

Hymmen Technology Allows Digital Production of the Look And Feel of Surfaces to Become Widespread

Digital Over All

The production of digitally printed materials is becoming increasingly popular – whether in the flooring, furniture or building materials sector. Customers expect that the look of a surface will match its feel. Various processes are available to cater for their needs. All established methods have one thing in common: unlike printing processes, they are not digital, but analogue. Hymmen has developed a solution for this dilemma which is now patent-pending: Digital Lacquer Embossing.

Growing importance of digital decor printing

To realise the current importance of digital printing worldwide for example in the flooring industry, one only has to take a look at the production volumes attained: at present 40 million square metres is manufactured with Hymmen JUPITER Digital Printing Lines alone. And this is only set to increase. Manufacturers are increasingly taking advantage of the benefits of digital printing on an industrial scale:

- Industrial production of small output volumes per decor
- Integration of digital printing in the process chains of the decor industry
- Individualised mass production
- Fast response to market trends
- Shorter time to market
- Shorter set-up times
- Lower storage costs

- New design options (register lengths, colours, visual depth)

The need for an authentic feel

If we consider the example of flooring, its key properties do not just include the look, but also the feel. The feel is typically created with the help of pressing plates or structured rollers. This results in the following dilemma: although digitally printed decors are becoming increasingly popular, all associated benefits are thwarted by the analogue structuring process.

“We therefore believe that digital textured printing offers major market potential,” comments Dr. René Pankoke, Managing Partner and CEO of Hymmen, the market leader for industrial digital printing in the wood materials industry. And this is what prompted Hymmen to develop a process for digital surface structuring that is suitable for industrial applications.

Prerequisites for the industrial capability of digital structuring

“We firstly have extensive experience in digital decor printing”, comments Pankoke, explaining the background to development of the new product. „Secondly, from our expertise in liquid coating we knew that customers make high demands on structured surfaces. If they are not satisfied, new technology will have no chance of supplanting established processes.“ This was the reason why, for example, initial efforts with a structure created with a digitally positive application method were discarded, as the result did not live up to the requirements on abrasion resistance.

„The numerous trials at our pilot plant in Rödinghausen and discussions with customers gradually brought to light the key conditions digital structuring needs to satisfy to be suitable for industrial applications,“ remarks Pankoke, summarising the company’s findings when de-

veloping the process. They involve the following characteristics:

- A structure depth of 10 - 90 µm
- Embossed in register (EIR) to the decor of the surface
- Surface quality to be preserved. This varies between products (furniture, flooring, etc.)
- Different gloss levels
- Creation of a depth structure resembling real wood and not a positive build-up of the structure
- Option of adding the technology to an existing conventional lacquering line.

The innovation: Hymmen Digital Lacquer Embossing

Following extensive laboratory testing Hymmen filed a number of patent applications and presented the technique of Digital Lacquer Embossing to the public for the first time at INPRINT 2016. This was the response to a clear customer need for the appearance and feel of a surface to match. While looking absolutely natural as well.

With this innovative technique, which is the subject of several patent applications, a transparent liquid medium is printed into a layer of conventional, non-cured lacquer. This is accomplished with the tried and tested technology of the Hymmen JUPITER Digital Printing Lines. The deep and unique structure is then brought about by subsequent physical and chemical reactions. The diagram in Figure 3 illustrates this process.

Digital Lacquer Embossing takes advantage of all commercial and technical benefits of Hymmen’s tried and tested digital single-pass printing method. They include properties such as great flexibility, short set-up times, no stor-

age costs, new design options and individualisation – not to mention the saving resulting from the changeover of rollers or pressing plates.

With a width of between 70 mm and 2,100 mm and just a single digital printing bar, this technology can be easily integrated in existing processes. Despite using just a small quantity of the structuring medium, all proven features of the lacquer such as hardness, bonding, scratch resistance and chemical reliability are ensured here. Lastly, it is possible to create structures that are embossed in register to the decor of the surface, whether with digital or analogue printing.

Fig. 2 shows a workpiece where the surface of the lacquer is not yet fully cured, as below the row of printing heads at Hymmen’s pilot plant. In Fig. 3 a digitally structured surface can now be seen, directly after the structuring process. Fig. 4 shows a digitally structured surface patterned as wood before it passes through the UV dryer. In Fig. 5 a comparison can be made between a selection of disparate structures which were applied digitally. „We recently produced extremely high-quality samples at our pilot plant in Rödinghausen in preparation for the Ligna fair and Interzum 2017,“ says Carsten Brinkmeyer, Head of Division for Digital Printing And Liquid Coating at Hymmen, in explanation of the figures/photographs. “The technique of Digital Lacquer Embossing met with huge interest at the trade fairs.” To ensure the necessary capacity for the customer trials planned Hymmen is currently installing a complete test line at its pilot plant in Rödinghausen. Digital Lacquer Embossing offers an unprecedented extra benefit for surface finishing: seeing and feeling authentic surfaces now becomes reality thanks to the widespread usage of Hymmen’s industrial digital printing process – including the commercial and technical benefits.

