UPDATE
COMPANY MAGAZINE

No. 31

HOME FOR BEARS
HARIBO Goes for Gold in Logistics

HEALTHCARE & COSMETICS
Sensitive Products with Zero-Fault Tolerance

GLOBAL MARKETS
E-Commerce in the Nordics

IDEAS, VISIONS & SOLUTIONS FOR INTRALOGISTICS

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INNOVATIVE CUSTOMER SUPPORT MAXIMIZES AVAILABILITY

High system availability combined with responsiveness to incidents and faults – that is the key to the successful operation of complex intralogistics solutions. Moreover, digitalization is opening up entirely new possibilities. Against this background, SSI SCHAEFER offers a comprehensive portfolio of innovative services. These ensure the operational reliability and productivity of your equipment, and allow you to harness powerful emerging technologies. From augmented support to preventive maintenance – we give our customers much more than traditional advice and assistance. Our comprehensive life cycle management and intelligent Industry 4.0 services ensure you maximize the uptime of your intralogistics systems.

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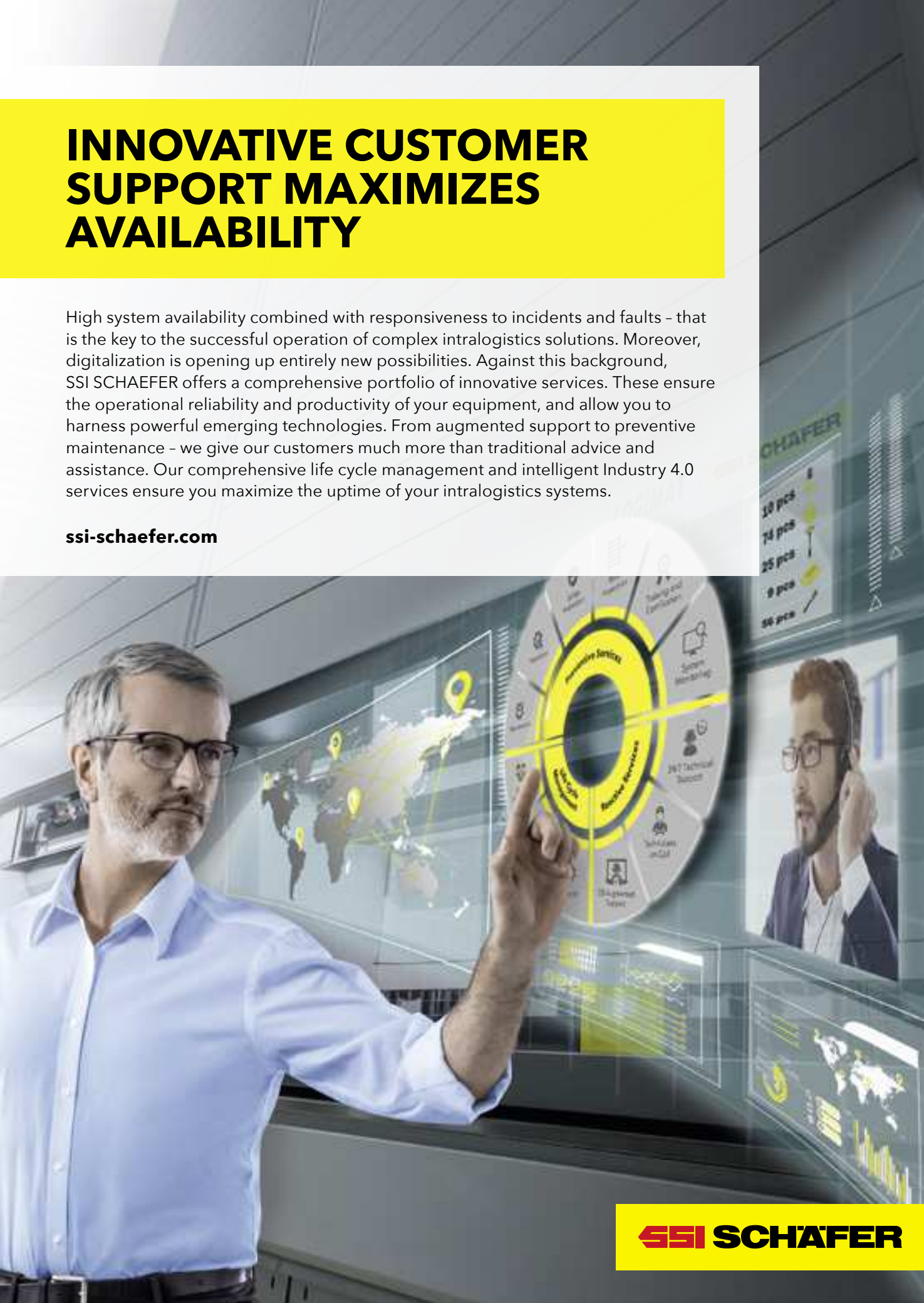

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Dear readers,

Now more than ever, consumers are demanding digital, tailor-made offerings, one-of-a-kind brand experiences, and rapid delivery. This is where intralogistics comes into play. And, it is not a commodity. It provides a key competitive advantage in highly contested markets – saving our customers precious time.

