



## Booster for productivity

Modular automation solutions for intralogistics and assembly

KNOLL is gaining valuable experience with its automation systems in its in-house production.

*KNOLL Maschinenbau is not only one of the leading suppliers of conveying and filtering systems as well as pumps for metal processing, but is also successful as an automation specialist for assembly systems and intralogistics. Modular overall solutions consisting of stationary and flexible conveyor lines as well as manual workstations, including the intelligent linking of sensors and software, act as boosters for productivity – for customers from a wide range of industries and in their own filter production.*

In order for small and medium-sized engineering companies in Germany and Europe to survive in the face of global competition, they must constantly search for optimization opportunities, evaluate them and, if necessary, implement them as quickly as possible. One area with great potential consists of assembly or production processes, as well as the entire field of intralogistics. Because this is often where a great deal of time, space and energy is wasted.

KNOLL Maschinenbau, Bad Saulgau, known as a specialist for cooling lubricant and chip management in machining production systems, already recognized the potential of automation in these areas more than ten years ago. Managing Director

Matthias Knoll looks back: "Back then, we were looking for a suitable transport system to set up a line assembly for our compact filters. Since we didn't find anything suitable on the market, we decided to develop such a system ourselves, based on chain conveyors."

In 2012 and in Bad Saulgau, KNOLL installed the first self-developed transport system with accumulation roller conveyor for the assembly of the upper parts of compact filters. Key features: a robust steel construction that ensures high bending stiffness, as well as the uncomplicated handling of the system, which is demonstrated, among other things, by the fact that transport carts or other devices can be fed in and out without the need for auxiliary equipment.

### Our own user experience enables targeted consulting

A great deal has happened in the past ten years. Technology has been constantly improved and new components have been developed according to customer needs. KNOLL has planned, produced and installed numerous systems at customers' sites



Managing Director Matthias Knoll: "Markets no longer require only stationary conveyor technology, but demanding automation solutions, preferably from a single source."

as well as others in its own production facility in Bad Saulgau. For example, another transport system supports the final assembly of the small systems – based here on a straight link chain with a platform and significantly more technical finesse. "Since we use our own automation products on a daily basis, we can further develop them in a practice-oriented manner and provide our customers with detailed live advice," explains Matthias Knoll. "These are usually also medium-sized system and engineering companies whose problems we know very well. They need to automate in order to compensate for the lack of skilled personnel. They are tied to premises that have grown piece by piece and therefore require specially adapted transport and assembly systems. These are circumstances that we meet with maximum modularity. In addition, we can convert and expand our systems at any time if necessary."



View into a KNOLL production hall: Compact filter systems are assembled there with the support of the transport system developed in-house.

### From transport system to automated assembly system

In 2019, the "Transport Systems" section became a separate department, which has been called "Automation" since the beginning of 2022. "This renaming was necessary because the markets no longer demand only stationary conveyor technology, but demanding automation solutions, preferably from a single source," explains Matthias Knoll. "Our Automation Division has been dealing with such demanding assembly and logistics tasks for years, for which we link stationary transport systems based on chain and roller conveyors with transport robots (AGVs) and handling robots (robots, cobots), entirely as required. We advise, plan and supply flexible complete solutions from a single source, along with corresponding network integration if required."

Christian Spohn has been the department head of KNOLL's Automation business unit since 2021 (also read the short interview). He points to successful, representative projects that KNOLL has implemented at leading companies in innovative industries.

### Modularity pays off

These projects include, for example, an installation at RIKA Innovative Ofentechnik in Adlwang. In order to cope with the growing number of orders for pellet and wood-burning stoves, the manufacturer has partially automated and digitalized its production there in 2019 and 2021 with the help of KNOLL Maschinenbau. The two new assembly lines have succeeded in increasing productivity by around 15 to 20 percent. In addition, RIKA can now offer its employees a working environment that meets the latest standards in terms of ergonomics and occupational safety.



The assembly line at RIKA Innovative Ofentechnik ends at the last station with a 100 percent inspection, where all components of a stove are checked through.

"A key strength of our systems is their modularity, which clearly comes into play at RIKA in Adlwang," emphasizes Christian Spohn. Because it turned out there that the two assembly lines could get by with fewer stations, but that two additional lines would be required due to the growing order situation. No problem for KNOLL. The automation specialists took some elements from the existing lines and used them in the two new ones. "Thanks to the modular design of our systems, this was easy to solve mechanically and in terms of software," explains Christian Spohn. "The customer ultimately benefited from lower costs and faster commissioning of the new lines. Accordingly, he is very satisfied."

