KLEIBERIT® ADHESIVES • COATINGS

Global track record of success

KLEIBERIT's HotCoating® opens up new applications, such as for untreated melamine

With the kind approval of Surface Magazin / DRW-Verlag

2009: The first industrial unit for coating flooring elements goes into operation at Lico, Switzerland

2012: Operations begin at the first roll-to-roll industrial unit for coating products at Versatrim, USA

2012: Operations begin at the first industrial unit for high-gloss coating of wood-based boards at Kastamonu in Istanbul, Turkey

2013: The first HotCoating unit in South America goes into operation at Duratex in Itapetininga

Absolutely flawless edges on drilled HotCoating wood products

KLEIBERIT's HotCoating® opens up new applications, such as for untreated melamine

2018: Operations begin at the high-gloss and super matt coating unit at Pfleiderer in Leutkirch, Germany

2019: The world's first industrial unit for coating 0,8mm HPL flat laminates goes into operation

2020: The first high gloss & super matt board coating unit in North America is installed and begins operations at Tafisa in Canada

2020: Development and IHD certification of fire-retardant facade coating products

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2015: Development of surface products for outdoor use

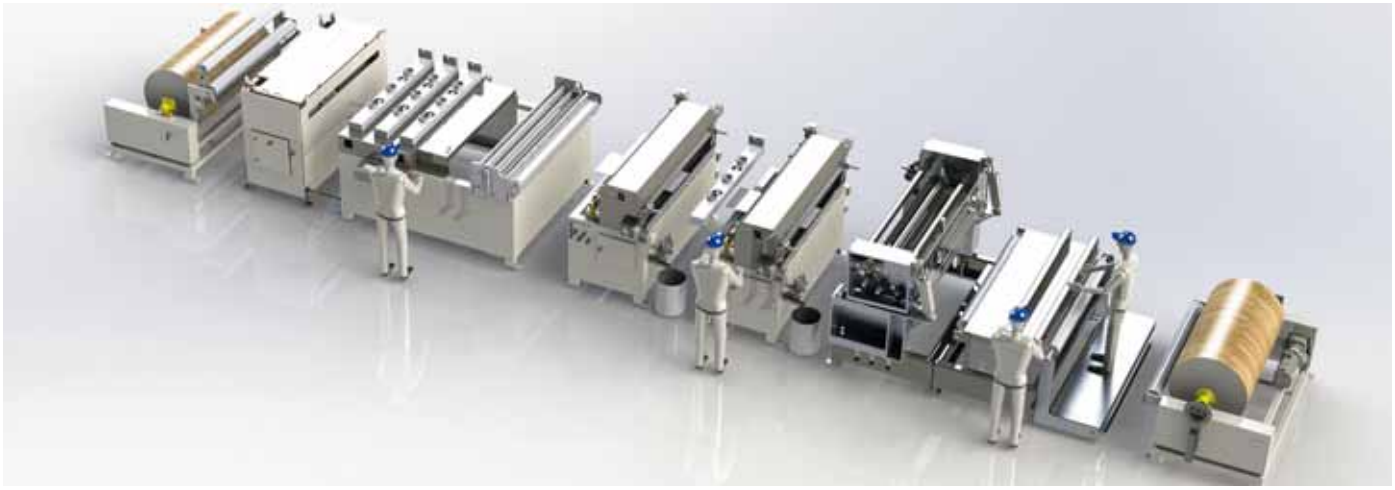
2017: Second HotCoating unit installed at Kastamonu in Turkey

2017: Development of Dualcure HotCoating

2018: Operations begin at the first industrial unit for coating digitally printed fibre cement-based flooring boards

Machine partner Huser's HotCoating digital printing line

1600 mm HotCoating line for printed papers and thermoplastic foils



2021: Development of new HotCoating types with around 67% lower reaction times

Outlook 2022: PG Bison, South Africa, due to begin operations of its second HotCoating unit

Today, 72 industrial coating units can be found around the world. In 2022, additional units have been confirmed for clients in Asia and the Americas, and our machine partners are already building the production units