As the global leader in this industry, it is our mission to streamline intralogistics processes, making them ever leaner, faster and more efficient. That also means leveraging the power of digitalization, and harnessing it for the world of internal material flows. The connectivity of things and systems in today's globalized world is opening up revolutionary opportunities to fulfill our customers' ultimate, underlying need: the ongoing, reliable and flexible availability of goods across all distribution channels and all industries. We cooperate and communicate closely with our customers on a wide range of innovative projects to make their businesses fit for the future.

An excellent example is HARIBO's new central warehouse. SSI Schaefer provided a one-stop solution by successfully planning and executing this mammoth project within a very tight timeframe. You can discover more in our cover story, beginning on page 10.

In addition to individual projects, we are tackling the challenges of today and tomorrow on a broader scale. We are shaping the future of intralogistics. Emerging trends, such as Artificial Intelligence and robotics, motivate us to continue driving innovation within our industry worldwide – with the aim of proactively researching and developing new solutions for our customers.

You will learn more about these and other intralogistics topics in this issue of *"Update"* magazine. We hope you find plenty of inspiration, and wish you an enjoyable read.

Yours sincerely,

Klaus Tersteegen
Member of Operational Management Board,
SSI Schaefer

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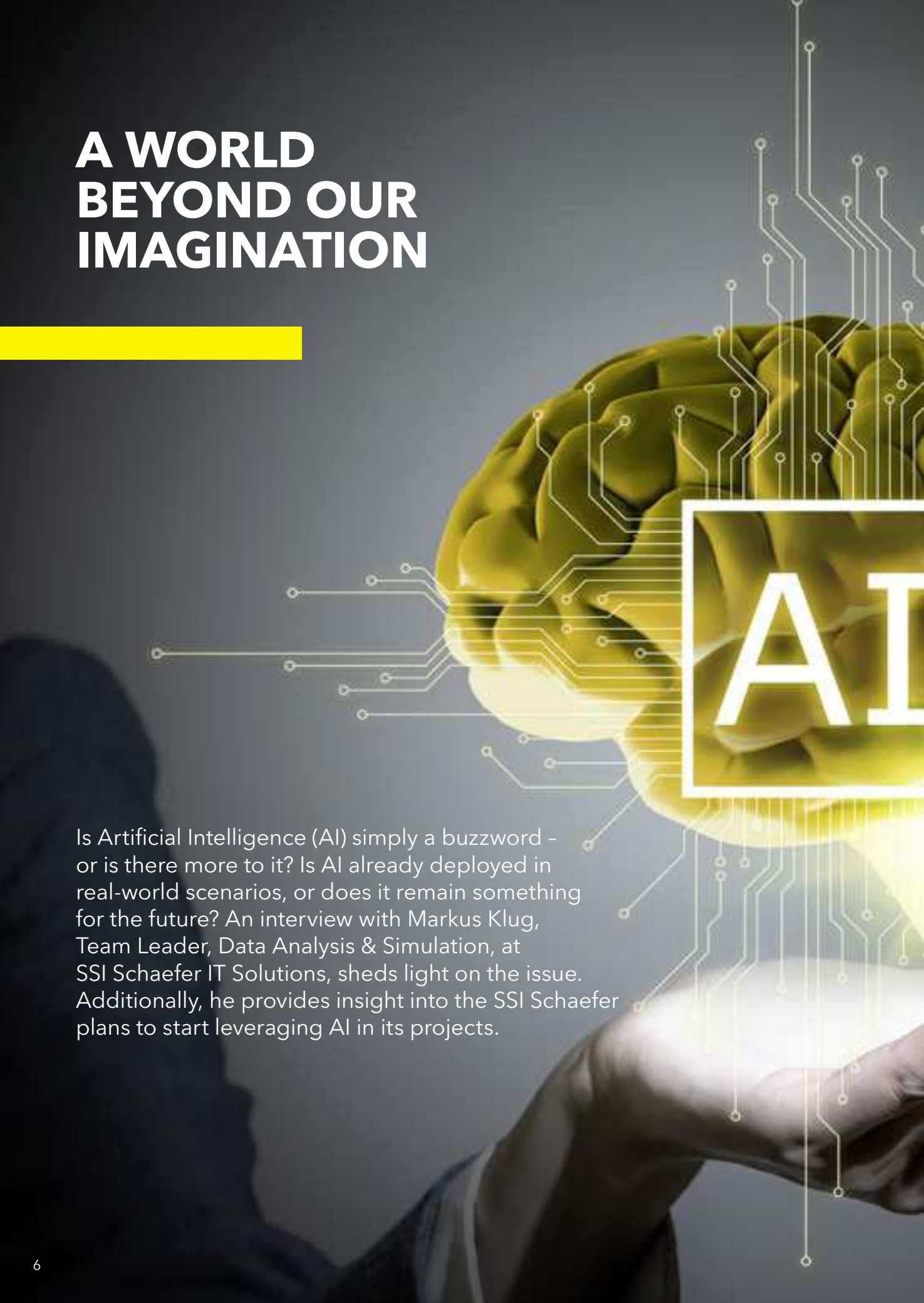
A WORLD BEYOND OUR IMAGINATION



