Chapter 1: What is Gravure?

What is Gravure?


Topics

- Definition and characteristics of Gravure
- Why Gravure is a successful process
- Competing printing processes
- Gravure professional organizations

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Gravure Process Defined

- Gravure's main features:
  - Image area is below the non-image area
    - In small, recessed cells
  - Image carrier is a gapless cylinder
  - Variable repeat lengths are possible
  - Fluid inks
  - Direct transfer and immediate drying
  - Web- or sheetfed
  - Webs up to 12 feet wide

Intaglio Printing

- Gravure is derived from Intaglio
- Flat plates are used
- The image area recessed below the non-image area
- Now only used for fine artwork and printing currency.
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Rotogravure

- The most popular commercial form of gravure in the U.S. – it features:
  - Thin, fluid inks (thus only a "kiss" impression is needed)
  - Roll form substrates
  - Gapless cylinders of any repeat length
  - Engraved into a cell pattern

Characteristics of Gravure

- Gravure printing delivers:
  - Rich, uniform and vivid color
  - High speeds
  - Extremely long and stable run lengths
  - Wide variety of substrates
Gravure Sectors

• Three sectors encompass the hundreds of products printed via gravure:
  – Publication
    • Magazines, retail inserts, and catalogs
  – Packaging
    • Folding cartons, flexible packaging, and labels
  – Product
    • End-use items: Floor coverings, gift wrap, and wallpaper

Why Gravure?

• Gravure is successful due to
  – Simplicity
  – Quality
  – Versatility
  – Productivity
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Simplicity

- Only 5 basic components to the press:
  - Cylinder
  - Ink Fountain
  - Blade
  - Impression Roller
  - Dryer

Quality

- Gravure most closely resembles photographs
- Has very high detail possible
  - Up to 90,000 cells/sq. inch
- Can lay down a variable ink film thickness
- Has very high shadow detail
  - Favored in fine art photography
- Dry trapping without using blankets
  - Allows greater accuracy
Versatility

- Broad range of substrates
  - Paper, film, board, laminates
- Solvent or water based inks
- Gapless cylinders saves paper
- Any repeat length is possible
  - Saves more paper


Versatility

- Benefits of image sleeves:
  - Faster changeovers (less downtime)
  - Much lighter than cylinders
  - More compact than cylinders
  - New bases are not required
  - Shorter runs can become economical

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Productivity

- Widest possible presses
  - Up to 196 digest pages
- Fastest production speeds
  - Up to 3300 fpm with fast-drying solvent inks
- Cylinders last for up to 3 million impressions
- Direct-to-cylinder engraving saves time
  - Enables profiling and color management

Competing Processes

- Flexography & letterpress
- Lithography
- Screen printing
- Digital printing
Flexography & Letterpress

- Both are relief processes (image area is above non-image area)
- Currently both processes use photopolymer plates
- Flexo's market share has increased in recent decades
- Letterpress' market share has dwindled


Flexography & Letterpress

- Main difference between the processes is the ink used
  - Flexography uses a fluid ink
  - Letterpress uses a viscous ink

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Lithography

- Uses planographic (flat) plates
  - Image area separated by chemical treatments
- Litho is an offset process for most applications
  - This increases longevity of the plate
- Lithography is a popular process for:
  - Books
  - Magazines
  - Newspapers
  - Folding cartons

Screen Printing

- Image area is porous; ink passes through to the substrate
- Can print on paper, textiles, metal, and plastic.
- Common process for
  - T-Shirts
  - Circuit boards
  - Architectural glass
  - Highway signs
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Digital Printing

- Direct Imaging (DI) can image plates on press but is not variable
  - Uses traditional processes to image
  - Gravure DI has not been developed yet

Digital Printing

- Another type can change the image on each revolution
  - Small sheet sizes and slow speed
    - Will not allow digital printing to threaten gravure's market

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Professional Organizations

- Gravure Association of America (GAA)
  - Advocates for the gravure process
  - Holds industry-sponsored educational programs and technical seminars
  - Sponsors research in gravure technology
  - More information at www.gaa.org

Professional Organizations

- Gravure Education Foundation (GEF)
  - Establishes Gravure Resource Centers at several universities and colleges
  - Provides scholarships for students studying gravure
  - More information at www.gaa.org