

How a Networking Event Led to Production Without an Assembly Line

Almost two years after a Next Level Mittelstand (NLM) workshop brought together the right partners, ebm-papst is presenting its new matrix production system to the growing community and offering insights into the digital transformation of industry.

Mulfingen, October 2, 2026

At the end of 2024, Thomas Sauer attended a Next Level Mittelstand (NLM) event on behalf of ebm-papst, where SmartFactory-KL from Kaiserslautern presented its research on agent-based manufacturing. Sauer immediately recognized how well the concept aligned with ebm-papst's needs. What began as a single encounter evolved into a close collaboration. Together with SmartFactory-KL, ebm-papst has implemented new concepts for digital matrix production, which is currently being ramped up. At the NLM Members Assembly on September 23 in Mulfingen-Hollenbach, members had the opportunity to experience this production approach up close. Around 90 people attended.

During the tour, Alexander Lindt, Supervisor of Final Assembly for Size 150 fans, explained the matrix production principle: each individual product is routed to the next available process module, eliminating the fixed sequence typical of a traditional assembly line. Automated guided vehicles transport components from station to station, the first collaborative robot (cobot) is already in operation, and more are planned. "At first glance, it may seem chaotic," said Lindt. "In reality, a fleet manager coordinates all transport orders in the background. That is why the production floor remains calm and organized."

The project's IT implementation was led by Patrick Reinwald, Vice President IT Industry Solutions. According to Reinwald, what members saw represents the next step toward autonomous manufacturing systems. "With this, ebm-papst is setting new benchmarks."

The reason products can independently find their way through production lies in a concept that has long been discussed in the context of Industry 4.0 and is now becoming a reality: the Asset Administration Shell (AAS). It is a key enabler of matrix production. At the start of manufacturing, every product variant receives its own digital record that accompanies it throughout the entire production process. Software agents representing the product, manufacturing equipment, and transportation systems negotiate among themselves which station should perform the next production step.

"The German industry has created a global standard with the Asset Administration Shell, one that every company can use and that we should work together to make successful," said Dr. Daniel Boese, Executive Vice President at ebm-papst and Chairman of the NLM Advisory Board.

The Asset Administration Shell also serves as a foundation for the Digital Product Passport (DPP), a key topic throughout the event. The European

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Union will require a Digital Product Passport for batteries beginning in February 2027, with steel, aluminum, textiles, and other product categories expected to follow gradually. The aim is to ensure products have longer lifecycles and can be repaired and recycled more easily. While the DPP is not expected to become mandatory for machinery and industrial equipment in the foreseeable future, manufacturers will still be indirectly affected, for example when customers require such data for supply chain compliance.

Several workshops highlighted how companies can turn the challenge of implementing the DPP into a competitive advantage. Organizations that systematically manage product data from the outset can later provide customers with information for maintenance, spare parts management, and recycling, while also creating entirely new business models based on that data.

Implementing a DPP can happen surprisingly quickly. In another workshop, Dr. Heiko Asum, Managing Director of Fibro Rundtische in Weinsberg, demonstrated how his company, in collaboration with Heilbronn University and the coding schools 42 Heilbronn and Arkadia, developed an initial prototype in just one and a half weeks. The prototype is already accessible via QR code.

In October, NLM plans to publish a so-called DPP Cookbook: a proven guide that will enable other members to replicate the approach within their own organizations. Eight such “recipes” have already been completed, with more currently in development. During the initial phase, NLM experts will support member companies in the implementation process.

Whether other members will adopt matrix production remains to be seen. However, SmartFactory-KL is already making the concept accessible to all NLM members. What began with a single meeting at ebm-papst is now being offered through NLM as a three-hour on-site workshop. From there, a first practical application can be developed within just a few months.

This was the third NLM member gathering of the year. Martin Schimmel, Director Business Development & Project Management at NLM, announced the latest addition to the network: with TUM Campus Heilbronn joining, NLM now has 52 members, with a target of 70 members by the end of the year.

“User companies are particularly important because only they can provide one another with the practical impulses needed to make Germany competitive again,” Schimmel explained.

“The community grows when its value grows,” emphasized Henrik A. Schunk, Managing Director of Next Level Mittelstand GmbH. For this reason, membership fees are intended to be invested primarily in people and expertise. NLM plans to hire additional project managers to actively facilitate collaboration and knowledge exchange.

“We all grew up working in silos. Today, collaboration is our number one priority,” Schunk said.

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The next Members Assembly is scheduled for January 2027.

Captions (Source: ebm-papst):

Picture 1: Dr. Daniel Boese, Executive Vice President at ebm-papst and Chairman of the Advisory Board of Next Level Mittelstand, spoke about the importance of the Asset Administration Shell as a foundation for the Digital Product Passport and future Industry 4.0 applications.

Picture 2: During expert presentations and workshops, members of Next Level Mittelstand exchanged ideas on implementing the Digital Product Passport, developing new business models, and creating digital value.

Picture 3: During a guided tour of the production facility, members of Next Level Mittelstand gained insights into ebm-papst's new matrix production system. The concept is based on autonomous material flows, software-controlled processes, and flexible manufacturing workflows.

Picture 4: Around 90 members of Next Level Mittelstand gathered at ebm-papst in Mulfingen-Hollenbach for the Members Assembly. The focus was on matrix production, the Digital Product Passport, and the future of autonomous production systems.

About Next Level Mittelstand

Next Level Mittelstand GmbH, headquartered in Heilbronn, was founded in April 2025 by ebm-papst, SCHUNK SE & Co. KG, HEITEC, and Blockbrain. Schwarz Digits and Bosch Rexroth are also involved. The initiative supports medium-sized industrial companies in jointly advancing digitalization and Industry 4.0. Henrik A. Schunk serves as Managing Director, while Dr. Daniel Boese chairs the advisory board.

About ebm-papst

The ebm-papst Group is a leading global provider of innovative ventilation solutions for air, refrigeration and climate technology, headquartered in Mulfingen, Germany. The company develops and manufactures innovative components for HVAC and cooling applications, combining advanced fan and blower technology with electronics, controls and software & service.

For more than 60 years, ebm-papst has set international standards through innovation in aerodynamics, motor technology, electronics and digitalization.

With its energy-efficient and intelligently connected technologies, ebm-papst supports the reduction of CO₂ emissions, digitalization and the development of future-ready infrastructure worldwide. Its technologies are used in a wide range of applications, including data centers, building and heating technology, industrial applications, cleanrooms, cold chains and renewable energy.

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