

New Frontiers in Interior Print

MAY 2017



Introduction

A key area of interest for the print industry today is the move into new applications areas. One major sector is functional and industrial printing – a broad range of categories such as automotive, ceramic, glass, biomedical, electronics and various other printing sectors – is valued at \$67.4 billion in 2015, up from \$32.1 billion in 2010. It will grow to \$107.9 billion by 2020.

One of the exciting segments within this area is décor printing. Print service providers (PSPs) are increasingly moving to printing as a means of decorating items for use in interiors – a trend that presents opportunities for developers of digital print in particular.

There is consistent growth in 2010–2020, reflecting the increase in house building and demand from affluent consumers for more pleasant surroundings.

There is growth in public buildings and in the private sector where organisations require branding. The value in 2015 is a little over \$16 billion, and this will grow by an average CAGR of 4.5% to 2020, when it will be worth \$20 billion.

Simultaneous developments in machines, pigments and substrates are delivering ideal conditions for the décor market to expand.

The decoration of interiors has taken place for decades, but new print techniques and a drive from consumers, designers, and architects alike, has opened new opportunities for service providers to exploit.



Companies are increasingly moving to printing as a means of decorating items for use in interiors

Interior designers are embracing inkjet to create bold and unique wall designs for corporate, commercial, and private environments
Source: Blum & Poe

Wallpaper

Printed wallpaper has been used since the 17th century, when woodcut printing was used to print designs as an alternative to tapestries and wall hangings. The mature sector uses some bespoke equipment and flexo, but is predominantly gravure.

Having reached something of a post-1970s drop with interior designs, wallpaper as a wall covering has seen a renaissance over the last few years.

This is due to advances in colour, texture and print effects that can now be achieved; and this is stimulating interest from both machinery and substrate suppliers.

Xeikon is a good example of a manufacturer that is innovating to support this resurgent market. Its 3500 press uses dry toner and is fully compliant with EN 15102 an international safety standard for wall coverings. It is offered as part of a Wall Decoration Suite.

This includes a web finishing module, cutter/slitter, rewinder and a pre-humidifier unit for nonwoven substrates – as well as workflow support software.

By bundling the technology Xeikon is offering print service providers a fast entry to the bespoke wall coverings market. This platform offers a print speed of 19.2m²/min with 1,200 dpi resolution including four-bit variable-dot density. It is able to handle custom illustration and photo murals, and canvas wall coverings as well as patterned wallpaper.

Developments in machines, pigments and substrates is delivering ideal conditions for the market to expand

At FESPA 2017, Neschen Coating showed a number of products in the wallpaper sector, including its high-performance substrate that is suitable for (eco) solvent, latex and UV-curing inks.

The German company unveiled two new substrates – Neschen Wallpaper Lite a wallpaper with a lighter grammage, and Neschen Wallpaper Wallgrip, a self-adhesive vinyl wallpaper.

Laminates

A fast expanding alternative to wallpaper is plastic laminates. These have seen strong growth in corporate vehicle and building graphics applications – and extending their use to interiors on walls, windows, and other surfaces is presenting new permanent and temporary design options for informational and promotional signage applications.

High-pressure laminates (HPL) are available in a wide selection of colours, designs and textures. HPL can be used flat on vertical and horizontal surfaces, and can be heated and formed to hold a curve for worktops, cabinet fronts, furniture carcasses, wall panels, windowsills, and laminate floors.

The arrival of new lower temperature UV curing lamps and related technologies is expanding the range of temperature-sensitive materials available.



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Xeikon has constructed a Wallpaper Suite around its 3500 model press. This toner printer is marketed primarily for label and packaging work
Source: Xeikon

Press builders are increasingly cooperating with suppliers of plastic substrates to optimise the commercial and technical performance of media, as the latter increase their product range.

Lintec, for instance, has a number of substrates in its range that offer high levels of versatility when interior surfaces need to be decorated. The pressure-sensitive films, and digital printable wall coverings, can be printed with UV curing or latex inkjet inks.

Similarly, MX Display has substrates available for wall and floor graphic materials, to window and fabric displays. Polycril, for instance, is a canvas textured material that is non-reflective and can be printed in sheets of up to 2.4m x 4.0m, making it ideal to cover large surfaces with no joins.

Alumigraphics is a foil-based malleable adhesive graphics product that can mould around walls and other surfaces. The printed images appear to have been directly applied to the wall or object surface.

Texture

Texture is a major trend with wallpapers and other wall covering substrates. FESPA 2017 saw wallpaper materials developer Veika show its new product Dimense.



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Graphics films like 3M's Scotchcal have been optimised to follow the textures of wall materials, like brick
Source: 3M

This technology allows digital print and embossing to take place in a single pass without a print cylinder, meaning different non-repetitive embossing can be produced. The elimination of the cylinder also means custom embossing becomes economical on much lower print runs of wallpaper.

The Lithuanian developer is licencing the technology to Mimaki for production on its equipment. A commercial launch is scheduled for 2018.