Is Artificial Intelligence (AI) simply a buzzword – or is there more to it? Is AI already deployed in real-world scenarios, or does it remain something for the future? An interview with Markus Klug, Team Leader, Data Analysis & Simulation, at SSI Schaefer IT Solutions, sheds light on the issue. Additionally, he provides insight into the SSI Schaefer plans to start leveraging AI in its projects.

Where do traditional IT systems and state-of-the-art AI differ?
Conventional IT systems are rule based and correspond with static messages. In other words, we define functions and decision trees that machines then implement. However, today's businesses want more. They need highly flexible and tailored IT support for a variety of order types and structures received from across multiple sales channels. For example, systems must simultaneously support deliveries to brick-and-mortar shops and e-commerce fulfillment. A first step is to deploy algorithms that optimize fulfillment. SSI Schaefer has deployed these for the client Desigual, allowing us to continuously adjust and improve order management processes and to improve the cost efficiency of picking. Although, the way logic is currently modeled in IT systems limits what we can do currently.

At SSI Schaefer, our innovative culture keeps us forward-thinking, and AI is our next big mission. We want to create intralogistics processes that are able to adapt to customers' changing needs – autonomously and dynamically. We want IT systems that are "open-minded" and able to identify and analyze patterns; for instance in ordering behavior, in situations where humans, with our focus on causal links, cannot process. This paradigm shift will allow us to design processes that are more agile, and more situation-sensitive. This will enable us, for example, to predict customer orders before those orders are placed, and to perform picking and commence shipment at an earlier stage. We want to harness the customer knowledge that resides in our data.

What is Artificial Intelligence? What is intelligence? When does a system become AI?
AI is the attempt to give computer systems the ability to think for themselves to a degree. However, even the experts cannot really agree upon an exact definition of intelligence. One example is neural networks. This is an IT model of cognitive structures with the aim of approximating a generally unknown functional correlation between input data and outcomes. These systems analyze possible connections and use the data available to them in way that is not possible by humans with preconceptions and prejudices. Or, put another way, people think in terms of specific problems. Machines look for connections, and give us answers to questions that we may never have posed in the first place.

What will the future look like?
AI systems that have been trained to perform corresponding intralogistics tasks can help human workers in warehouses. AI systems will make recommendations and improve process efficiency by using smart forecasts. Prescriptive maintenance, for instance, will allow the early forecasting of the remaining service life of a given machine. Potential faults will be diagnosed in advance and preventive maintenance performed with the support of proactive intralogistics processes. In other words, this will minimize machine downtime. Prescriptive maintenance combines the intelligence of both hardware and software.

The term AI is nothing new, but it is gaining relevance. Why is this topic increasing in conversation?
In the 1990s, we simply did not have the volume of data or the processing power for sophisticated machine-learning processes demanded by our imperatives. Today's hardware and high-performance chips make it possible. Big data technology puts us in the comfortable position of being able to supply systems with artificial knowledge and enable continuous learning. Deep learning, i.e. a type of machine learning based on hierarchical neural networks, is now proven and viable. Ultimately, we have more flexible, improved abilities. We can go beyond theory, and deploy these technologies in our day-to-day work. Things are continuously evolving and getting better, greatly expanding our AI possibilities.

