

Irvine Royal Academy—Technical Department

Graphic Communication—Advanced Higher

Printing Processes—introduction

This data sheet gives a quick overview of the different printing technologies you need to know about for Advanced Higher Graphic Communication.

Laser Printing

The image shown here is of a small office or domestic laser printer. In printing, larger machines work the same way, printing greater quantities. For up to 300 copies a laser printer is cheaper than offset lithography, whereas for over 300 copies, laser is more expensive. They print colour images very quickly. The printer actually uses a laser to project the image onto the printer's drum, which carries an electric charge. The parts of the drum that are exposed to the laser lose their charge. The parts of the drum that retain the electrical charge are able to pick up the dry ink, also called toner, from within the printer. This ink is then fused to the paper, using heat, as the paper rolls over the drum.



Ink-Jet Printing

Ink-jet printing is normally only used in small-scale printing, for example at home. Most printers will have three or four colour cartridges of different coloured inks. These are either Red, Blue and Yellow, which are mixed to create other colours, or else Cyan, Magenta, Yellow and Black cartridges, again mixed to create all colours. The ink is sprayed onto the paper in tiny droplets, one colour at a time, and build up to form images. They are good for photography. They would not be used for commercial printing work.



In some factory situations, inkjet printing can be carried out on large items, such as packaging, where best before or date stamps are added to them.

These printers are usually only available in A4 or A3 size, but sometimes come in small sizes for photographs.

Wide Format Printing

Wide format printers are printers that print on rolls of material (eg paper, plastic, film, backdrops, vehicle wraps, etc) that are more than 450 mm wide, up to 3,000mm. Larger printers would be classed as **Superwide Format**. The printing technology changes depending on what type of material is being printed on, from laser or ink-jet on paper, to solvent inks on film.

These printers would be used to make **Roll-up Banners, banners, shop signs, plastic stickers for the sides of vans, flags, canvas prints, wallpaper, vinyl stickers, etc.**



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Screen Printing

Screen printing is the process of transferring a stencilled design onto a flat surface using a mesh screen, ink and a squeegee. Fabric and paper are the most commonly screen-printed surfaces, but with specialised inks it's also possible to print onto wood, metal, plastic, and even glass. The basic method involves creating a stencil on a fine mesh screen, and then pushing ink (or paint, in the case of artwork and posters) through to create an imprint of your design on the surface beneath.

The process is sometimes called 'silk screening' or 'silk screen printing' and while the actual printing process is always fairly similar, the way the stencil is created can vary, depending on the materials used. It is only used for making small quantities of printed items.



Offset Lithography Printing

Offset printing, also called offset lithography, is a method of mass-production printing in which the images on metal plates are transferred (offset) to rubber blankets or rollers and then to the print media. The print media, usually paper, does not come into direct contact with the metal plates. This prolongs the life of the plates. In addition, the flexible rubber conforms readily to the print media surface, allowing the process to be used effectively on rough-surfaced media such as canvas, cloth or

wood. The main advantage of offset printing is its high and consistent image quality. The process can be used for small, medium or high-volume jobs.

Solid Ink Printing

Solid ink is a type of ink used in printing. Solid ink is a waxy resin-based polymer that must be melted prior to usage. The technology is used most in graphics and large format printing environments, where colour vividness and cost efficiency are important. Due to the way solid ink printers put the ink onto the page, print quality is considered to be precise and accurate, with bright colours. Excellent results can be achieved with low-quality stock, as the Solid ink covers the stock with a glossy, almost opaque, surface. Solid ink printers are able to print on many different types and thicknesses of media. They are much less sensitive to changes in media type than are colour laser printers.