Domestic challenge

The developments in technologies and substrates that have initially been used for decorative enhancement in the commercial sector, is now becoming commonplace in domestic environments too.

Designers and architects are seeing the potential that digitally printed substrates can have on an interior space, are increasingly specifying these as a component of their designs.

This proposition has been pioneered in commercial applications, where innovative print technologies can command a premium. The challenge is now to evolve these systems to facilitate penetration into home and non-luxury commercial environments.

Applications

In addition to wallpaper, windows, furniture, floors and a host of other surfaces offer a new source of revenue for PSPs. For interior designs the traditional approach has been for white or tinted papers to be printed, and then laminated onto chipboard or medium-density fibreboard (MDF), for use in flooring and furniture.

Texture is a major trend with wallpapers and other wall covering substrates

Manufacturers will buy printed décor paper or print internally. Melamine foils are printed décor paper impregnated with duroplastic resins – these are used as the surface for worktops and furniture.

Screen printing, mostly rotary, is used to print the base paper and materials for décor, and for decals and transfers where base white is often screen printed. Carpets can be printed with specialist screen systems.

Bespoke machines are used to print finished shapes directly – for example, doors, furniture and coverings.

As new materials have been developed they have overcome a number of obstacles, such as how to print onto curved surfaces – especially laminates.

Rotogravure dominates the market, with flexo and offset taking a small share. Importantly, however, digital methods are now becoming more widespread.

Inkjet

The move to digital output can be seen with the development of more pigments designed for digital presses.

J-Teck3 showed its new sublimation and disperse digital inks developed for Kyocera and Epson machines at FESPA 2017. The pigments enable the direct printing onto a range of fabrics, with the inks particularly suited to applications where rub fastness is critical.



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Digital production matches industry demand for test and small product runs for large-scale installation graphics

Source: Interprint

The use of inkjet for print output offers many opportunities, especially when substrates are concerned. At FESPA 2017, Drytac Europe – a self-adhesive materials manufacturer and developer – showed its ViziPrint Impress, SpotOn and ReTac solutions.

The company's ReTac product can be used on most indoor surfaces, and is compatible with UV and latex printing systems. SpotOn is a printable vinyl 100µ monomeric PVC film that can also be printed with similar systems.

For architects and interior designers, the advances with interior décor have been transformative due to the continued development of print machines, advanced substrates and pigments.

Market growth

Inkjet is the fastest growing sector, with small runs and one-off items such as panels and doors printed on wide format and traversing head printers, with fast single-pass presses becoming used for base paper. This print process has grown at a considerable rate in the past few years, and the market is set to mature into a multibillion proposition in the coming years.

Inkjet has long been in use to print individual panels, and doors and furniture. Flatbed and wide format inkjet machines are used to print directly on to materials and on to transfer paper for small runs such as bespoke table tops.

Narrow web machines are used to print thin edge bands, usually onto plastic, and finished strips for furniture and work surfaces.

Inkjet is starting to make inroads into the décor printing sector as an alternative to gravure, as the quality and productivity has improved.

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Interior glass

The decoration of glass has a long history in the commercial and domestic markets. High-performance films now available, which can be printed with any desired graphic – including the use of white pigment – are offering a host of new opportunities.

Xtreme Graphics, for instance, has an optically clear window film that can be attached to any glass surface. Being fire retardant, the film has many applications. The company also offers wall and floor covering, all of which can be digitally printed.

There is also a developing segment for printing directly onto glass, for both interior and exterior installations – though the material handling and substrate properties means this is limited to a few specialist providers.

One leader is Israel's Diptech, with platforms like the GPI series able to operate at 1,410 dpi using its own digital ceramic inks on sheets up to 2.4m x 6.0m. This includes the ability to deposit photorealistic prints, at 35m²/hour.

This type of output has been limited to commercial installations – like hotel or corporate headquarters. There is potential to spread into the domestic environment, with smaller machines producing materials like shower screens.



There are developments in printing directly onto glass for interior and exterior

Specialist machine builders and ceramic inks are adding an array of new colours to interior glass surfaces
Source: Diptech

Integrated design

The use of single-pass wide-web equipment is growing, with companies such as Hymmen, Padaluma and Barberàn being joined by KBA in providing high-performance paper printers.

These use water-based inks and the developers are steadily solving production problems. The paper is a challenge: its surface has to be open enough to be impregnated with a resin system after printing, but this is not ideal for print quality.

KBA says it has sold a wider RotaJet, with a web width of 2.25m, to another décor printer and claims there are more projects in the pipeline.

Papers that are easier to impregnate are harder to print on. German providers are pioneers in adopting the technology, with Schattdecor and Interprint in the vanguard. The Palis 2250 from Schattdecor is able to print at 162m²/minute to a paper width of 2.25m. Using 80 water-cooled printheads, the machine is capable of 1,200 dpi resolution.

Crucially, the pigments in use are the same as for rotogravure printing. This means that in an overall design for a room analogue and digital processes – including fully and post-print customised designs – can be integrated seamlessly across a range of media and surface to create a unified concept.

