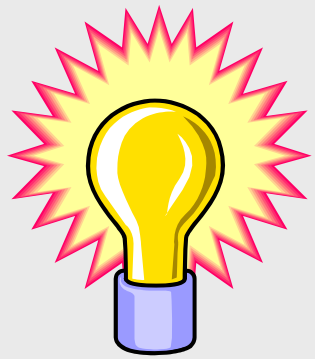
Screen Printing P2 Opportunities

- Prepress
  - Silver Recovery for Film and Recycling for Chemistry
  - Digitally imaged screens
- Press
  - Water-Based Inks and Coatings
  - UV Cured Inks and Coatings
  - Low Vapor Pressure/Low VOC Ink Removers
- Post Press
  - Nonhazardous Reclamation Chemistry – Emulsion & Haze
  - High Pressure Wash System
  - Water Recycling System

Energy Efficiency

Facilities

- Green buildings return 10 times the investment
  - –$50-$70/Sq Ft Vs. $5-$7 In Cost
  - –Energy, wastes, water, O&M costs, productivity
- Lighting, HVAC, Control Systems, Motors, Insulation
- Compressed Air
- Maintenance
- Source of Electricity



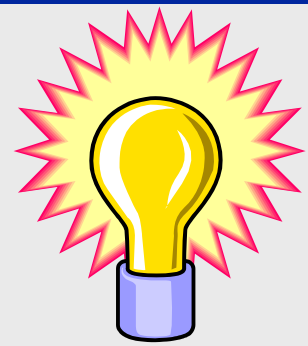
Would you like 90% of your gas bill back?

- Recuperative Afterburner replacement
- Regenerative Thermal Oxidizers
  - Heat is recycled through ceramic saddles
  - Gas use reduced 90% +
  - NOx emissions reduced proportionally

Compressed Air

- Air leaks are invisible!
  - Can you hear the giant sucking sound?
- Reduce compressed air use
  - Smaller orifices on stream feeders
  - Substitution of low pressure air on deliveries
  - Air lines and shut off valves
- Improve bindery and press performance
  - Pocket delays reduced
  - Paster improvements
  - Folder quality and control
  - Especially downstream machines
- Replace aging compressors
  - Newer ones with lower capacity

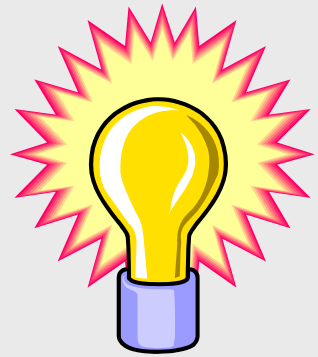
Energy Efficiency Case Study



- Facility - Pearl Pressman Liberty
  - 29,000 Sq. Ft. Commercial Printer
  - 2 Buildings- 2 and 3 Stories Each
- Upgrades
  - 356 T-12 Fixtures and Magnetic Ballasts Replaced
  - 52 Incandescent Lamps Replaced With CFs
  - 124 New Lenses and Reflectors Added
  - 3 25-W Exit Sign Bulbs Replaced By 9-W CFs

Energy Efficiency Case Study

Facility - Pearl Pressman Liberty



- Cost: $30,000
- Benefits
  - Wattage Per Fixture Decreased By 1/2 While Actual Light Levels Increased/Remained Same
  - Annual Savings of $21,017
  - Reduce A/C Costs By 15%
  - Prevented 203 T CO2, 23 Lbs SO2, .72 T NOx
- Will Replace 1,000 W Sec. With 70W Na

A Word About Regulations…

Current System

- Command & Control
- Priorities Politically Driven
- Media-by-Media Approach
- Enforcement Focus
- Lacks Business Integration
- Heavy Administrative Burden
- Discourages Innovation
- No Longer Challenges "Good" Companies
- Limited Public Involvement

Future System

- Performance-Based
- Prioritizes Environmental Risk
- Multi-Media Approach
- Assistance Focus
- Integrates Business Goals
- Reduced Administrative Burden
- Encourages Innovation
- Rewards Stewardship
- Appropriate Public Involvement

In Conclusion

21st Century Printer & New Technology

- Evaluated, Incorporated, and Addressed
  - Environmental Issues
  - Safety Concerns
  - Performance
  - Productivity
  - Energy Consumption
  - Cost

Before A Decision Is Made!

Questions