

Print Industry Overview

Printing is a type of manufacturing known as "Discrete Manufacturing" – where the finished products are distinct items that are easily counted, touched or seen. Everywhere you look you see products of the printing industry: Signs, packages, labels, newspapers, books and banners – from the logo on your letterhead to the brand on your t-shirt, it's been printed, and most every print job is a unique order.

Examples of Printing Companies

- Book printers
- Newspaper printers
- Commercial printers
- Bags (plastic and paper)
- Food packaging
- Large format printers

- High street printers
- Wallpaper/Liner
 printers
- Corrugated box printers
- Envelope printers
- Label printers

- Box packaging
- Apparel printers
- Inhouse printers
- Security printers
- Metal printers
- Copy shops

Print companies typically define themselves not by what they produce, but by the method of production. Offset, web-fed, digital, flexo, large format – for a good understanding of the print industry, it's important to learn the many terms and methods involved.

Here we will break down the printing process into its basic stages and describe the elements involved from inception to completion.

- 1. PRE-PRESS (Design)
- 2. PRESS (Printing)
- 3. POST-PRESS (Finishing)



Let's review some basic printing terminology.

СМҮК

CMYK refers to the four inks used in most color printing: cyan, magenta, yellow, and key, with "key" referring to black. Print-ready files are always saved in CMYK, as opposed to RGB (red, green, blue), which is used for digital web design.

Check out this video: <u>https://www.youtube.com/watch?v=8cOZv4AF4pc</u>



СМҮК

SUBSTRATE

In printing, the term substrate refers to any of the wide variety of surfaces onto which an image is printed. Substrates can be paper, board, plastic, vinyl, film, foil, fabric and more, depending on the requirements of the finished piece.



GRAIN

Just like wood, paper of any type will have a grain, which is referred to as either "short" or "long," depending on the direction of the fibers in the sheet.

- Short Grain The grain runs parallel to the short edge of the paper.
- Long Grain The grain runs parallel to the long edge of the paper.



Check out this video: <u>https://www.youtube.com/watch?v=zxn4cFk6rDo</u>

PANTONE

Pantone is a brand name - but is used throughout the print industry in reference to the Pantone Color Matching System, which is a method of standardizing colors for the CMYK printing process.

INKJET and TONER

Inkjet printing is used in digital printing, where small droplets of ink are propelled onto the substrate through one or more jet nozzles. In laser printers, toner is used. This allows for faster drying and therefore speedier, high-volume production runs.

COATINGS

Printed sheets are often coated through various means, both for protection and visual appeal. Coatings can be applied as liquid or film, with a glossy, matte or satin appearance. Liquid coatings can be applied to the entire sheet ("flood coating") or a specific area ("spot coating").

- UV coating (cured through ultraviolet light)
- Varnish coating (solvent, basically a clear ink)
- Aqueous coating (water based)



PRE-PRESS

Pre-press involves the gathering and preparation of digital files that have been designed and include the content (artwork, images, text, etc.) to be printed. Most print companies will have their own pre-press department in-house, and some also have their own design department.

- 1. Print-ready files are received and evaluated (typically high-resolution PDF files). This stage is referred to as "preflight."
- 2. An imposition is made content is arranged for proper layout on the substrate (paper, board, plastic, fabric, etc.)
- 3. Proofing a single test example (either electronic digital sample or actual printed sample) is made for final approval by the customer





Figure 1 Example of an Imposition. There are eight pages on the front of the sheet, and the corresponding eight pages on the back.

- 4. Proof is OK'd by the customer
- 5. If the printing process will be offset, plates are now ready to be made and we move on to the next phase of production



PRESS (Printing)

There are many methods of printing, and they are characterized by the machines used and the product desired. Of course, we recognize the majority of print production as ink on paper, anywhere from a small business card to an encyclopedia. But as mentioned earlier, all sorts of items contain print, including pens, boxes and banners.

- 1. Offset Printing
 - The plate (typically metal) is mounted to a cylinder on the printing press, where the image/content to be printed is transferred from an inked rubber blanket to the substrate.
 - The substrate is fed through the machine either as individual sheets or from a continuous roll (known as a "web").



- 2. Digital
 - Rather than using a plate, the image is sent directly from a computer to the printing press and transferred to the substrate via inkjet or laser



3. Screen

• Commonly used for printing on textiles, screen printing employs a wire-mesh frame to place images to the substrate, where a squeegee pulls ink over the area and non-porous areas remain blank.



4. Flexography

• A rubber or polymer plate is mounted to a cylinder and transfers ink from raised areas to the substrate. Commonly called "flexo," this method is used for printing on non-porous substrates and is the predominant method for the printing of labels and various types of food packaging.



- 5. Gravure
 - Also known as rotogravure, this printing method uses an acid-etched metal cylinder to transfer the image to the sheet. Gravure is mostly used for long production runs of high quality and multiple colors.



OFFSET VS. DIGITAL PRINTING

While both methods produce high-quality printed materials, each has its advantages. The lengthier setup ("makeready") time involved in offset means a greater expense initially, but for long print runs it becomes much more cost effective.

With no plates and minimal setup time required, digital printing is ideal for short runs, as well as "variable data" jobs, where each printed piece can contain different content (such as addresses for mailers or individual names for personalized print).

There are other differences, such as sheet size, which affect whether a job is best suited for offset or digital production.

POST-PRESS (FINISHING)

From foil stamping to book binding, there are many processes that occur after the printing stage of production. While printers often perform some post-press tasks in house, there are many companies which are dedicated exclusively to print finishing services and work as sub-contractors to print shops.



Common finishing processes include:

- Cutting trimming the finished item(s) from the parent sheet
- Die-cutting steel rule is used to score and cut the printed item into various shapes
- Foil stamping heat and pressure are used to apply metallic (usually) designs to the printed piece
- Embossing designs are impressed to the paper with metal plates for a raised effect
- Folding brochures, envelopes, newspapers, pharmaceutical inserts, etc. all undergo some type of folding as a finishing process
- Gluing There are many types and purposes of gluing in the print industry, such as the tabs on a simple pocket folder or the bonding of plastic credit cards to a mailer.
- Binding and Stitching from a stapled pamphlet to the glued spines of books, a bindery is a good example of a sub-contractor
- Laminating thin film is adhered to the substrate with heat and pressure. Like coatings, laminate can be gloss, matte or satin finish



Targets for printers

- Know their margins
- Reduce cost of goods sold
- Reduce errors
- Automate processes
- Create easy order entry
- Combine production
- Buy substrate at low costs
- Gain customer loyalty

Printing companies also often handle

- Customer owned substrates
- Customer finished goods
- Fulfillment (pick, pack, ship)
- Mix of production and finished goods
- Print-on-demand
- Sample modelling

Stay informed

- <u>www.printing.org</u> (PIA Printing Industries of America)
- WhatTheyThink.com
- DRUPA.com