



## TOOL-FREE FURNITURE ASSEMBLY: GLUING INSTEAD OF NAILING

*IKEA launches Pax 2.0, the innovative way to produce flat-pack furniture. Specialized machine manufacturer Lehbrink and adhesive application specialist Robatech were involved in the development.*

A fine PUR adhesive strip is placed precisely in the joint. Seconds later, the connection between the side panel and the back panel is perfect. An innovation that is revolutionizing the assembly of cabinets is currently in production at IKEA in Sweden: Pax 2.0. What now works seamlessly was once a real challenge. Together with Lehbrink, Robatech developed a precise adhesive application system that enables tool-free furniture assembly – efficiently and reliably. But how did this solution come about?

### The idea

The vision behind IKEA's PAX 2.0 is a cabinet that can be assembled by one person alone and without tools. Flat-pack furniture, where the back panel is folded and glued, have been around for some time. But IKEA wanted to go one step further: The back

panel is to be glued directly to the side panels. The finished piece of furniture is then pulled apart like an accordion and set up. A key advantage of this design is that the back panel is still attached to the side panels from behind so that no space is lost in the depth of the cabinet.

### Test passed

IKEA needed a machine manufacturer that could deliver worldwide. Lehbrink, the German specialized machine manufacturer for woodworking, fitted the profile perfectly. With 75 years of experience and a renowned reputation for durable machines made of solid steel, Lehbrink accepted the challenge. IKEA tested gluing the side panels to the back panel on a converted stand-alone machine for gluing back panels. With just a few adjustments, the technology also worked perfectly for the thicker side



## THE CUSTOMER

Lehbrink has been developing and building specialized machines for woodworking in furniture construction for 75 years. The company has a great deal of experience, especially in folding back panels and door processing. As part of the Koch Group, Lehbrink employs 25 people. The group has 250 employees in Bielefeld, Germany. Lehbrink is represented worldwide.



First step: The side panels are aligned together with the back panel



Second step: A precise joint is milled into the side walls





*«We particularly appreciated the transparent communication and flexibility in the joint project with Robatech. This made the collaboration very pleasant and efficient.»*

**Joachim Alves**

Area Sales Manager, Lehbrink

panels. A large order followed. IKEA relied on Robatech for the adhesive application system – because the positive experiences from Sweden spoke for themselves.

#### **The solution**

Lehbrink developed a conveyor system that was specially designed for the new requirement. The package of side panels and folded back panel is aligned with millimeter precision – the biggest challenge in this project. Everything else is a sequence of proven processes: cutting to the correct width, gluing and cooling. Robatech's contribution? The RobaPUR 20 MOD adhesive melter reliably melts the PUR adhesive using melt-on-demand technology and

transports it to the application head. A custom-made heated hose ensures that the adhesive maintains its ideal temperature right up to the tip of the nozzle. The real highlight, however, is the Vivo 18 coating nozzle, whose geometry has been specially adapted for this application in order to apply the adhesive precisely and evenly.

#### **Nozzle geometry: the make-or-break factor**

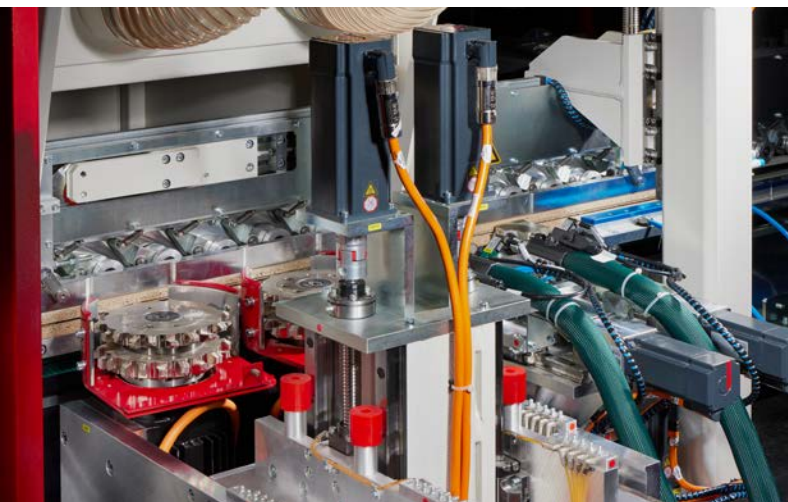
The first tests with the standard Vivo 18 nozzle were precise, but not optimal. The nozzle did not have the necessary tolerance to compensate for the rough surface of the particleboard. Robatech and Lehbrink worked closely together to revise the nozzle geometry several times. For

precision, temperature control right up to the tip of the nozzle is the top priority. On the other hand, there was now a requirement for more tolerance in the narrow adhesive joint. The goal was to find a balance between precision and sufficient clearance for the uneven surfaces. The result: an adhesive application that works reliably even with difficult materials.

IKEA was so impressed by the solution that they ordered two more systems even before the first system was commissioned in Sweden. Since then, another system has been sold to IKEA Italy and another to a supplier in China. The success of this co-operation shows that precision and flexibility must go hand in hand to produce innovative solutions.

### Success factors

What made the project successful? The close cooperation, the transparent communication and the ability to respond flexibly to new requirements. Robatech traveled to Sweden to train the operating personnel on site – a step that was crucial for the successful start of production.



Third step: Precise PUR adhesive application that glues the side panels to the back panel



Finished "book": The cabinet side panels are glued to the back panel

## ROBATECH

Robatech optimizes the industrial hot melt and cold glue application with sustainable and innovative adhesive application systems. Since 1975, Robatech has been developing and producing high-quality control systems, application heads, melters, and dosing systems that make gluing processes more environmentally friendly, safe, and straightforward. The Robatech Group, headquartered in Muri/AG, Switzerland, is represented in more than 80 countries. More than 670 dedicated employees worldwide provide personal and fast customer support in a wide range of industries.

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