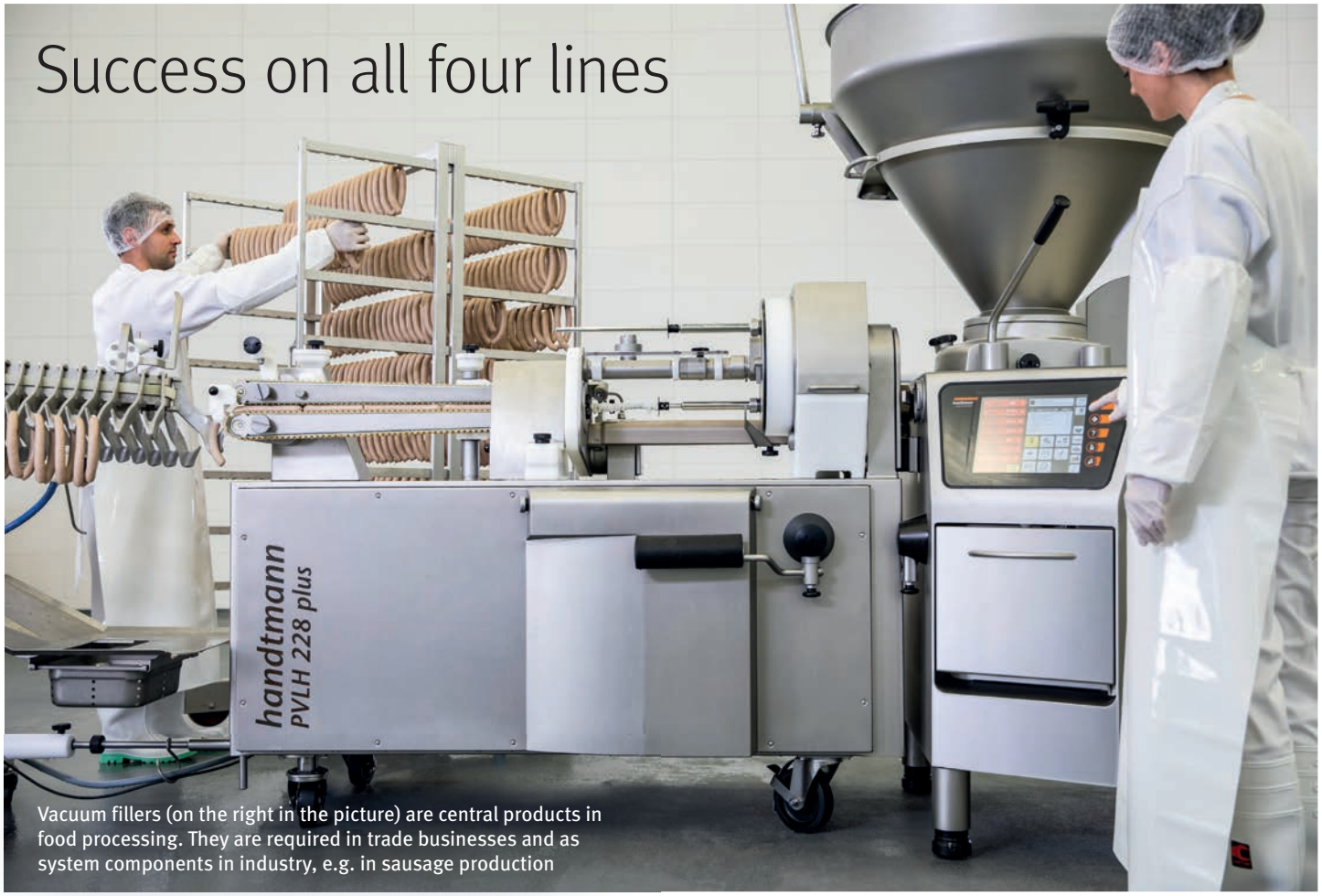
KNOLLREPORT
AT HANDTMANN MASCHINENFABRIK

User report of
KNOLL Maschinenbau GmbH

Success on all four lines



Vacuum fillers (on the right in the picture) are central products in food processing. They are required in trade businesses and as system components in industry, e.g. in sausage production

Since the beginning of 2024 Handtmann Maschinenfabrik has a new production hall where vacuum fillers are assembled in different sizes and configurations. An important success factor is the newly organised intralogistics: Modern conveyor technology from KNOLL and the clever provision of all components ensure pleasant, ergonomic work and high added value.

Sausage and meat products, bakery products and doughs, dairy products, fish, convenience, fillings, delicacies, pet food and other pasty substances – all these foodstuffs can be processed using machines of Handtmann Maschinenfabrik, Biberach. The global market and innovation leader in the area of filling and portioning supplies both individual systems for trade businesses as well as fully automated production systems for industrial food manufacturers. Production Manager Georg Briegel explains: "We see ourselves as a solution provider with line and process expertise, who develops and manufactures customised machines from a modular system. We have grown continuously over many years with this concept and a high vertical range of manufacture."

