

JOINED UP THINKING

Dr. Anke Pankoke explores a new technology and a powerful partnership for digital printing on decorative paper with water-based inks

Decorative surfaces must be produced quickly and flexibly in the desired quality and at a reasonable price. For over a decade, attempts have been made to achieve these goals in industrial digital printing on decorative paper with water-based inks – so far without significant success.

One of the main challenges on the technical side is to join the expertise of different market players, such as the machine manufacturers, the printhead manufacturers and the local producers of flooring, furniture and other wood-based materials concerning digital printing on décor paper with water-based inks.

TAILORED APPROACH

Besides the missing knowledge-transfer, the strategic focus of the market players had to be changed completely. Until now they had not realised that the traditional rules of the supply chain had to be revised. The industry doesn't need the traditional huge amount of centrally produced décor paper anymore. To bring the flexibility of digital printing to the local manufacturing sites, you need a digital printing line that fits to the capacities and investment volume that the local plants in the woodworking industry need. Only then the manufacturers of flooring, furniture and other applications can realise the benefits of just-in-time production, low warehouse costs, skipping shipping costs and high output quality at the same time.

Thanks to the development partnership between Hymmen and Ricoh, manufacturers of digitally printed decorative paper now have a strong technology team at their side that ensures the knowledge-transfer and has

Application	Lines in operation
Finish foil (pre-impregnated)	5
Doors (panels UV topcoat)	1
Flooring (panels UV topcoat)	8
Flooring (melamine process)	4
Decor paper (melamine process)	4
Thermoplastic sheet materials	8
Construction materials	4
Digital Lacquer Embossing	2
Lab equipment	5
Total:	41

Repeated investments by Hymmen customers in JUPITER systems attest to their

- technological performance
- profitability

Fig. 1: Hymmen JUPITER digital printing lines list of references sorted by application

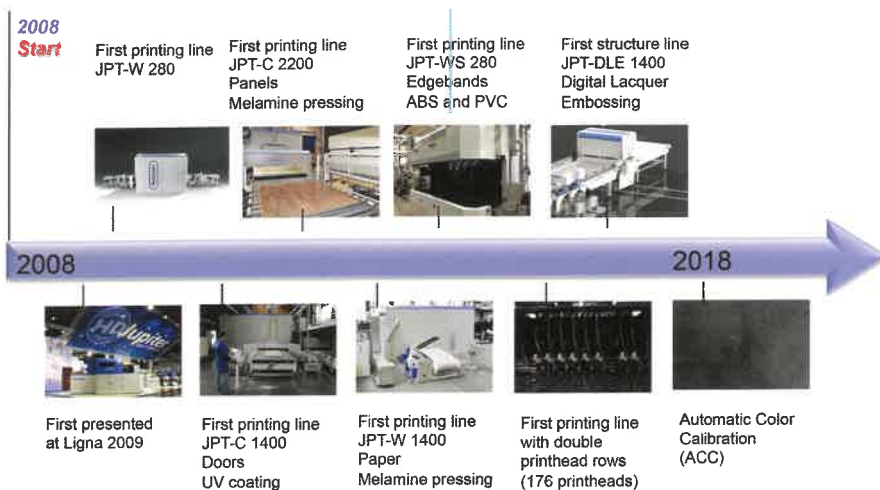


Fig. 2: The history of the JUPITER digital printing lines – a history of dealing with technical challenges

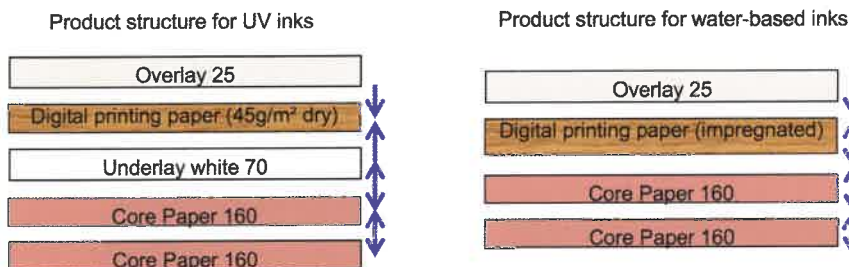


Fig. 3: Comparing the product structure of digitally printed paper

resulted in a digital printing line named Saturn that is ready to market fitting to the needs of local production sites.