What impact does this have on intralogistics solutions from SSI Schaefer? What role does AI play within your own team?
We have seen our IT and software skills develop at SSI Schaefer IT Solutions to open up new AI opportunities. SSI Schaefer will soon be able to deploy AI systems in customer projects – at least as it pertains to historical data. In the future, this will lead to us doing less programming work, and concentrating more on training systems, with the goal of greater project success. At the same time, we need to retain control over the system. How far do we go? We will require fallback strategies that allow us to respond to unforeseen changes on the customer side. This is the only way of ensuring that the customer's warehouse is always operational. Ultimately, we want to implement a solution where the only limitation is the physical intralogistics equipment itself. Flexibility is the central characteristic of software support, allowing greater responsiveness to customer needs. However, to achieve a successful AI project, communication between data science, simulation professionals, and the people who are actually responsible for implementation is key. Understanding the real-world customer situation is paramount as SSI Schaefer leaps forward.

SENSITIVE PRODUCTS WITH ZERO-FAULT TOLERANCE

Companies within the healthcare and cosmetics industries face complex intralogistics challenges. Products are generally highly sensitive and require end-to-end documentation. Plus, deliveries must be made in very short intervals. Additionally, there can be extreme peaks in order volumes, as storage capacity from the recipient side is shrinking, and customers are therefore ordering smaller quantities. At the same time, they often expect delivery within a matter of hours. And, end-user customers demand the highest standards of quality and with zero-fault tolerance.

Intralogistics requirements are extremely high in both industries. However, specific product handling challenges differ greatly. Storage and picking of pharmaceuticals, for instance, is subject to a variety of strict government regulations, with profound ramifications for the supply chain.

One key priority is the ability to track and trace prescription drugs. It is also essential to monitor and comply with expiration dates. Moreover, these products include a serial number in many countries to prevent counterfeiting. As a result, they must be picked individually, instead of

in batches. What's more, there are differences between prescription and non-prescription products. There is also a need for dedicated storage areas for herbs, narcotics and hazardous chemicals. Some items require cooling, and others must be held in secure storage. With these new regulations in place, this market demands validation and certification of individual intralogistics solutions and processes.

Cosmetics, by contrast, require extremely careful handling at all stages to prevent damage. The goods are not just highly sensitive but also expensive. Packaging must be safeguarded throughout the logistics chain at all times to maintain perfect appearance. However, a further challenge is the implementation of omni-channel management across all material flows – including comprehensive returns management. Intralogistics solutions such as an A-frame, goods-to-person systems, a shipment staging zone and handling systems can handle even the most complex process. Shuttle systems play a key role in fulfilling the high demands of this market. There is also a clear need for software solutions for intelligent control of all manual, semi-automated, and fully automated systems. Lastly, the industry requires corresponding value added services, which can vary depending on the manufacturer, retailer, or distributor.

Within the healthcare and cosmetics industries, it is not unusual for up to 20,000 items to be picked within an extremely tight time window.

A NEW HOME FOR BEARS

SSI Schaefer has created a central warehouse for HARIBO that precisely meets the famous confectionary company's unique challenges whilst also accommodating future growth plans.

THE PERFECT PAIRING

In Germany and beyond, HARIBO's tasty creations – Goldbears, licorice wheels, Happy Cola candies, and more – are well known and well loved. But there are a number of tasks to be completed before these sweet treats can be enjoyed: from sourcing the ingredients, to manufacturing, distribution, logistics, and delivery to retailers, where they finally find their way to consumers. HARIBO's success is not just about great taste and high-quality products, it also hinges on seamless, behind-the-scenes warehousing – to ensure the ongoing availability of their delicious goods.

For nearly a century, HARIBO was headquartered in Bonn, in the German state of North Rhine-Westphalia. Now, its HQ is moving to Grafschaft, in the state of Rhineland-Palatinate. HARIBO is also establishing a new production facility at this location, which will open in 2018. It is the largest standalone project in the company's history; the production area alone will be as large as seven soccer fields.

The goal: minimizing costs and complexity
HARIBO's new headquarters, production lines, packaging systems, and central warehouse span over 27 hectares in the Rhineland Innovation Park in Grafschaft. SSI Schaefer was awarded end-to-end responsibility for construction and logistics for the new, greenfield warehouse.

Two floors ensure high redundancy
All material flows are duplicated on two floors; furthermore, processes are mirrored on the ground floor and on the first floor, ensuring HARIBO enjoys a high degree of redundancy.

Fully-fledged sequencing of outbound goods
Outbound goods are staged via multiple buffer stations, and pallets are placed into the correct order for subsequent shipment. This sequencing process means much more efficient routing of delivery vehicles. Specifically, products are loaded into trucks in line with specific customers, routes and days.

Made-to-measure software support
The new warehouse makes use of the rich functionality of SSI Schaefer's warehouse management software (WMS) and WAMAS® logistics software – in conjunction with enhancements that are tailored to HARIBO's specific processes. WAMAS® intelligently manages all intralogistics components as part of a single overarching system. The solution controls and monitors all of HARIBO's intralogistics processes, from efficient and flexible order processing to material flows, resource optimization, and the capture, presentation and analysis of corresponding metrics.