## Hardware and software from a single source

Another growth area is heat pumps, such as those produced by Stiebel Eltron in Holzminden. Here, those responsible were concerned with increasing the area productivity in assembly. They therefore planned a highly flexible production system called "Multiline," which connects stationary conveyor lines with manual workstations and individual work and test stations via AGVs. A head controller ensures that the various heat pump models find their individual ways to the required assembly stations. An important partner in this project was KNOLL Maschinenbau. The Bad Saulgau-based company not only supplied the stationary conveyor technology – they also took care of the intelligent linking of sensors and software.



For STIEBEL ELTRON, KNOLL designed and supplied not only the conveyor systems and assembly workstations, but also the support plates, which are compatible with all heat pump variants.



In the assembly line at STIEBEL ELTRON, most workstations are equipped with a lifting table and rotating platform for ergonomic assembly.



At KNOLL Maschinenbau in Bad Saulgau the majority of the transport orders are now automated. The AGVs from partner company SAFELOG play a significant part in this. These take over the transport of various components from production to the warehouse and bring the components there that are ready directly into the assembly box or to the assembly line.

"We were able here to demonstrate our wide range of products and know-how," explains Christian Spohn. On the one hand, this concerns the supplied hardware in the form of the conveyor belts and manual workstations, but it also concerns the operation of the lifting and rotating tables via control units at the workstations, which – thanks to hardware buttons – was implemented easily and trouble-free. Christian Spohn adds: "With the Multiline, the smooth interaction of conveyor belts, assembly stations, AGVs and SAP ME with the integrated system control unit is a central factor. Here, we were able to prove that we are very familiar with PLCs and have important interface know-how."

Those responsible for production at Stiebel Eltron are also very satisfied with the result. They confirm that the implementation of future-oriented systems and processes has succeeded in significantly increasing productivity and achieving enormous transparency. The proof of satisfaction: a follow-up order to KNOLL to equip another new production facility for heat pumps in 2023.

## Automation

### Interview: "We are partners at eye level"

Three questions for Christian Spohn, Automation Department Manager at KNOLL Maschinenbau

*Mr. Spohn, at just over ten years old "Automation" is a relatively young business unit at KNOLL Maschinenbau. Why has the department developed so successfully?*

It is very important that we can build on our own experience. We are – like many of our customers – a medium-sized machine constructor. Even though the industries are quite different, the products usually require a certain robustness of the system. That is why we do not use standard aluminium profiles but usually use solid welded constructions where delivery by forklift is also possible without any problems. In addition, there is the basic modular design of our systems with regard to the mechanics, electronics and software. It allows for customized planning that takes into account any hall conditions or even special pallets.

*How would you describe the performance range of the KNOLL Automation Department?*

There are three keywords that characterize our activities: Transporting, automating, networking – and everything from a single source. For transporting, we offer not only our proven stationary systems based on chain conveyors, but also flexible transport systems. For this purpose, we have entered into a partnership with the AGV specialist Safelog. The combination in particular makes for enormous flexibility.

In addition, we are able to integrate various automation components, especially operating units, handling aids, sensors and the corresponding software, as well as robots and cobots if required.

Another one of our strengths is networking the conveyor technology with the customer's ERP system or other software. In fact, only a few machine constructors can do that. However, we have specialists on board who are able to develop and implement concepts for data exchange.



Christian Spohn,  
Automation Department  
Manager: "Our goal is to  
increase our customers'  
competitiveness."

*How have customer requirements – and accordingly the KNOLL range of products – changed? What can we expect?*

The task of automating assembly processes and intralogistics tasks has become more complex. It requires a large number of technical components and the corresponding know-how, especially in the fields of electronics and IT. The growing possibilities also require significantly more consulting services in advance. These concern sensible pre-commissioning, cycle times, the possible use of AGVs, safety, ergonomics, networking, data evaluation, etc. For this, intensive discussions with the customers and with the employees concerned are important in order to include all the requirements and to find the best possible solutions.

Ultimately, we orient our product range to making our customers as competitive as possible, so that they can produce both more and more cost-effectively, so that their employees are satisfied with their jobs – that's what drives us. We medium-sized companies in Germany and Europe must not lose the connection. We want to contribute to this.



### KNOLL Maschinenbau GmbH

KNOLL is the leading provider of conveyor systems, filtration units and pumps for metalworking. These transport and separate chips and cooling lubricants. The comprehensive product range offers systems for decentralised or centralised applications. Its Automation Division deals with solutions for demanding assembly and logistics tasks. These include stationary transport systems with chain and roller conveyors. The integration of handling units (robots, cobots) and transport robots (AGVs) enables flexible systems to be created from a single source.