WATER-BASED PARTNERSHIP

A specialist in digital printing in the wood-based materials industry for over a decade, Hymmen has sold more than 40 single-pass

machines all over the world (see Fig. 1). Major challenges in the development of the complex single-pass digital printing technology have already been mastered (see Fig. 2). Hymmen already offers technology for printing decorative paper with UV-curable inks. However, there are applications where the product cannot be built as required for

Continued over

Technical data

- Printing speed 15 - 35 m/min
- Effective working width 700 / 1,400 / 2,300 mm
- Printing color system standard 4 colors CMY expandable to 8 colors
- Additional colors bright colors and special colors possible in the future
- Ink system water based
- Resolution 600 or 1,200 dpi
- Printhead type Ricoh MH5421 MF

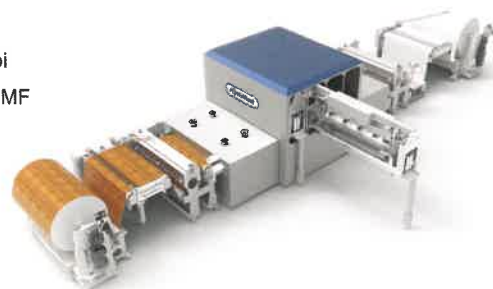


Fig. 4: Technical data of the Saturn digital printing line for water-based inks

UV-curable inks. This is where water-based inks come into their own (see Fig. 3). Hymmen's know-how and experience in the manufacture and finishing of wood surfaces as well as its contacts in the flooring and furniture industry make the company an ideal partner for a printhead manufacturer with expertise in water-based ink.

Ricoh has over 40 years of printhead production experience and the company division that specialises in industrial printing is strategically focused on inkjet printing. The core technology comprises printheads with a metal nozzle plate, which are used with a wide range of liquids. Ricoh brings the printhead technology for water-based

inks into the development partnership.

The Ricoh/Hymmen partnership boasts in-depth expertise in digital printing technology, the markets, and process management. With a focus on water-based digital printing for decorative paper, the result of the cooperation between the two companies is set to be a product with the goal of offering 'a plug-and-play industrial inkjet solution for the wood-based materials industry.'

SATURN DIGITAL PRINTING LINE

Saturn is an industrial digital printing line that can be integrated into customers' existing production processes. It is a standard machine that offers printheads, ink and printing at the desired resolution for an affordable price.

The Saturn Digital Printing Line (see Fig. 4 and 5) is a breakthrough in the production of digitally printed decorative paper (see Fig. 6a and 6b). This system differs from the existing water-based printing solutions in that it is decentralised, more flexible in terms of design for both small and large batches, and not primarily focused on replacing analogue technologies with digital ones.

Saturn ensures minimal storage of decorative papers through just-in-time production. The entire process in the new facility is much easier than with existing decorative printing equipment. Drying the inks is simpler and the printing process is more stable and reliable. Finally, Saturn requires a lower investment volume. Fig. 7 illustrates the main points.

NEW APPROACH

With Saturn, decorative surface printing is approached in a new way. The dynamic of the supply chain is completely changed. While décor papers were typically manufactured in centralised locations before further processing in impregnation facilities, now the local production of the décor paper is possible. Batch production meets customers' needs quickly, on-demand and skips the logistical overhead such as shipping and warehousing.

As well as bringing technological innovation in print forwards, Hymmen and Ricoh realise that they also need to address critical elements to improve the supply chain significantly. They need to make fundamental changes to the

valiani.com | flatbed-plotter.com



Short to Medium Cutting Run?

Why not do it in-house?



Cut up to 3/4" (20 mm) in thickness

Optima V

Available in 3 different sizes up to 4'x8' (123 x 250 cm) with optional oscillating tool head.



Digital

Packaging

Apparel Pattern

Cut up to 3/4" (20 mm)



Who is Valiani?

Valiani is an Italian award winning manufacturer of cutting machines. Since 1974, their pioneering engineering skills have produced quality and reliable machines that are used in many high profile organizations around the world.

Valiani srl - Italy
Via delle Regioni, 305
50052 Certaldo - Firenze, ITALIA
info@valiani.com

USA Contact
Dave Modcan
dmodcan@creasontcardboard.com

USA Warehouse
100 W. Willow Road,
Whiting, IL 60190 U.S.A.



Fig. 5: The core of Saturn: the printbar shown at Ligna 2019



Fig. 6a: Digitally printed décor paper by Saturn before (bottom) and after impregnation (top)



Fig. 6b: Digitally printed décor paper pressed on different board materials

way décor suppliers have worked in the past. Improved time to market, quality output and reduced inventory – this is what the on-location printing just-in-time with the Saturn Digital Printing Line offers. Now the flexibility of digital printing also reaches the decentralised production sites.