THE PROJECT AT A GLANCE:

- Design, simulation and implementation planning
- Turnkey facility
- Automated high-bay warehouse with 92,800 pallet positions
- 22 Exyz storage and retrieval machines
- Put away throughput: 645 pallets/hour
- Includes approximately 2.6 km of conveyors
- 2 electric rail-guided vehicle system circuits
- A covered bridge connecting the central warehouse with production
- WAMAS® Lighthouse: visualization, monitoring and improved productivity
- WAMAS® logistics software, plus custom functionality for HARIBO's processes

“The challenge with this project was to provide HARIBO with a huge turnkey warehouse in less than two years – a relatively short timeframe. Our employees’ hard work and commitment allowed us to go live with the warehouse on schedule in late May 2017.”

Martin Keller,
Project Manager at SSI Schaefer

"SSI SCHAEFER MADE OUR VISION A REALITY."

Stefan Sorce,
Head of Global Logistics
at HARIBO

3 questions for Stefan Sorce, Head of Global Logistics at HARIBO

HARIBO chose a one-stop solution from SSI Schaefer: was this a requirement from the outset? What are the benefits to having a single partner for an entire project?
From the outset, we were looking for someone to provide an end-to-end solution, encompassing material flows, software and the buildings themselves. We wanted to keep this mammoth project as simple as possible, and minimize the number of interfaces. SSI Schaefer did an excellent job making this possible. This is HARIBO's first-ever central warehouse, and we primarily based our decision on cost and efficiency. Having a single source for all solutions led to lasting process improvements.

How did SSI Schaefer support you during this major project? What made an impression?
We have been fully satisfied with SSI Schaefer's work to date. They have made our vision a reality – they took our high-level plans and turned them into a fully viable facility, just as we had imagined. SSI Schaefer and HARIBO share a similar philosophy and approach to challenges, and both companies are family-owned and -operated. Despite the pressure to deliver an exceptional warehouse, the chemistry between the two parties was always good.

What plans do you have for the future and for working with SSI Schaefer?
We already have further, concrete plans for future collaboration. These will allow us to build on the experience gained with the current project. Moreover, when it comes to designing new facilities, for example in the US or UK, SSI Schaefer is our preferred intralogistics partner. They are a truly international player – and the perfect choice.

JEWELRY TELEVISION®: STRATEGIC OMNI-CHANNEL IMPLEMENTATION

The permanent availability of goods coupled with quick delivery have allowed the retail sector to experience rapid growth in recent years. If distributors with only one warehouse employ an omni-channel strategy, the complexity of their logistics processes will inevitably increase at the same time. Jewelry Television® (JTV), one of the biggest multi-channel retailers in the U.S., had reached its limits in this respect – but SSI Schaefer rose to the challenge and implemented an innovative distribution center including a sophisticated returns management system.

With a television program broadcasting 24/7, more than 86 million U.S. households view the shopping network. Trendsetters, jewelry lovers, and private collectors are among JTV's customer base, and it's growing daily. In addition, JTV.com offers the most comprehensive learning library for precious stones and jewelry on the internet and is a leading online jewelry retailer in the U.S. The e-commerce business processes smaller orders, but with increasing dynamics and complexity. The JTV logistics processes warrant a solution to keep pace with this trend.

As a pioneer in the industry, JTV continuously offers new and innovative products to fulfill a growing demand from customers. Round-the-clock communication with customers through various channels presented the company with an enormous space issue, combined with internal processes in need of improvement. The potential for further growth within the market reinforced the need for a new logistics solution.

SSI Schaefer put its global project expertise and years of industry experience to use in developing a customized concept. The intralogistics specialist started by analyzing the actual situation, then identified the potential for improvement, and finally went on to develop a material flow model including integrated software. The beating heart of the warehouse complex is an automated warehouse with 16 Schäfer Carousel Systems (SCS) and four picking stations that include the Pick by Light feature. SSI Schaefer's WAMAS® logistics software controls all the processes. This combination of perfectly coordinated components forms a logistics solution that enables order processing in real-time, significantly increases throughput, and makes optimum use of capacities.

Efficient returns management is essential for e-commerce. Customers may decide on another color or size and opt for a return. At JTV, the warehouse and the distribution center are directly connected to one another, meaning that returned products can be put into the system faster and new orders can be distributed in the shortest time possible. At the same time, the logistics software provides customers with ongoing transparency concerning the ordering and delivery process – boosting the first-class customer service provided by JTV. As such, the solution developed for JTV offers an ideal platform for a comprehensive implementation of an omni-channel strategy. In addition, the complete solution provides flexibility to accommodate further growth.