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Fig. 1: Dr. René Pankoke, Managing Partner and CEO of Hymmen.

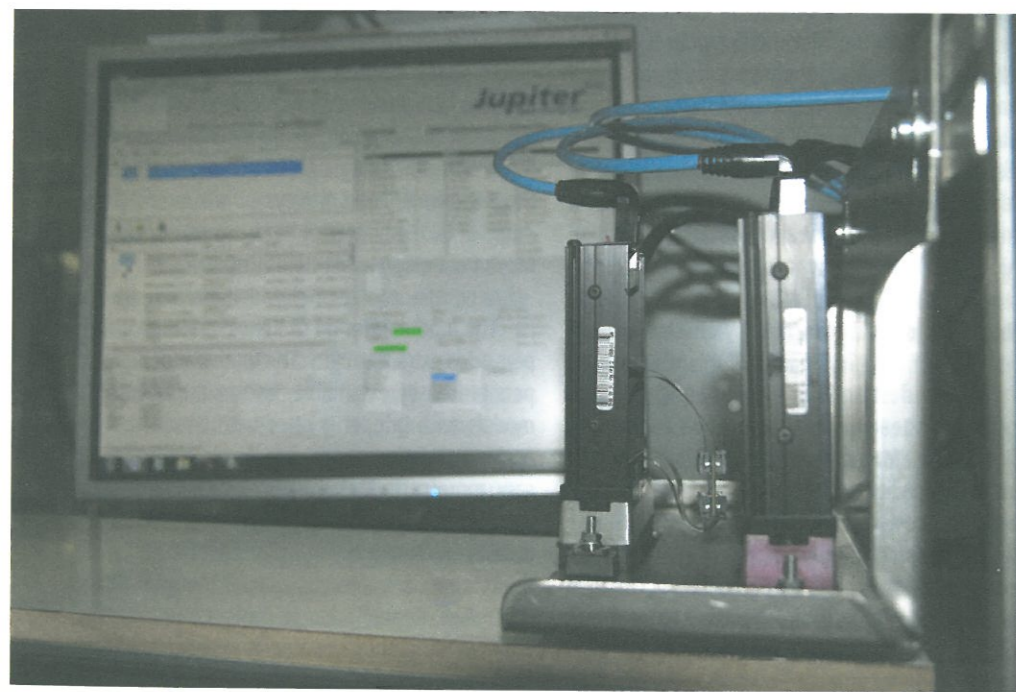


Fig. 2: A lacquer surface which is not yet fully cured as it passes along the Hymmen JUPITER Digital Printing Line at the pilot plant en route for Digital Lacquer Embossing.

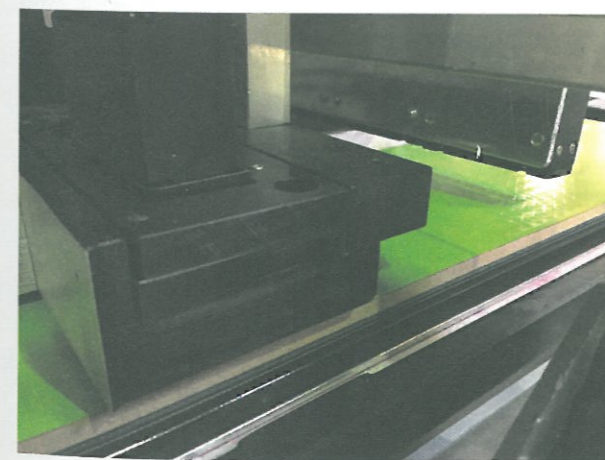


Fig. 3: A digitally structured surface at the outlet of the digital printer.

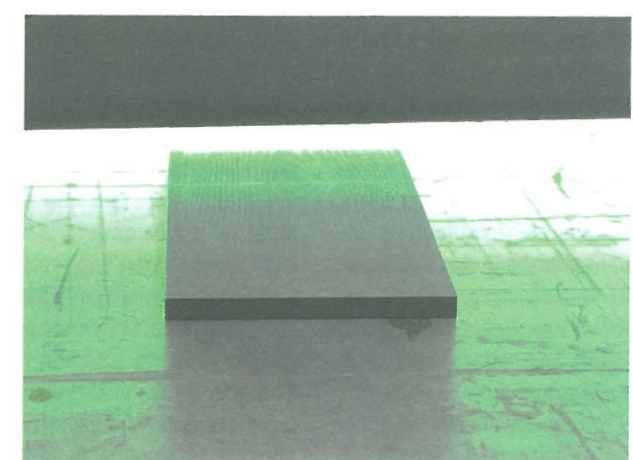


Fig. 4: Surface displaying a digitally applied woodlike structure at the inlet to the UV dryer.



Fig. 5: A selection of disparate digital structures applied using Hymmen's technique