HotCoating skirting board coating in exterior quality

HotCoating can also be used on melamine surfaces without a primer; HPL samples

Roll material coated with HotCoating and finished with a high-gloss decor

Sample board with wood-textured HotCoating finish

About KLEIBERIT

- **Company name:** KLEBCHEMIE M. G. Becker GmbH & Co. KG
- **Brand name:** KLEIBERIT
- **No. of employees:** Approx. 640
- **Company headquarters**: Weingarten (Baden-Württemberg), Germany
- **Products**: 1C/2C PUR adhesives; hotmelts based on EVA, PUR, PO, PA; dispersion adhesives; hotmelt pressure adhesives; solvent adhesives; STP adhesives; PUR foams; sealants; epoxides; UV lacquers
- **Production:** Approx. 60,000 t per year
- **Market sectors:** Wood and plastics processing; furniture manufacturers and the supply industry; automotive; construction; textiles; paper processing; ship and boat building; filter production
- **Exports**: Around 80% of sales are generated by exports
- **Global sales:** Direct sales via worldwide engineering consultants network; specialist retailers and web shop; subsidiaries and branch offices on all continents

What initially began as a polyurethane hotmelt adhesive applied via roller coater, is today an international patented process by KLEBCHEMIE M. G. Becker GmbH & Co. KG, located in Weingarten, Germany – commercially known as KLEIBERIT – that influences surface trends across the world, penetrates established markets and is even used for outdoor applications. Sustained success has encouraged the family-run SME to increase production capacities by an expected 60,000 tons within the next three years, thus doubling KLEIBERIT's current capacity. CEO Leonhard Ritzhaupt announced this to our editorial office in the run-up to the virtual Ligna 2021 trade fair, adding that investments in further HotCoating production plants are in the pipeline for that reason. "This is a clear commitment to Germany as a business location," says Peter Mansky, head of Marketing and Communications.
The talks with the managers in Weingarten revealed a wide range of factors that have enabled and promoted this development. Alongside the

excellent product characteristics, what really stands out is the KLEIBERIT team's ability to cooperate strategically with external partners such as Spanish machine manufacturer Barberan. This distinctly sets the company apart from other technology providers and is an increasingly important aspect in times of progressive digitalization of processes and systems.

Full package comprising patented process + demo line

Rainer Kampwerth (Sales Manager HotCoating and Industrial Coatings) and Jens Fandrey (Technical Manager HotCoating and Surface Technologies) know that, in addition to the strong partnerships with machine manufacturers, a significant part of the success is due to its subsidiary, dekoraPUR GmbH located in Barsinghausen/Hanover, Germany (see various DRW publications, e.g. MDF & Co. Magazine 2016). A complete HotCoating line was installed there at an early stage for coating furniture components, e.g. for kitchen manufacturers, and lately also for coating edges. In Barsinghausen, the KLEIBERIT team has unrestricted access to an industrial line operating under real production conditions, where new and further developments, sample parts, customer trainings, and technology tests can be conducted at any time. What a dream for every application engineer, developer or salesperson. Who else has that kind of almost permanent access? KLEIBERIT thus manages to offer a complete package that is surely unique – an internationally patented process with strong references, a demo line under its own control, and customer trainings in real conditions including the use of customers own material.
The dekoraPUR line, equipped for a wide range of different applications, provides a significant competitive advantage. Time-to-market is a key issue nowadays. Risk minimization, fast developments, persuasiveness, and creating acceptance and trust are just a few of the positive effects that KLEIBERIT, as well as its partners and customers, benefit from.
Successful examples can be found worldwide, for instance, at Kastamonu, PG Bison, Duratex, and Tafisa – all significant players in their respective markets. Pfleiderer's Primeboard (see Surface Magazine 2017/ Laminat Magazine 2018) also originated there.