"Our processes are now even more efficient thanks to wave-less picking. We are already considering duplicating the SSI Schaefer system, as we anticipate an additional surge in orders and are due to expand our product range."

Steve Walsh,
Senior Vice President of
Global Operations at JTV

STORAGE LIFT FOR RAPID ACCESS TO SMALL PARTS

Storing small parts in conventional shelving can waste significant space. For example, containers are on average less than half full. In many cases, materials are not assigned to specific containers in a standardized way. The result is squandered storage. For these scenarios, SSI Schaefer offers an exceptionally efficient answer: the LOGIMAT® vertical storage lift, which can be deployed as a standalone solution or integrated into automated systems as a module.

High flexibility ensures best use of space

Felix Lütkebomk, Head of Dynamic Systems Sales at SSI Schaefer, explains: "A storage lift can be thought of as an oversized drawer cabinet, with two columns of trays – one at the front, one at the back. There is a lift between these two columns that retrieves individual trays, and positions these at the access window." LOGIMAT can be modified for diverse environments: it is available in eight widths, two depths, and its height can be freely defined up to nearly 24 m. To make maximum use of tray dimensions, SSI Schaefer developed its LMB containers: these can be divided into compartments using partitions, and are specially designed for the 800 mm deep trays. Additionally, slats can give trays even greater flexibility for storing small quantities of items, or products in diverse sizes.

Compared to static storage solutions, LOGIMAT® requires up to 90 percent less space, and reduces the unproductive time employees spend moving within the warehouse by over 70 percent.

Scalable goods-to-person picking

The LOGIMAT storage lift is equipped with a programmable logic controller (PLC). The PLC can be connected to the customer's IT system via an interface. Integrated software streamlines order picking by retrieving items in an efficient sequence across multiple LOGIMATs – cutting the amount of time employees spend simply waiting at the access window to a minimum.

Multiple installation possibilities

LOGIMAT's compact dimensions make it suitable for a broad range of situations and requirements. For example, the vertical lift can be installed underground or over two stories, it can be built into the outer wall of a warehouse, extended through the roof, or be lowered into the floor – and put away and picking tasks can be segregated.

A future-proof and efficient solution

This dynamic, scalable system can be tailored precisely to customer-specific challenges and ensures ergonomic and reliable warehouse processes. Furthermore, SSI Schaefer provides a one-stop solution, including hardware, software and after-sales service.

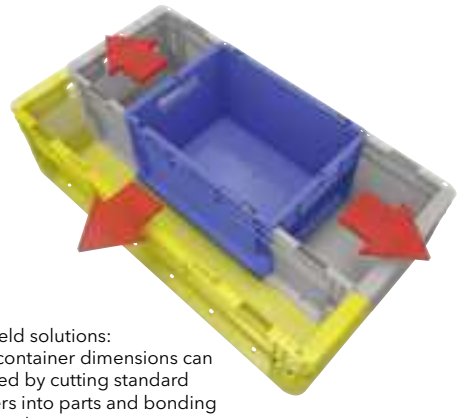
LOGISTICS LEXICON: ENGINEERED PACKAGING

A variety of small load carriers – i.e. containers in diverse (but typically standardized) shapes and sizes – are employed in intralogistics for manually transferring unpackaged parts. However, in many scenarios, for example when parts must be stored or transported in a precise and fixed position, there is a need for tailor-made solutions. In these situations, packaging is purpose-designed, and may include inserts or compartments, to ensure the secure handling of sensitive goods.

Engineered packaging of this type is often the only way to prevent damage, particularly to delicate or painted wares. There are a number of possibilities, for instance QX-type, injection-molded and thermoformed containers, plus customized inserts. Cut & Weld solutions are a further option: standard containers are cut into parts, and these are then bonded together to achieve custom dimensions.

Engineered packaging is not only ideal for cushioning and safeguarding fragile goods during transport or storage – it can also enable automated handling. When robots are deployed for picking tasks, high precision is vital. Machines lack the flexibility and dexterity of human hands, so the items to be picked must be positioned exactly where the robot expects it to be. Accurate placement is essential, particularly at high throughputs. An error-free process requires compliance with all defined parameters.

Engineered packaging necessitates analysis of the specific scenario and product, and the definition of a corresponding made-to-measure solution. Above all, it calls for comprehensive, expert advice.



Cut & Weld solutions: custom container dimensions can be created by cutting standard containers into parts and bonding these together.

