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PRINTtips



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How Do You Define Printing?

Printing. Considering the range of ways to "get the marks on paper" today, it is a simple word with a complex meaning. Reduced to the basics, printing is the transfer of images from one surface or source (printing plate or digital file) to another (paper or other substrate) using a medium (ink or toner).

As recently as ten years ago, we printers may have been careful to distinguish between printing using an offset press, and copying using an analog copier. But with the introduction of digital copiers, the distinction is becoming much less important.

Lithography

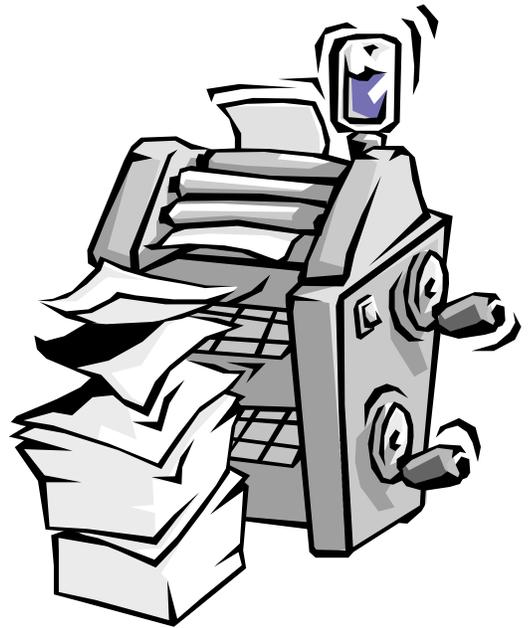
Literally meaning writing on stone, lithography is the printing process most widely used today. And most lithography is performed on sheet-fed offset presses. These presses have three same-size cylinders (plate, blanket, and impression) and a dampening and inking system.

The cylinders rotate, and the press plate is wet by the dampening system (preventing ink transfer to any part of the plate except the image area) and inked. Then the inked image is offset from the plate to a rubber blanket surrounding the blanket cylinder.

The blanket contacts the paper, making a final transfer of the image to the sheet as it passes between the blanket and impression cylinders.

Digital Printing

Sometimes called electronic printing, digital printing can be accomplished with printer/copiers that use a laser beam to expose dark



areas (representing the image) directly onto a photo (light) sensitive drum or belt. Electrically-charged toner particles are attracted to the image on the drum or belt, then transferred to the paper and fused to it with heat and/or pressure. With digital printing, there are no plates.

Comparison of offset and digital printing processes

Digital printer/copiers operate at a uniform speed, stated as copies per minute. Speed is slowed by sheet size and duplexing (two-sided printing). Presses operate at variable speeds depending on what is being printed. This gives presses and copiers a different economy of scale, and throughput capacity. With copiers, the unit cost stays the same throughout the run, so the first copy costs the same as the thousandth. On a press, the unit cost drops as run lengths increase, so the first sheet can cost significantly more than the last sheet.

How Do You Define Printing? (Continued)

“Copiers effectively have no makeready requirements...”

Depending on the speed of the copier, it may take substantially longer to print the job than it does on an offset press. For example, a high speed black and white copier with a rated speed of 105 copies per minute can print about 6000 one-sided 8 1/2 x11 sheets per hour. An offset press can print the same job at 8,000 to 9,000 sheets per hour, completing the job in less time.

Presses require setup sheets called makeready at the beginning of the print run to place the image in the correct location on the sheet and bring the ink up to color. Makeready costs are assigned to the first sheets of the press run, making the unit cost of a very short run significantly higher than the unit cost of a long run. Copiers effectively have no makeready requirements, eliminating these costs.

Due to the high heat used to fuse toner to paper, there is a limited selection of papers that can be used in a copier. The paper feed system imposes further limits on paper thickness and sheet size.

“...each print from a digital copier is an original and can be unique.”

Appropriate Applications for Offset and Digital Printing

A number of technological improvements to copiers – raster image processing, microfine toner particles, better control of registration – means that the decision to use offset or digital printing no longer depends primarily on image quality. Today's black and white, and color digital copiers produce perfectly acceptable quality for all but premium or showcase printing, and do so at production speeds.

To help you determine whether offset or digital printing is best for your project, we've developed an overview of the benefits of each process.

