DIGITAL PRINTING & FINISHING IN YOUR BUSINESS

How to improve packaging production
with modern techniques

HOLMEN
IGGESUND

Digital printing is nothing new – it has been around for nearly three decades. But a lot has happened since Indigo launched the world's first commercial colour digital printer in 1993. Today's digital printers are even faster and more flexible than in the past, and the image quality and colour reproduction are on a par with traditional printing.

The latest digital printers have been designed to manage thicker, larger substrates and print on all kinds of paper in a variety of sizes. This is an improvement over previous digital systems, where running thicker substrates through printing machines often leads to bottlenecks or even damaged machine parts. Digital production includes adding a wide variety of finishes, from die cutting to embossing, to those substrates. This may be done in combination with traditional printing techniques. Altogether, this opens up possibilities to use digital techniques for both basic and complex packaging solutions.

The price of digital printing is also lower than in the past, particularly for shorter print runs. And while printing methods such as offset, rotogravure and flexographic printing are still more economical for the really large print runs, this too is changing.

Now that digital printing technology is mature, brand owners are beginning to understand how to make the technology work for them to gain a competitive edge. In a market that's saturated with products, it's important to stand out from the crowd and the latest digital printing techniques offer the flexibility to help brands do exactly that. Digital printing can increase efficiency and speed-to-market, and also offers the flexibility to design personalised campaigns. With customised and personalised packaging campaigns, consumers can instantly engage with a brand by adding their personal touch to a package, such as their own design or a photo. Personalised print campaigns can be connected to social media, leading to immediate consumer engagement and interaction.

Learn more about the possibilities of personalised packaging, *click here*.

With digital printing, you can print on demand, which leads to better efficiencies in the production and supply chain of the packaging. At a time when consumers are demanding that companies reduce their carbon footprints, shorter runs and on-demand printing play a key role in reducing waste. Digital technology also uses fewer chemicals and materials than analogue alternatives.

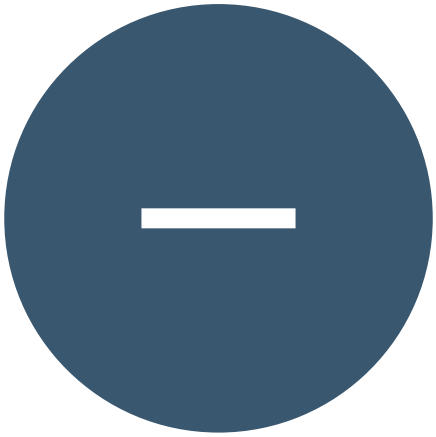
As digital printers come of age, the pros of digitally printing packages clearly outweigh the cons.

Digital printing pros

- Turnaround time for a print run is much faster than with offset printing
- Excellent image quality
- The print is consistent throughout and there is no need to balance water and ink
- Any quantity can be printed
- Lower quantities can be printed at a lower price per piece
- Reduces waste
- Images can be edited multiple times, without the high cost and time required to make printing plates
- Customisation can be done while printing, and every single sheet or package can be unique
- Doesn't require drying time which is advantageous for finishing
- Large format printing is possible

Digital printing cons

- Digital printing can still be more costly than analogue techniques for large quantities, but the price differentiation is narrowing
- Offset machines are faster for larger volumes
- Often fewer options as regards materials



CHAPTER 1:
Digital printing techniques

Dry toner, Indigo and Inkjet are the most popular digital printing techniques on the market. All three printing systems are common, but each one has its unique features.

Inkjet

SUPPLIER TIPS
Inkjet printers: Canon, Durst, Fuji, HP, Kodak, Komori, König & Bauer, Landa and Ricoh.

Inkjet printing is perhaps the fastest-growing print process for the graphics and packaging industry. It involves spraying tiny droplets of liquid ink onto paper. Due to its non-impact printing technique, inks can be printed on almost any substrate, including irregular and delicate materials. Inkjet imprinters can print unique codes and messages onto packages as well, expanding the possibilities for new applications.