E-COMMERCE GAINS TRACTION IN EUROPE

Online sales are rising rapidly across Europe. Consumers are very willing to make purchases over the Internet. In 2016, the volume of trade transacted over electronic channels grew by 15 percent year-on-year, to a total of 530 billion euros in a market with a total population of 500 million. And studies* have shown that buying and selling via online platforms continues to grow.

Electronic commerce, generally shortened to e-commerce, is creating new challenges on a daily basis and across multiple markets. The number of businesses offering products and services over the Internet is on the rise. These companies want to be visible online and easily reached. The goal is to expand their presence in their domestic markets, and to then extend into international operations. At the same time, e-commerce activity varies considerably from country to country, and from region to region.

In Europe, the North and the East both play pivotal roles, but in very different ways. The Nordic countries, where 93 percent of the population uses the Internet, have been the pioneers. They account for almost a tenth of the continent's e-commerce market, despite being home to just 4 percent of its population. And the Scandinavians primarily make their online purchases via mobile devices. The situation is very different in Eastern Europe, which currently generates just 6 percent of e-commerce market transactions. According to studies, this is in part attributable to an Internet penetration rate of less than 50 percent. However, the region is experiencing huge growth. In fact, its e-com market expanded by a third last year, making it the fastest growing market of Europe.

Overall, Denmark is the online leader, with an annual trade volume of around 16 billion euros. Norway has, powered by 100 percent Internet penetration, the largest potential market. In particular, exports are booming: almost one in three Norwegian businesses sells over the Internet, but only 5 percent of their customers are based in the European Union. Demand in Europe is strongest for clothes and sports goods, as well as electronic products and financial services.

* European Ecommerce Report 2017; Russian online retail market, 2016 Results; ICT usage in enterprises (http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics)

Consumer expectations, such as next-day delivery, create huge challenges.

New business models, and the new jobs that go with them, plus close interaction with customers, are accompanied by both risks and opportunities. Customers now expect next-day delivery as standard. This creates significant logistical challenges for online merchants. Automated intralogistics plays a vital part in ensuring storage of large inventories, rapid picking, and timely shipment. An effective supply chain is the key to consumer satisfaction. As a result, the core business mission in the Internet age is to satisfy customer demand by means of logistics processes and systems of maximum efficiency.

"The rising number of e-commerce orders on the Russian market is exerting ever greater pressure on companies' intralogistics. We know that current warehouses and logistics centers are not able to cope with this pressure. Businesses must therefore build new warehouses and improve intralogistics in order to be equipped for the growing volume of online trade."

Andrey Belinskiy,
Managing Director at SSI Schaefer Russia

HUMAN-ROBOT COLLABORATION: WORKING TOGETHER EFFICIENTLY

Robotics and automation are vital aspects of digital transformation – and human-robot collaboration (HRC) has a pivotal role to play. HRC entails people and machines working not simply alongside each other, but actively cooperating. Contrary to popular belief, automation will not replace humans in the long run. Instead, robots will relieve people of monotone and strenuous activities. In particular, machines can efficiently perform tasks that are potentially unhealthy or very difficult, which will ultimately protect employee well-being.

For certain activities, automated solutions are often more cost-effective than their manual equivalents. However, manufacturing and logistics facilities will not be totally void of humans. People and machines will, instead, be partners. They will cooperate and communicate within networks. But humans will always remain in control in the final instance. Even the most automated systems will remain a mix of man and machine. In fact, the more advanced the solution, the greater the importance of humans retaining oversight and ultimate decision-making power.

While machines and robots offer total precision, speed, process stability, and uninterrupted operation, humans retain distinct strengths that cannot easily be emulated. These include, for example, cognitive ability, sensitivity, flexibility, a holistic mindset and, above all, judgement.

Man-machine interaction is of growing importance within the framework of Industry 4.0. Increasingly, technological components in manufacturing processes operate within inter-enterprise and international networks, and in some instances manage themselves. Automotive manufacturers, in particular, have already made significant progress in this regard, and are leading the way in the deployment of robots and automated guided vehicles (AGVs). There is also a clear trend toward ever-increasing automation in intralogistics, where the adoption of robotics will soon be on par with the automotive industry.

The main challenge to man-machine collaboration is ensuring safety in a shared space. Clearly, the overriding priority is to eliminate any risk of injury to the employee. To this end, it is vital to precisely and comprehensively predict all possible human movements. Machines need to be able to calculate potential movements, and to accurately detect actions being taken – in particular those that are safety-critical. Humans remain the greatest safety risk in the context of HRC. A robot must therefore be able to divine a human's intentions on the basis of their initial movements.