The main factory in Biberach, Upper Swabia, built in the open countryside in 2000, offers the necessary growth prospects – also with regard to premises. Extensions have been built every few years, only recently a new production hall for assembling vacuum fillers. "These are central products for us, which we have been successfully offering and constantly further developing since 1966", mentions Georg Briegel.

Vacuum fillers are used for the conveying and accurate filling of pasty substances and also prevent air from getting in and causing spoilage. Handtmann currently produces 14 vacuum filler models. A modular system with many options is available for the application-based configuration. Add-ons outside the standard catalogue are also possible so that machines based on series production can receive the individual configuration desired by the customer.

Previous assembly reached its limits

Over the years the assembly of vacuum fillers became more and more of a bottleneck in the production process. Within the scope of factory structure planning, Handtmann recognised that this area needs more space and new intralogistical organisation. "Our previous assembly area was based on a simple, unsynchronised line assembly using a rail system embedded

The new Handtmann production hall is equipped with two individual lines and one double line for the assembly of vacuum fillers. KNOLL developed and supplied the accumulating roller conveyor system along with PLC control and programming.

A lifting table is integrated in every cycle, with which the fitter can move the machine frame at an individual, ergonomic height.

The so-called trolley assemblies assume an essential function. They carry order-specific components for each machine to be assembled.

in the ground", explains Production Manager Briegel. The employees used lifting tables recessed in the floor and upon completion of their tasks pushed the assembly trolley to the next station. "A fairly rigid, inflexible system that could only be changed with great effort", adds Briegel. And a change was required as the new generation of machines was no longer compatible with the existing assembly trolley.

The approval of the new assembly hall opened up huge scope in terms of the design of the assembly process. A project team focussed on which conveyor system and which organisation offer the best prospects. Assembly supervisor Alexander Zinnecker reports: "We definitely wanted to introduce synchronised assembly which manages our wide range of variants. In order to design the cycles appropriately, several lines and a suitable conveyor system are required."

KNOLL: Vast experience in assembly automation

At Logimat 2022 the members of the project team visited the exhibition stand of KNOLL Maschinenbau, Bad Saulgau, a company that was renowned as a leading supplier of conveyor systems, filter systems and pumps for metalworking. "In trade journals and on the homepage we had also read about the Automation Division that focuses on transport and assembly systems", says Zinnecker. "After visiting the stand at the trade fair we got the impression that KNOLL could be the right partner for us."

KNOLL has broad expertise in automation. In terms of the mechanics and electrics, the mechanical engineering company is well positioned in every respect. There are also proven specialists in the automation team for software and networking. Christian Spohn, Head of Automation at KNOLL, remembers the initial conversation: "After we presented our diverse pos-

Transport plates with machine frame and trolley assembly are arranged on the conveyor on a rotating basis.

sibilities, we quickly decided to design rough concepts. Finally, in recent years we realised several assembly projects for customers in various industries and for our own in-house production."

It was particularly advantageous for the Handtmann project team that everything can be obtained from a single provider from KNOLL – stationary conveyors, lifting stations, turntables and buffer stations, mechanics and electrics along with the software networking. Automated guided vehicle systems (AGV) are also included in the offer.

Daniel Braig, responsible for Lean Management and member of the project team, was already employed in two other companies of the Group before his involvement at Handtmann Maschinenfabrik. He mentions another argument: "At Handtmann Elteka, the Plastics Technology Division, two conveyors with KNOLL automation were already implemented a few years ago. Both conveyors run very reliably."

Flexible conveyor solution

The project team decided on an accumulating roller conveyor system from KNOLL, comprising two individual lines with five cycles and a double line with four cycles. As every transport section is integrated in an accessible wooden platform, no structural changes to the hall floor were required. "Modifications or extensions to the conveyor sections are also possible without problems", says Production Manager Georg Briegel happily. "This is a key benefit. Ultimately we want to use our assembly hall for many years during which machine sizes as well as cycle times and assembly content will change."

The height of the platform is 400 mm. KNOLL project developer Danny Zinssler explains the reason for this size: "This means we can integrate the double-scissors lifting tables at ground level. The system is also prepared for the use of forklift or low-height automated guided vehicle systems, which are to assume the transport of carrier plates from and to the conveyor sections at a later stage."

In the configuration put into operation in June 2024 the two individual lines are identical. There are five cycles in addition to a delivery and pick-up station. They each include an adjustable lifting table along with control column, a stop station for the trolley assembly at an ergonomic distance of 1200 mm and an operator call in order to call for a manager in the event of difficulties. In every line a cycle is already prepared for the additional integration of a turning station. This configuration allows workpiece carriers and trolley assemblies to be transferred out for unsynchronised processing.

Carrier plates and trolley assembly, a space- and route-saving duo

The trolley assembly mentioned is a special material trolley developed by KNOLL, which together with the machine frame on the carrier plate passes through the entire assembly line. It is fitted with the individual equipment of the respective vacuum filler relevant to the order. Small standard components are on Kanban shelves on one side beside the conveyor.

The large parts and pre-assembled components are available on one side of the conveyor belt, on the other side (in the background) are the Kanban shelves with small parts.

An important element of the conveyor system is the carrier plate, which was designed by KNOLL so that all machines frames can be transported on it.