Indigo

Indigo is one of the pioneers of digital printing technology and it offers high print quality that is comparable to offset printing. Indigo was developed in Israel in the early 1990s and acquired by Hewlett-Packard (HP) in 2001. The HP Indigo printing process is based on Liquid Electrophotography or LEP and requires HP Indigo's ElectroInk, proprietary liquid inks. These are the first steps in this technology: a charging unit generates uniform charge on an electrophotographic Photo Imaging Plate, and exposure of the plate by a scanned array of laser diodes removes charges from the image area.

Learn more about the HP Indigo technology, *click here*.

Dry toner

SUPPLIER TIPS
Dry toner printers: Canon Océ, Kodak, Konica Minolta, Ricoh, Xeikon and Xerox.

Dry toner printing is mainly used for laser copier systems. Dry toners are usually found in desktop, office and engineering copier systems that use uncoated papers. Dry toner is a fine powder that is usually made of a combination of acrylic and styrene. Dry toners are considered more economical than liquid toners since no solvents are required. Unlike liquid toners, they do not penetrate the printed material. The disadvantage with this is that images can fade over time.

CHAPTER 2:
Finish it any way you like

Finishes, such as varnishes, embossing and die cutting, add value to the final packaging. All of these finishing elements can be added digitally, which saves converters a lot of setup time. A big advantage with digital production is that so many of the fancy finishing techniques can be done with just one piece of equipment. It is also possible to integrate multiple effects or embellishments, in contrast to conventional finishing, where each effect or embellishment has to pass through its own specialised equipment. There are still some challenges to doing this, including cost, but as with all new technologies, this will likely decrease over time.

Here are just some of the finishing options that can be done digitally.

SUPPLIER TIP
Kama is one of the suppliers to look for when it comes to die cutting solutions.

Creasing

The creasing process allows you to fold with precision without any cracks on the surface of the printed, varnished or laminated folds. The crease should be as deep and narrow as possible to achieve accurate folding. An advantage with multi-layer paperboard is that it can be creased before folding. Perforated punches can be added with a paper creaser, which is useful for inserts or coupons, for example.

Learn the basics of successful creasing, *click here*.

Die cutting

Die cutting is a common cutting method that enables uniform shapes to be cut quickly and with no irregularities. This can be done in conjunction with creasing and embossing. The die cutting tool meticulously cuts out shapes, leaving as little waste as possible. This technique is best suited to a short digital print run. Die cutting at higher speeds can present challenges, but there is new servo technology on the market that helps maintain accuracy throughout the process.

Read more about die cutting, *click here*.

Laser cutting

Almost any pattern can be achieved through laser cutting, which can create exciting and complex effects. It is important to use a strong paperboard to withstand the intricate cutting. It works by etching a design through a copper template, which is positioned over the paperboard. A laser beam runs back and forth over the template, vaporising the paperboard along the contours of the pattern. One downside with this method is that the heat of the laser beam causes some discolouration on the reverse side where there are contours of the pattern. This, however, can be covered with a print or incorporated into the design.

Some good advice: use a paperboard with a low lignin content to avoid yellow discolouration when laser cutting.

Read about how to refine the packaging design with laser cutting, *click here*.

SUPPLIER TIP
Highcon machines make it possible to use advanced laser cutting for intricate cut-outs.

