

## Laminating technology – the next generation

### **HOMAG Group develops new laminating technology reactTec**

**In the field of lamination technology, a distinction is generally drawn nowadays between the three different adhesive types urea, PVAC and hot-melt. Working in close cooperation with the companies Henkel and Nordson, the HOMAG Group has now developed a new technique: reactTec lamination. With this innovation, the world technology leader is providing yet more proof of its pioneering credentials. The Schopfloch-based company unveiled its new technique to the public punctually for the HOMAG Treff, marking the company's 50-year jubilee.**

Development of the new technique, known as **reactTec** for short, was born out of the idea of transposing the familiar benefits of hot-melt gluing to a new method minus its equally familiar drawbacks. The targeted positive properties outlined in the product brief consequently included:

- Reliable, easy-to-operate glue application using a closed nozzle application system
- Energy and resource efficiency through a high level of technical availability
- Low cleaning and maintenance requirement
- Few parameters to be monitored by the operator
- Insensitivity to changing process parameters such as feed rate
- Low space requirement through compact plant design
- Optimum surface smoothness even with the thinnest coating materials
- No ingress of moisture, consequently no chip swelling

- Glue joint free of formaldehyde and other emissions
- High mechanical load capacity, i.e. elimination of the surface impressions previously observed with hot-melt adhesives

### **For low-cost, green production**

The project planning remit naturally encompassed both economic and ecological requirements. The declared aims: Favourable production costs and high environmental compatibility. Also central to the remit was the elimination of the known drawbacks of hot-melt gluing – in particular in comparison to urea gluing. These included:

- Low moisture resistance of the glue joint both with EVA and PO adhesives (PUR is excluded from this comparison for cost reasons)
- Low temperature resistance, primarily in the case of EVA adhesives, with low softening point
- Soft surface when using APAO-based hot melt glues
- Cost-intensive, soft and pressure-sensitive glue joint
- Process complexity and susceptibility to faults, as well as complex process monitoring

### **New adhesive – new application method**

It quickly became clear that the defined targets could not be achieved using available adhesives. A new development was called for which would be capable of addressing the demands of the new process in terms of temperature and moisture resistance, hardness of the glue joint and, last but not least, in terms of cost. The companies HOMAG and Henkel AG & Co. KGaA, Düsseldorf, a specialist in wood adhesives and a reliable supplier to the industry with its Dorus brand, were on the same wavelength right from the outset. And because the issue of glue application also necessitated a complete rethink, the partners invited a further highly

competent associate, the company Nordson Deutschland GmbH based in Erkrath, to come on board.

The outcome of this development consortium is a new type of hot-melt glue with no open time. Glue application is performed using a new, specially developed generation of wide-slot nozzles which allows work with application volumes of 20 g/m<sup>2</sup> and upwards. This makes a major contribution towards cost saving. By comparison: Using existing hot melt gluing methods with EVA, consumption is between 50 to 60 g/m<sup>2</sup>, as proven through exhaustive testing in the research department of HOMAG subsidiary FRIZ.

The major challenge facing the machine development team was the fact that the open time of the new adhesive tends towards the zero mark. In previous systems, the heat capacity existing in the melt was sufficient to bridge the short delay between glue application and the laminating process. This brief time window is no longer available when using the new **react**Tec process. This necessitated adopting a new approach to the laminating process sequence.

### **Two possible methods of glue application**

The new adhesive system permits two different methods of application onto the coating material: A one-step or a two-step process. In the one-step variant, also known as the inline method, glue is applied directly during the laminating process within the production line. Immediately following glue application, the coating material is applied – in compliance with the zero open time specification.

Despite the “0” open time requirement, it is still possible to use the two-stage method by first applying the adhesive outside the laminating line in a

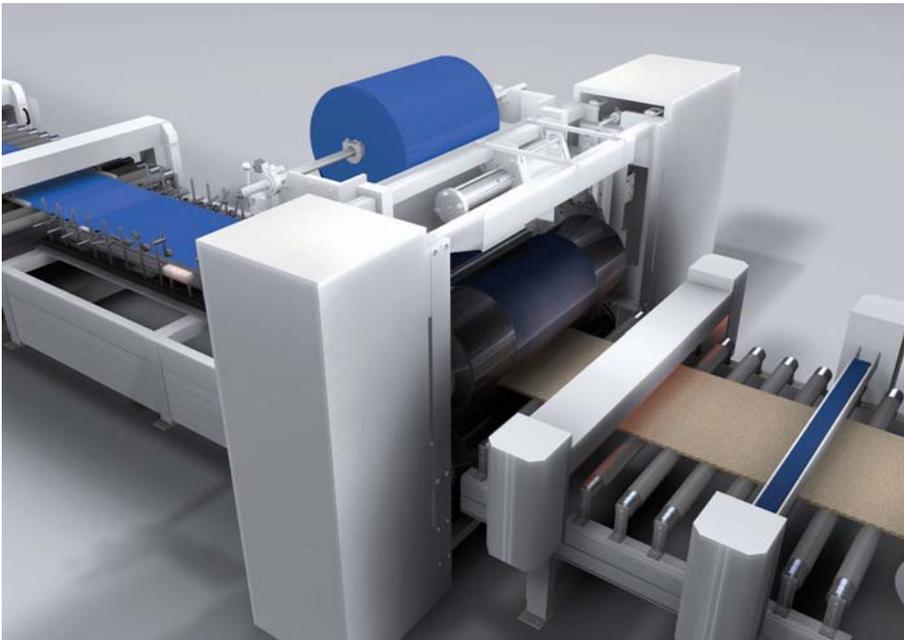
stationary pre-coating unit and then using a thermal reactivation technique such as application of a heated laminating roller. Which of these two alternative methods the customer chooses depends on the application in question. Parameters such as piece numbers, differing substrate material widths or targeted feed rates all play a major role in determining the most suitable method.

### **reactec is one step ahead of the market**

Internal testing has shown all the targets formulated in the product brief to have been achieved without exception. Compared to the three familiar gluing methods using urea, PVAC and hot-melt adhesives, the new **reactec** laminating technique from HOMAG scores practically right across all the selection criteria: whether in terms of investment costs, space requirement, the laminating possibilities for surfaces and edges, production safety, or freedom from emissions in the glue joint – and in addition, unlike to water-based dispersion adhesives, no water is used during the application process. This eliminates the possibility of swelling in the wood-based materials used and so ensures a marked improvement in surface quality. It also cuts out the previously required drying process, and compared to EVA-based hot-melt glues also allows an increased degree of thermal resistance and a harder surface to be achieved. The new HOMAG Group **reactec** method presents the ideal combination of process stability and almost exclusively positive technical characteristics, making **reactec** the most economical laminating process for the future.



**Fig. 1:**  
Laminating plant for the **reacTec** technique



**Fig. 2:**  
Surface lamination of the pre-heated panel takes place in the laminating calender



**Fig. 3:**  
Laminating rollers – these can be heated for thermal reactivation  
(HOMAG reacTec technique)

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