Large parts and pre-assembled components such as transmission, e-box, swing-type housing, are on the other side. "In our new system my employees can rest assured that every required part is available at the right place", highlights assembly supervisor Zinnecker. "Otherwise, the machine frame is not even transferred into the assembly line. This saves the inconvenience of searching for parts and the staff can concentrate on their task at hand."

In addition to the introduction of a trolley assembly, the carrier plate also developed by KNOLL is of particular importance. It has a uniform design and can safely accommodate all different machine bases. Danny Zinssler from the KNOLL automation team explains: "One challenge, for example, was guaranteeing the secure footing of the machine, which has different load centres across the assembly phase. We equipped the machine with a special non-slip coating so that no recesses are required for the feet of the base." The RFID chip in the plate is also worth mentioning. It is described at the start with the respective order data. The order data can be read at each assembly station and provides detailed information, e.g. on the test voltage to be applied.

Double line creates options for new machine start-up and production peaks

A double line is now available to the Handtmann assembly team instead of the originally planned third individual line. "During the detailed planning we came up with the idea of an additional conveyor, which can be used as a buffer at peak load times or for the start-up of new products", explains Lean Manager Daniel Braig. There was enough space available. A line was created at which two conveyors are arranged side by side. This means that there is only space available to the right and left of the double line for the Kanban shelves and large parts. "This is not exactly ideal from a logistics perspective", says Braig, "but as the fourth conveyor is only used from time to time, it is a very beneficial solution."

Georg Briegel, Production Manager at Handtmann Maschinenfabrik: "For the concept of realising synchronised assembly in our new hall, the KNOLL conveyor system was the key technology. That's why we spent a lot of time revising and improving the solution together with KNOLL."

Discussion as equals: Subproject Manager Daniel Braig (2nd from left) and assembly supervisor Alexander Zinnecker (3rd from left) talk with KNOLL Project Developer Danny Zinssler (left) and Christian Spohn, Head of Automation at KNOLL.

Cycles 1 and 2 are reserved for mechanical assembly, the electrical installation takes place in cycles 3 and 4 (in the picture).

KNOLL implemented some tweaks to optimise the processes. On the one hand, the double line handles four cycles, and, on the other hand, the lifting tables of the two conveyors are offset. This means that the trolley assembly moves in front once and back once, and the employees of the double line are not in the way.

Production Manager Georg Briegel draws a positive conclusion: "Thanks to the tight synchronisation and defined content per work station, we have better planning reliability and higher output. No employee has to do more than before. The accumulating roller conveyor system also offers the flexibility that not all trolleys have to be necessarily synced at the same time. Each cycle can also run individually as there is a certain buffer in case there is a slight delay." He has a clear view on the support from the KNOLL automation team: "An ideal partner for us. Hardware and services are of high quality, and the team is very flexible and obliging. Together we achieved a result that will certainly support us efficiently over many years.“ Dr. Mark Betzold, CTO of the Filling and Portioning Systems Division, concludes: "This investment not only safeguards existing jobs, but also offers us new prospects for the future. Through the expansion of our production capacities and the new intralogistics, which we implemented successfully with KNOLL, we can better meet the increasing requirements of our customers. Short delivery times and high availability are essential these days and with the new assembly hall and the synchronised assembly we are best equipped to meet these expectations."

Everything from a single source: KNOLL supplied not only the mechanics, but also the electronic components along with control and programming.

Handtmann filling and portioning systems are used for all sorts of food: from the classics at the cold cuts counter to innovative products from milk, dough, confectionery, soya and other pasty substances.

KNOLL Maschinenbau GmbH
Schwarzachstraße 20, DE-88348 Bad Saulgau
Tel.: +49 7581 2008-0, www.knoll-mb.de

KNOLL .It works

AT HANDTMANN MASCHINENFABRIK

Albert Handtmann Maschinenfabrik GmbH & Co. KG

Founded in 1873 as a brass foundry, the Handtmann Group has grown to become a global system and plant manufacturer. The Group includes six independent divisions, which can be assigned to the mobility and food industries. With around 4500 employees at over 30 locations worldwide, in 2023 the Handtmann Group achieved a turnover of 1.2 billion euros. The Filling and Portioning Systems Division is a leading manufacturer of process technology for the processing of foodstuffs. At the same time, investments are made in sustainable concepts for food innovations. This also includes the state-of-the-art technology and customer centres at the headquarters. The division employs around 1500 staff worldwide. With numerous subsidiaries and sales and service partners, the company is represented globally in over 100 countries.

Albert Handtmann Maschinenfabrik GmbH & Co. KG
Hubertus-Liebrecht-Str. 10-12
DE-88400 Biberach
Tel.: +49 7351 45-0
info.machines@handtmann.de
www.handtmann.de/food

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 challenging 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.

KNOLL Maschinenbau GmbH
Schwarzachstraße 20
DE-88348 Bad Saulgau
Tel.: +49 7581 2008-0
info.itworks@knoll-mb.de
www.knoll-mb.de

10.2024 | photos: KNOLL, Handtmann