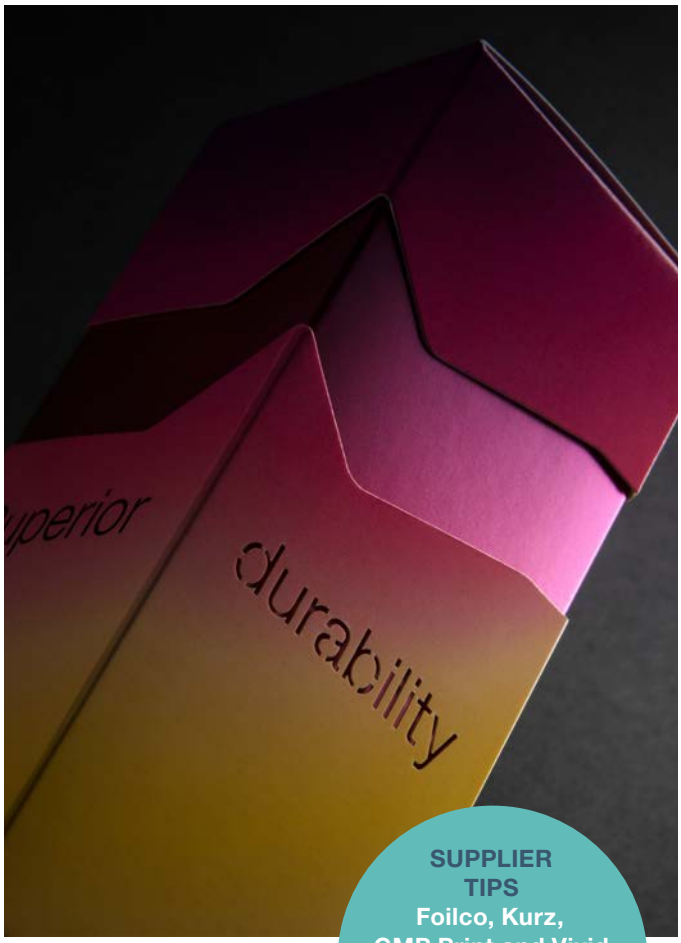
Embossing and debossing

By pressing onto the paper, embossing creates a raised image, while debossing leaves an indented impression. Both techniques are not only eye-catching, but also add an extra sensory element to the paperboard package. These techniques can be combined with foil embossing or other techniques to multiply the effect.

How to create a wow-effect with embossing, *click here*.

Ram punching

This cutting method is used to cut large numbers of small shapes such as cards, envelopes and labels. Ram punching is used to cut through a whole pile of paperboard, in contrast to die cutting, which cuts one sheet at a time.



SUPPLIER TIPS
Foilco, Kurz, GMP Print and Vivid Laminating are some of the specialists in digital foiling solutions.

Foiling

Foil comes in all kinds of colours and finishes, from shimmering metallic to holographic patterns. In the traditional foiling process, heated plates are required. These leave a raised embossing. Digital foiling offers the same luxurious effect of foiling, but often you will need to combine this with a hot foil-embossing tool to get the same relief effect. The digital technique also enables multiple foilings.

Learn more about foiling, *click here*.

SUPPLIER TIPS
Scodix, Tresu and MGI all offer top-of-the-line coating solutions for the digital printing industry.

Binding

Saddle stitching, Wire-O binding, glue binding and thread stitching are some of the many binding methods available. These are generally used for brochures, magazines and booklets. Binding involves creasing, folding and stitching, and it's critical to avoid cracking on the creases and folds during subsequent use. Using a multi-layer virgin fibre paperboard helps to minimise the risk of cracking. It also helps ensure that covers stay well attached to the booklet or magazine over time.

Learn more about how to avoid cracking with durable paperboard, *click here*.

Varnishing

A varnish can enhance the colours, and it also helps protect the surface and make it smoother. Anti-scratch varnish, for example, helps protect package surfaces and eliminate fingerprints. Spot varnishing, which uses different gloss values on the same surface, is ideal for drawing attention to a particular area that you want to highlight. A matte surface, on the other hand, makes it easier to read text, so you may want to use multiple varnishes on the same surface.

And you can take a step further with 3D varnish, where inkjet digital printers are used to actually create images and print with a raised or embossed feeling while the reverse side remains smooth. This technique works best with coated and laminated substrates.

Some examples of how to use varnishing, *click here*.