From cork flooring to melamine – the chronology of HotCoating

It all began in the flooring market, says Jens Fandrey, specifically with the Swiss company Lico's cork flooring. The adhesion quality on the digitally printed cork substrate, the permanent elasticity and surface durability (with its high, AC5-rated abrasion resistance) soon convinced the renowned manufacturer and, subsequently, the related market.
HotCoating's hybrid structure comprises two layers: polyurethane in micro-emission quality for coating, and a compatible UV acrylic lacquer as a top coat. The reactive PUR layer bonds with moisture, protects the surface and digital prints, and the acrylic top coat layer hardens upon UV radiation. Furniture manufacturers also benefit from these features.

Structure of HotCoating layers for digitally printed boards

Barberan HotCoating unit for super matt surfaces

Outfeed of the unit, showing high-gloss HotCoating board

They wanted more added value, higher quality and product personalization of decorative as well as digitally printed boards. Demand from the industry was for such surfaces to be finished with high-gloss and super matt coating, and to provide optimal adhesion between the melamine surface and the lacquer coat. Conventional coating systems showed problems with adhesion to the melamine. High investments were made in equipment and expensive primers were used as bonding agents, applied to surfaces that had been finely sanded several times. But high reject rates on account of adhesive problems upon further processing failed to convince the manufacturers and the market.

Just how HotCoating manages to achieve high adhesion levels without the use of a primer remains a well-kept secret. The HotCoating layer forms a composite unit with the melamine surface, the digital printing and the top coat, and also meets all the other requirements of the panel industry. Even subsequent pore embossing up to 150mμ with existing short-cycle presses will not cause any cracking in the lacquer.

The crucial factors for success and high market acceptance are the special properties in subsequent processing; one such example being Pfleiderer's Primeboard.

In times of invisible glue lines and laser edges, it is essential that sawing doesn't cause any chips or jaggedness on or along the edges or on the surface layer. This is the only way to ensure that the edge banding is flush without any visible seams. Any chips in the top layer would lead to a very expensive reject.

In production lines set up for mass customization, any reworking requirements have an impact on productivity. Not to mention the current price increases of board material, which also have to be factored in.

Challenges, solutions, further innovations

One new application was the compact board for outdoor use. HotCoating is so tolerant that it can even be reworked on site upon installation, and even with less-than-ideal tools. The application's proven robustness in practice and its resistance to water, cold, heat, and UV rays impress customers. Market feedback has exceeded KLEIBERIT's cautious expectations by far. Jens Fandrey mentions the ability to coat thin and pliable HPL. Pliability and flexibility of the lacquer coat were key requirements, particularly for CPL. Downstream

HotCoating experts in conversation: Jens Fandrey (l.), Leonhard Ritzhaupt and Rainer Kampwerth (r.)

processers using postforming, for example, required being able to process very small radii down to 2-3 mm. Not every lacquer or coating can handle that, at least not without generating fine hairline cracks. HotCoating does, however, as its successful use at Stylam Industries in India clearly proves.

It appears that the key players' intense affinity with the core technology is gradually convincing even the last sceptics. Every improvement, every new application leads to experiences and findings that are shared actively in the KLEIBERIT team. Peter Mansky emphasizes that this is what makes it possible to constantly and jointly develop seemingly impossible new areas, resulting in new motivation and further success. It is the only way to realize innovations such as inert curing for high-gloss, or using excimer technology in the manufacturing of super matt, virtually reflection-free surfaces. KLEIBERIT's recipe for success is evidently down to several factors: the clear functional structure of the HotCoating layer, the specialists' in-depth subject knowledge, the additional experience of partner companies, and an openness and willingness to share acquired knowledge in order to find new solutions. What, then, could be more obvious than to open up further chapters with roll-to-roll coating?

At the Ligna 2017, the Weingarten-based company provided live presentations of its first inline digital printing unit – a masterpiece in the eyes of the experts. Jens Fandrey and Rainer Kampwerth speak proudly about a large roll-to-roll installation under way in Florida, USA. A service provider for coating printed paper and thermoplastic foils has invested in a 1600 mm wide HotCoating unit manufactured by machine partner Huser. KLEIBERIT comprehensively supported this customer from the first inquiry right up to commissioning. And with production up and running, the customer continues to benefit from the strong partnership and innovative spirit emanating from Weingarten.

Reinhard Huber, Freudenstadt

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