Consider this:

- **The range of paper stocks is greater with offset printing.** Digital copiers typically use three paper sizes – letter, legal, and ledger – and cannot feed any others. Enamel or cast coatings on paper can be a problem for digital copiers because of the fusing temperature. Finally, the paper path or the paper pickup system limits the thickness of paper.
- **In general, offset presses run faster than digital copiers.** At high quantities, a digital copier may be too slow to produce the job in the desired turnaround time.
- **Photographs and screens can be printed at a higher resolution on press.** Because press plates can be imaged at a higher resolution than digital copiers are capable of printing, presses produce finer dots for photographs and screens. This prevents the banding and streaking that can appear in digital printing.
- **Digital printing has less makeready than process color on press.** Because digital color printing requires no plates and only a few sheets to attain good color, it is less expensive in short runs (generally 500 copies or less) and can be produced faster than making plates and printing on an offset press.
- **Digital printing does not require color separations.** This means that a file created in a program that does not support color separations (like Microsoft Word or PowerPoint) can be printed on a digital copier but can't be printed on an offset press. However, this may be changing as portable document format (PDF) workflows are adopted for prepress.
- **Digital printing supports variable data printing and versioning.** Because there are no press plates, each print from a digital copier is an original and can be unique.
- **A digitally-printed job can proceed straight to bindery.** Because there is no need for ink drying time, a job printed on a digital copier can be folded or cut immediately after imaging.

How Do You Define Printing? (Continued)

The best time to use digital color printing is when the project is a short run, when there are no unusual requirements for the paper, and when turnaround time may be a factor. Use

offset printing if the quality requirements are premium or showcase, if the job has specific paper requirements, or if the run length is 2000 or greater.

Changes and Alterations...

An alteration – also known as a change order – is any adjustment you make in job specifications or copy after providing us with your files or after signing off on files we prepare for you. Some examples of common alterations include:

- **Page count.** If we quoted your organization's newsletter based on a page count of 8 and your newsletter editor submits 10 pages, that's an alteration.
- **Copy.** If you discover a typo in your organization's catalog, or if you want to add or delete a product because the manufacturer has changed, that's an alteration.
- **Quantity.** If the number of people attending your organization's awards banquet is greater than anticipated and you increase the amount of programs ordered, that's an alteration.

- **Photographs.** If we report that the photographs you submitted in your artwork file are low resolution and you have us substitute high resolution, that's an alteration.

Alterations are chargeable to you and vary from very small to very expensive, depending on where they are made. For example, alterations made during design usually are less expensive than those made during prepress. The most expensive alterations are those that must be made after film is prepared or when the job is already on press.

To control costs associated with alterations, begin by determining just how important the alteration is. It is possible to find something to change in any job at any stage of production. Determine for yourself how crucial the alteration is to the overall success of the project, and ask us how much the alteration will cost. Weigh the cost: benefit ratio, including the possibility of delay in delivery of the finished product, and then decide.



"...alterations made during design usually are less expensive than those made during prepress."

A Vocabulary of the Graphic Arts

Coated stock: paper with a coating of clay or other substances to improve light reflectivity and ink holdout.

Composition: the arrangement of type, graphics, and other elements on a page.

Duplexing: copying on two sides of a sheet of paper.

Electronic printing: digital printing.

Letter, Legal, Ledger: standard United States paper sizes. Letter is 8 1/2 x 11 inches; legal is 8 1/2 x 14 inches, and ledger (also known as tabloid) is 11 x 17 inches.

Makeready: the activities required to prepare a press for a specific printing job. Also called setup.

Portable Document Format (PDF): file format developed by Adobe that allows sharing of files between computer platforms and outputting files without having the native application.

Proof: test sheet printed from an electronic file. Used to reveal errors or flaws or to predict results on press.

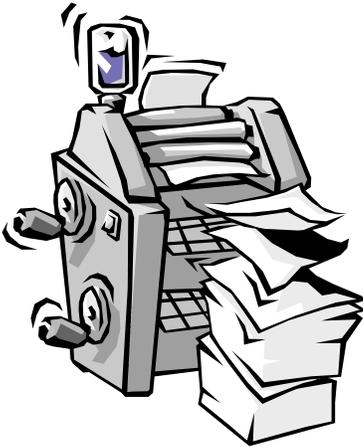
Register: to place the image in position relative to the sides of the sheet and relative to other colors.

Washup: to clean ink and fountain solution from press rollers, ink fountains, screens, and other press components.

Words

"...file format that allows sharing of files between computer platforms and outputting files..."

How Do You Define Printing?



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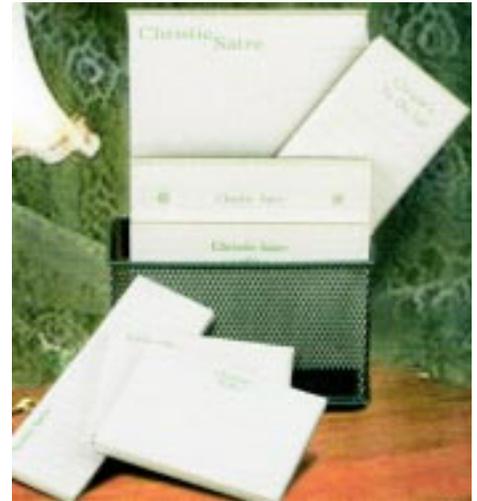
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