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Digitally printed fabrics

The household or home décor market for digitally printed fabrics was worth \$91.1 million globally in 2016, and consumed 70 million square metres of fabric. This segment encompasses a range of products, including upholstery, carpets and floor coverings, bed linen, and curtains.

Interior designers are benefitting from a greater availability of wide format digital printers, and machines are now being built specifically for this segment.

In 2016, SPGPrints introduced a new wide format digital inkjet press – the Javelin – aimed at the home décor market. Able to print in widths up to 3.2m, the machine is ideal for the soft furnishing sector. The machine also lends itself to shorter print runs and bespoke commissions for specialist clients such as hotels. Offering six-colour output, it runs at 550m²/hour. In addition, the company has two new PIKE digital inkjet printers that can output onto rigid substrates to round out its portfolio.

The décor segment is experiencing impressive growth due to digital's scope to enable personalisation, new functionality and design creativity. For example, interior decorators can make customised fabrics to create unique interiors.

A design for wallpaper, for example in a house, can then be reflected with similar designs on furnishings.



Décor is experiencing impressive growth due to digital's scope to enable personalisation

The increasing installed base of inkjet means soft furnishings can be customised to align with and enhance a room's décor
Source: FESPA

There is great potential to exploit web-to-print platforms, familiar in clothing and accessories segments, for the household segment as it matures – with customisation of patterned fabrics printed in volume by conventional means are an attractive option.

Globally household décor’s share of the digitally printed textile market will increase across the next five years – more than doubling from \$91.1 million in 2016 to \$199 million in 2021. Bed linen, fabric wall and floor coverings, and curtains all represent key applications ripe for exploitation.

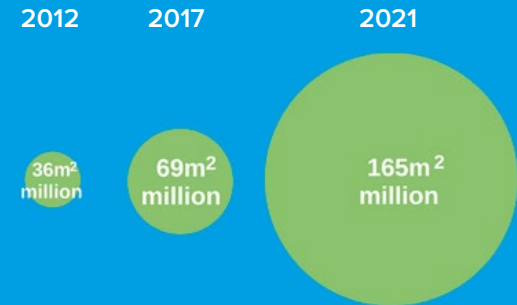
Printing onto textiles has been a rapidly evolving market for several years. Machine manufacturers such as Mimaki have been paying close attention to this evolution, as they develop new machines. Good examples are the Tx300P-1800 and Tx300P-1800B direct-to-textile printers.

These can print with up to five ink types so as to accommodate all of the most popular textiles – including cotton and hemp, as well as polyester – used in interior design.

In particular, there are significant opportunities for the progress of digital printing techniques – and a number of firms are supplying high-performance printers to cater for this area.

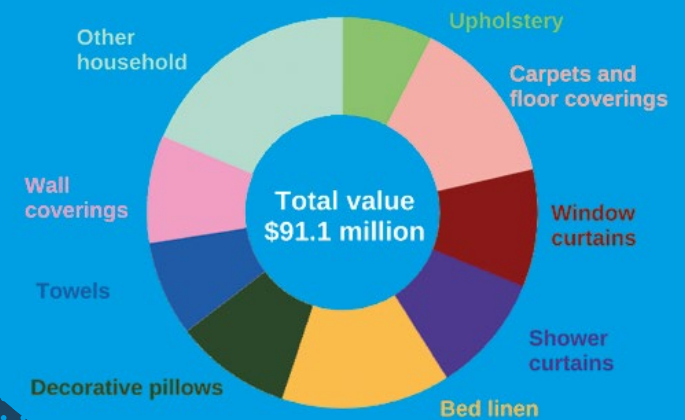
Printing onto textiles has been a rapidly evolving market for several years

Inkjet home fabrics market



World demand will increase by a factor of 4.6 across 10 years

End-use applications 2016



Source: MX Displays

Conclusion

As part of the wider functional and industrial printing movement, décor printing is an exciting growth area for PSPs to diversify beyond conventional graphics printing.

In particular significant opportunities exist for the progress of digital printing techniques – and a number of firms are supplying high-performance printers to cater for this area.

The range of print techniques that can now be achieved is vast. Machine developers are also moving towards multi-use machines that can handle a wide range of substrates to meet the needs of their clients. And these needs are diversifying. Where décor was once defined as little more than wall covering, this now encompasses every surface of an interior.

Print applications for décor have continued to diversify as new print techniques have appeared, and machine developers have reacted to the changing demands of the marketplace.

Digital does have the same potential for other interior elements, although its impact is likely to be more evolutionary than revolutionary.

Residential, commercial and consumer spaces all have the potential to be transformed by the availability of various print techniques – most notably digital – either on traditional substrates, or with new laminates.

A major bridge to cross is to compose business models that allow digital fabric print to move from the top-end commercial environments to the mass-market private home and residential sector.



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The flexibility of digital print, twinned with new substrates, means a wider range of surfaces can be exploited for decoration or informational signage
Source: MX Displays