Owing to the partnership between two established companies in the digital printing market and their combined expertise, Hymmen and Ricoh are your ideal partners for tomorrow's water-based digital printing. ■

Dr. Anke Pankoke is Head of Marketing and PR at Hymmen

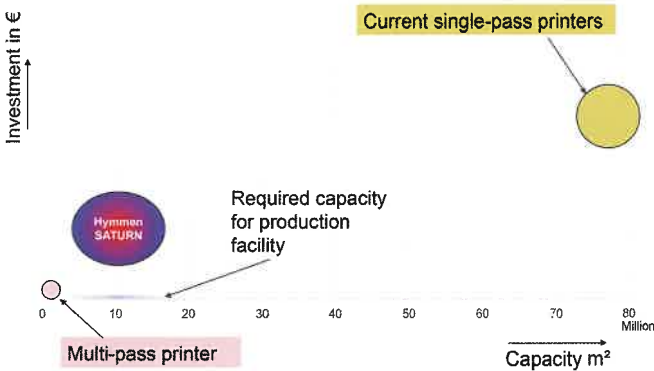


Fig. 7: Comparison of printing machines for digitally printed decorative paper

Further information:

Hymmen GmbH Maschinen- und Anlagenbau, Bielefeld, Germany
 tel: +49 521 5806 184
 email: info@hymmen.com
 web: www.hymmen.com



INKS MADE FOR LIFE

SCREEN · DIGITAL · PAD

MARABU INKS FOR COMPLEX MANUFACTURING PROCESSES.

Smart and flexible: Our inks are tailored to your specific production processes, enhancing speed and reducing downtime.

PRINT
 MUNICH
 12-14 NOV 2019 MESSE MÜNCHEN

Visit us!
 Hall: **A6**
 Booth: **516**

Your link to ink: marabu-inks.com



Mimaki has drawn on its know-how in industrial 2D inkjet printing to ensure the high detail accuracy, colour consistency and production stability of the 3DUJ-553



also introduced an enhanced waveform control system, which adapts the waveform for each ink that is used. You may wonder at the term waveform – what it means is that ink droplets are jetted in near-perfect circles and positioned with absolute precision, resulting in flawless print quality.

So, how will Mimaki's colour-powerful 3DUJ-553 change designers' lives? With its output quality, simulation matching and consistency. The new 3D printing system helps designers ensure that the projects they create on their screens perfectly match the printed output, which broadens up creative opportunities and enables time and cost savings – provided, of course, that screen calibration is done properly! Consistency and repeatability bring in further benefits in terms of cutting out time, cost of transportation and thereby decreasing the environmental impact, as once the project is ready to be printed out, production can run locally with the guarantee that the final products look and feel the same.

BEYOND COLOUR

Colour is not the only strength of our core 3D printing technology. Mimaki's expertise in industrial 2D inkjet printing, as well as in inkjet direct-to-object printing has enabled us to be accurate in every detail of our 3D printing systems.

The 3DUJ-553 is equipped with in-head ink circulation systems, which helps prevent pigment sedimentation and remove air bubbles near the nozzles, and with NCU (Nozzle Check Unit), a nozzle status detection unit that

enables automatic cleaning to be performed when a nozzle is missing or damaged. Both the technologies are derived from Mimaki's 2D inkjet printing knowledge and ensure advanced uptime and improved productivity, reliability and production stability also in 3D printing.

Another feature worth mentioning is the modelling area of 500 x 500 x 300mm, which makes the 3DUJ-553 suitable for a wide range of applications, including large-scale prototyping and modelling, with high detail accuracy and efficient positioning of printable objects.

All in all, we expect new frontiers to open up for 3D applications across the coming years. Technology-wise, Mimaki is ready to take up the 3D printing challenges. Application-wise, there are different market segments that can be addressed with the new 3DUJ-553. Ranging from scaled models, mock-ups and prototyping to 3D art, tools and equipment, figurines, as well as medical and educational applications, colour-powerful 3D printing technology is set to enhance the way those industries envision creativity and to improve the overall production process. ■

Bert Benckhuysen is Senior Product Manager at Mimaki Europe

Further information:

Mimaki Germany GmbH, Diemen, The Netherlands
tel: +31 20 462 76 40
email: info@mimaki-europe.com
web: www.mimaki-europe.com

Digital
printing
everywhere.

Direct to board and on
paper/foil with UV-
curing ink.

On decorpaper with
waterbased ink.

GLASSPrint2019
CONFERENCE
27-28 NOVEMBER 2019
DÜSSELDORF, GERMANY
www.glassprint.org

FOR FULL
INFORMATION
SEE PAGES
22-23



Hymmen

www.hymmen.com