A Crash Course in Graphic Communications

Press Page Up or Page Down to navigate through the program.
Press Esc twice to exit the program.
Part 7
Presswork

Showtime!
Showtime!

- Although sophisticated technological advances have been introduced to the pressroom, underlying principles of printing have not changed.
Presswork

- Presswork consists of four main steps:
  - Premakeready
  - Makeready
  - Pressrun
  - Washup
The Heart of Printing: The Press

- A printing press is a device that transfers an inked image—or, as is more often the case, many copies of an inked image—to a surface.
The Lithographic Press

- Lithography is the dominant printing process
What Is Lithography?

• In lithography, the image carrier—a printing plate—has two distinct areas:
  • Image areas that attract ink
    – These areas are *oleophilic*, meaning “oil loving”
  • Nonimage areas that attract water
    – These areas are *hydrophilic*, meaning “water-loving”

[Image showing hydrophilic and oleophilic areas]
What Is Lithography?

- The printing plate, wrapped on the plate cylinder, contacts two roller systems
  - Dampening
    - Series of rollers carry a thin film of water to the plate
  - Inking
    - Series of rollers carry a thin film of ink to the plate
The Lithographic Press

- Cylinder system:
  - Plate
  - Blanket
  - Impression
The Lithographic Press

- Two categories of presses:
  - Sheetfed
    - Feeds sheets of paper
  - Web
    - Feeds rolls of paper
The Operators

• Press operators
  – Only one operator is needed for smaller lithographic presses
  – Large commercial presses normally require two or three operators
    • Head press operator
    • 2nd press operator
    • Feeder operator/roll tender
The Sheetfed Press

**Systems:**
- **Infeed**—Carries sheets of paper into the press
- **Delivery**—Removes and stacks sheets of paper
- **Inking**—Carries ink to the plate
- **Dampening**—Carries water (plus chemical additives) to the plate
- **Cylinder**—Image transfer happens here: from the plate to the blanket to the paper
The Sheetfed Press

- Basic configurations: One-color and multicolor presses
  - A *printing unit* consists of inking, dampening, plate, blanket, and impression cylinders
  - One unit can print a single color of ink on the paper
The Sheetfed Press

- The multicolor press
  - Two-, four-, five-, and six-unit presses are common
  - Each unit prints a single color of ink, so several colors can be printed in one pass through the press
The Sheetfed Press

- Multicolor perfecting presses
  - Ability to turn the sheet over between units, printing on both sides with one pass through the press
The Sheetfed Press

- Size formats:
  - Wide range of lithographic sheetfed press sizes
  - From small 10-in. x 15-in. to large 28-in. x 56-in. presses
The Web Press

- Systems are the same as on sheetfed presses:
  - Infeed
  - Delivery
  - Inking
  - Dampening
  - Cylinders
The Web Press

- **Infeed system:**
  - Roll stand
    - Holds the unwinding roll in place
  - Splicers
    - Fasten a new roll to an expiring roll as the press continues to run
The Web Press

- **Delivery Systems:**
  - Roll-to-roll
    - Devices that rewrap the printed web of paper into a roll, which is then taken to another site for finishing
  - Sheeters
    - Devices that cut the web into sheets
    - Commonly found on business forms presses
The Web Press

• Delivery Systems:
  – In-line combination folder
    • Cuts and folds paper in a variety of ways
    • Consists of a former board, jaw fold and chopper fold
The Web Press

- Inking and dampening systems are similar to sheetfed presses
  - Inking system—Comprised of an ink fountain and roller train
  - Dampening system—Comprised of a water pan and series of dampening rollers
The Web Press

- Drying:
  - Web presses are also categorized by how the inks dry:
    - Heatset presses require ovens to dry inks
    - Coldset presses require no heat
    - Some presses require UV light or electron beams to instantly dry or “cure” the ink
The Web Press

• Heatset Web Presses
  – High production commercial presses
    • Commonly used for full-color catalogs and magazines
    • Requires a hot-air dryer to evaporate solvents from the ink
    • Chill rolls cool the heated web of paper and set the ink before the paper moves into the folder
The Web Press

• **Coldset Web Presses**
  - Do not require a heated dryer
    • May dry special inks with ultraviolet (UV) light
    • Inks set on paper by absorption and dry by the process of oxidation
  - Examples of coldset web presses include newspaper presses and business forms presses
The Pressrun Sequence

- A pressrun must be carefully planned and carried out for smooth production
- Premakeready is the first step
  - Examining all production specifications
  - Assuring that all materials—imaged plates, paper, blankets, and inks—are inspected and delivered to the press staging area
The Pressrun Sequence

- Makeready
  - Washing units for any ink changes
  - Inking fountains and rollers
  - Mounting plates
  - Changing blankets
  - Setting ink levels
  - Loading paper stock and setting infeed and delivery settings
The Pressrun Sequence

- Makeready
  - Starting the press and checking initial print quality
  - Making adjustments as required
  - Getting the color okay
The Pressrun Sequence

- The Pressrun
  - Checking and maintaining print quality
  - Keeping inking and dampening levels up
  - Adding paper to the feed table
  - Removing paper from the delivery
Quality Control in the Pressroom

- Maintaining during the pressrun:
  - Ink density
  - Color accuracy and consistency
  - Print cleanliness
  - Paper quality
Quality Control in the Pressroom

- Color bars and densitometers
Common print problems

- **Misregister**

  • Printed images that are incorrectly positioned, either in reference to each other or to the sheet’s edges

  • Could be caused by a number of things:
    - Improperly set up infeed
    - Improperly imaged or mounted plates
    - Expansion or contraction of paper
Quality Control in the Pressroom

• Common print problems
  – Hickeys
    • Small spot surrounded by a white halo
    • Caused by a tiny speck of dried ink, dirt, paper, or other foreign substances on the plate or blanket
    • Removal involves either stopping the press and cleaning the plate or using a hickey picker as the press continues to run
Quality Control in the Pressroom

• Common print problems
  – Color does not match proof
  • Incorrect ink density
  • Inconsistency in paper brightness and color
  • Different lighting conditions affect perception
Automation in the Pressroom

• Press automation features
  – Makes presses more productive
  – Reduces makeready time
  – Can make quality easier to control
Automation in the Pressroom

- Direct-to-press imaging
  - Unimaged plates are automatically mounted on the plate cylinder and then imaged from digital data
  - Speeds makeready
We’re Almost There...
End of Part 7