Gold, rosé or silver

A metal look is something that always makes any packaging or graphic product attract the eye, which is what all brand owners strive for. This can be accomplished in different ways with digital printers. Several printing OEMs offer metallised inks to achieve a truly shiny surface. These inks need to be used with high quality paperboard or other material, since it's important that they are printed on a totally even surface.

Another option is to use a metallised board, such as Invercote Metalprint, to get the unique look. Invercote Metalprint Digital is the perfect fit for HP Indigo one shot systems. By printing different colours on the silvery board you can get a wide variety of lustrous results.

Read about the possibilities of digital silver ink printing, *click here*.
How to get a gold finish with Invercote Metalprint, *click here*.
An example of eyecatching packaging with Invercote Metalprint Digital, *click here*.

CHAPTER 3:
Paperboard considerations

When ordering paperboard products, it is always a good idea to let your supplier know which type of machine and digital printing system will be used, in order to achieve the best possible results. Discuss temperature and moisture levels with your supplier, as these vary in digital printing and can have an impact on the substrate you use. The climate in the print shop will also impact your paperboard, which can sometimes require a few days to acclimatise after arriving at the printer's. Letting your paper "settle" for a few days will help to eliminate moisture sensitivity and ensure flatness.

It is also important to choose a paperboard with consistent thickness to ensure trouble-free feeding of sheets and consistent transformation of toner and ink. Paperboard that is too stiff might get stuck in the machine if there are tight turns in the sheet paths.

Have your finishing techniques in mind as well when selecting paperboard, because the paperboard you choose will greatly affect the final result. Paperboard that is too resilient may be difficult to process, for example when creasing.

Invercote for digital printing

All of Iggesund's paperboards are highly suitable for both conventional and digital printing and will run well on any type of machine. Iggesund's Invercote is a multi-layer virgin fibre paperboard that is ideal for design and finishing applications that require top quality. It creases well without cracking, even after repeated use, and colours can be printed right over the folds. Invercote has a smoothness that delivers an exceptional finish and its true whiteness ensures excellent colour reproduction, even with halftones.

Invercote works well in the digital printing presses on the market today and is suitable for many digital printing applications, but due to the multitude of printing engines and the rapid development of both inks/toners and machinery, we recommend that you contact our technical service personnel for assistance.

Iggesund's Incada Folding Box Board is an option for less demanding print jobs when it comes to design and shape.

Order samples and find out what Invercote grades are suitable for a specific printer, *click here*.

Learn more about important paperboard properties in digital printing, *click here*.

CHAPTER 4:
What's the buzz in the industry?

Steven Widlic

Project Manager at 07 Media, Norway's biggest print house

"Digital printing has always been a huge market for us, but in recent years it has grown. I think it's interesting how the market has evolved from printing leaflets to producing advanced packaging.

Variable data, lower runs and lower costs have a huge impact for our clients and the products we now produce.

A lot of our clients demand more value for their money in print. The key is no longer to produce at the lowest cost, but how to find the right key for our client, and make them successful."

Jose Gorbea

Head of Brands at HP Graphics EMEA

"With the creation of new technologies, such as digital printing and new graphic solutions, we are enabling brands to tell unique individual stories. In the future, brands will offer solutions without the consumer having to go through the process of personalisation themselves. You can serve consumers with solutions based on stories they like and share, and the influencers they follow. Big Data through AI will help us provide solutions, with pre-personalisation becoming even more convenient."

Thomas Janson

Business Development Manager at Holmen Iggesund

"The digital printing and finishing techniques offer a lot of new business opportunities for our clients, with both increased efficiency and options for more creativity. But it's important to use material that can withstand the sometimes demanding printing and finishing stages with these techniques, since the final packaging should always look impeccable when it reaches the consumer."

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Holmen Iggesund is the premium paperboard company for purposeful solutions. We invite our customers and partners to be part of creating the next generation of sustainable packaging solutions and graphical applications together with us.

We are part of the Holmen Group, relying on our own sustainably managed forests to ensure a renewable material for centuries to come.

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