



# Moving Forward with History

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## History of printing

The history of printing started around 3000 BCE with the duplication of images

The use of round "cylinder seals" for rolling an impression onto clay tablets goes back to early Mesopotamian civilization, and featured complex and beautiful images, later in both China and Egypt, the use of small "stamps" for seals preceded the use of larger blocks. Block (woodblock) Printing became the mainstay technique for printing text, images or patterns with an initial focus on textile printing later being adopted onto paper under the influence of Buddhism for the production of multiple copies of key texts for religious reasons.

The oldest wood-block printed book is the Diamond Sutra, translated into Chinese in the fifth century. It carries a date on 'the 13th day of the fourth moon of the ninth year of the Xiantong era'

In Europe Block printing was practiced by Christian Europe as a method for printing on cloth, and was common by 1300. Religious Images could be quite large and elaborate, and when paper became relatively easily available, around 1400, the medium transferred very quickly to small woodcut religious images and playing cards. These prints were produced in very large numbers from about 1425 onwards.



# U.S.

Johannes Gutenberg, of the German city of Mainz, developed European movable type printing technology around 1439 and in just over a decade the age of printing began. Gutenberg's movable type printing is often regarded as the most important invention of the second millennium.

Gutenberg is also credited with the introduction of an oil-based ink which that were more durable than previously used water-based inks. Within a year of printing the Gutenberg Bible, Gutenberg also published the first colored prints.

The invention of the printing press revolutionized communication and book production leading to the spread of knowledge.

Early printing houses were run by "master printers." These printers owned shops, selected and edited manuscripts, determined the sizes of print runs, sold the works they produced, raised capital and organized distribution.

**Apprentices:** Apprentices, usually between the ages of 15 and 20, Apprentices prepared ink, dampened sheets of paper, and assisted at the press.

**Journeyman printers:** After completing their apprenticeships, journeyman were free to move employers. This facilitated the spread of printing to areas that were less print-centered.

**Compositors:** Those who set the type for printing.

**Pressmen:** the person who worked the press. This was physically labor intensive.

## Rotary printing press

A rotary printing press is a printing press in which the impressions are carved around a cylinder so that the printing can be done on long continuous rolls of paper, cardboard, plastic, or a large number of other substrates. Rotary drum printing was invented by Richard March Hoe in 1847, and then significantly improved by William Bullock in 1863.




## Flexography

In 1890, the first such patented press was built in Liverpool, England by Bibby, Baron and Sons also known as "Bibby's Folly". In the early 1900s, other presses using rubber printing plates and aniline oil-based ink were developed. This led to the process being called "aniline printing", "gummidruck," or rubber printing. During the early part of the 20th century, the technique was used extensively in food packaging in the United States. However, in the 1940s, the FDA classified aniline dyes as unsuitable for food packaging. Printing sales plummeted, and even after the FDA in 1949 approved the new safe inks, sales continued to decline.



Worried about the image of the industry in 1951 Franklin Moss, the president of the Mosstype Corporation, conducted a poll among the readers of his journal *The Mosstyper* to submit new names for the printing process. Over 200 names were submitted, and a subcommittee of the Packaging Institute's Printed Packaging Committee narrowed the selection to three possibilities: "permatone process", "rotopake process", and "flexographic process". Postal ballots from readers of *The Mosstyper* overwhelmingly chose the last of these, and "flexographic process" was chosen.





Originally flexo printing was basic in quality. Labels requiring high quality have generally been printed Offset until recently. In the last few years great advances have been made to the quality of flexo printing presses.

The greatest advances though have been in the area of Photopolymer Printing Plates, including improvements to the plate material and the method of plate creation.

## Inkjet Printing Technologies

- Piezoelectric DOD ink-filled chamber When a voltage is applied, the piezoelectric material changes shape, which generates a pressure pulse in the fluid forcing a droplet of ink from the nozzle
- Thermal DOD print cartridges with a series of tiny chambers each containing a heater



# CHEMENCE

- Liquid Photopolymers
- Jetsetter



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# Jetsetter Systems



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Software







# Ink Technology





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# JS

## Film Technology





# Calibrations





## New Technologies in development

- Software
- Film





- 1920's
- 1950's
- 1990's
- 2006
- 2012



# Questions?

*Thank you,  
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