In addition, communication and data exchange are important. In this case, a priority is ease of integration and ease of operation. A further focus is the ability of in-house staff to perform maintenance and programming tasks. Applied HRC, in other words, cooperation between human beings and machines without a defined safety zone, is still in its infancy. However, it will undoubtedly be a key consideration in future manufacturing and logistics facilities. The development of truly effective HRC solutions has huge potential in these industries.

"Seamless interaction between cyber-physical components, such as sensors and robots, in line with customer and process requirements, is central to the deployment of HRC applications in manufacturing and logistics."

Prof. Klaus-Dieter Thoben,
Head of BIBA – Bremer Institute
of Production and Logistics

A SMART CONTAINER SOLUTION FOR REYHER

Even a seemingly minor bottleneck, such as a missing screw, can bring an assembly line to a halt. With this in mind, REYHER, one of Europe's leading distributors of fasteners and fixing technologies, has deployed ROM – REYHER Order Management – in order to ensure the reliable supply of materials.

A central challenge of REYHER's ROM solution was finding suitable containers. How could it create Kanban containers that fulfill the specific requirements of both barcodes and RFID tags whilst safeguarding the quality of products and processes? In cooperation with its long-term intralogistics partner SSI Schaefer, REYHER found a successful answer: ROM | LTB Kanban containers. These were carefully designed on the basis of existing real-life experiences. They can be leveraged in diverse manufacturing and logistics scenarios – in principle, anywhere Kanban systems are employed for material replenishment.

SSI SCHAEFER SOLUTION

- Single manual action transforms open-front containers into transport containers
- Sliding mechanism makes containers suitable for flat or flow (inclined) shelving; best use made of storage positions
- Transparent label inserts protect against dirt and damage, and hold labels securely in place
- Larger inventory in same space; containers filled up to 28 percent higher (by volume)
- Ergonomic handles
- Reinforced, ribbed container bases support heavier loads
- Container interiors have rounded edges for simpler removal of small parts
- Openings in the container support automated handling

Elmar Issing,
Vice President Robotics &
Innovations at SSI Schaefer

WELL-EQUIPPED FOR FUTURE CHALLENGES

The end of the tugger train?

Growing market transparency in the wake of digitization and globalization is changing business requirements. Product customization and ever-shorter lifecycles are just two challenges among many – especially in terms of manufacturing logistics. In future, the focus will shift from conventional linear production processes to manufacturing and assembly cells (or "islands"). These must be supplied with a broad variety of materials in the correct sequence – while keeping costs low and process efficiency high. This requires considerable flexibility, to accommodate qualitative or quantitative changes. It is essential to be able to respond rapidly when sudden, unplanned changes occur to products or processes.

Flexible manufacturing logistics using tugger trains?

More and more, tugger trains are deployed to automate the internal transfer of goods – improving upon traditional methods, such as fork lifts. The result is a smart solution, paired with a decrease in the number of accidents, and improved ergonomics. Tugger trains have many advantages, and are an ideal logistics solution in manufacturing environments for highly standardized products. But can they keep up when greater customization is required? Or does this shift herald the end of the tugger train?

This new era requires the small-scale, dynamic, and flexible supply of goods to corresponding destinations, and under increasingly restricted time constraints. From our point of view, even the milk-run approach (e.g. joint retrieval and delivery of goods) cannot ensure the fast and precise ad-hoc supply of items demanded by customization; tugger trains and their static, cyclical routes simply lack the required agility.

Fully automated replenishment by means of AGVs

At SSI Schaefer, we believe the solution lies in the deployment of automated guided vehicles (AGVs), combined with fully automated identification and signaling/replenishment systems (eKanban). This enables responsiveness to unplanned needs and situations. With this in mind, and in cooperation with our partner IDENTYTEC, we have combined a number of elements to create a complete solution. A signal indicating a need for replenishment is relayed reliably and fully automatically to a higher-level server via a software-based eKanban system. The order placed by this system initiates manual or automated retrieval of materials, and the subsequent delivery of the precise quantity needed in the "supermarket" (i.e. a specific type of inventory at the end of a pull system).

In line with production priorities, the self-navigating AGV transfers racks of containers that have been pre-loaded with materials within the "supermarket". It uses its fork to transfer this replenishment stock fully automatically and precisely into the single-deep channel of the target racking in the manufacturing zone.

Compared to costly manual solutions and inflexible tugger trains, replenishment with the AGVs is based on actual assembly and manufacturing needs, and is ideal for the imperatives of customization. It is more responsive to incidents and changes during ongoing operations, and performs tasks with high precision and flexibility. This highly dynamic replenishment process translates into significant space savings, since it reduces the volume of goods that must be kept available at the point of use.

Manufacturing logistics 4.0: do customized products also require a customized transfer?

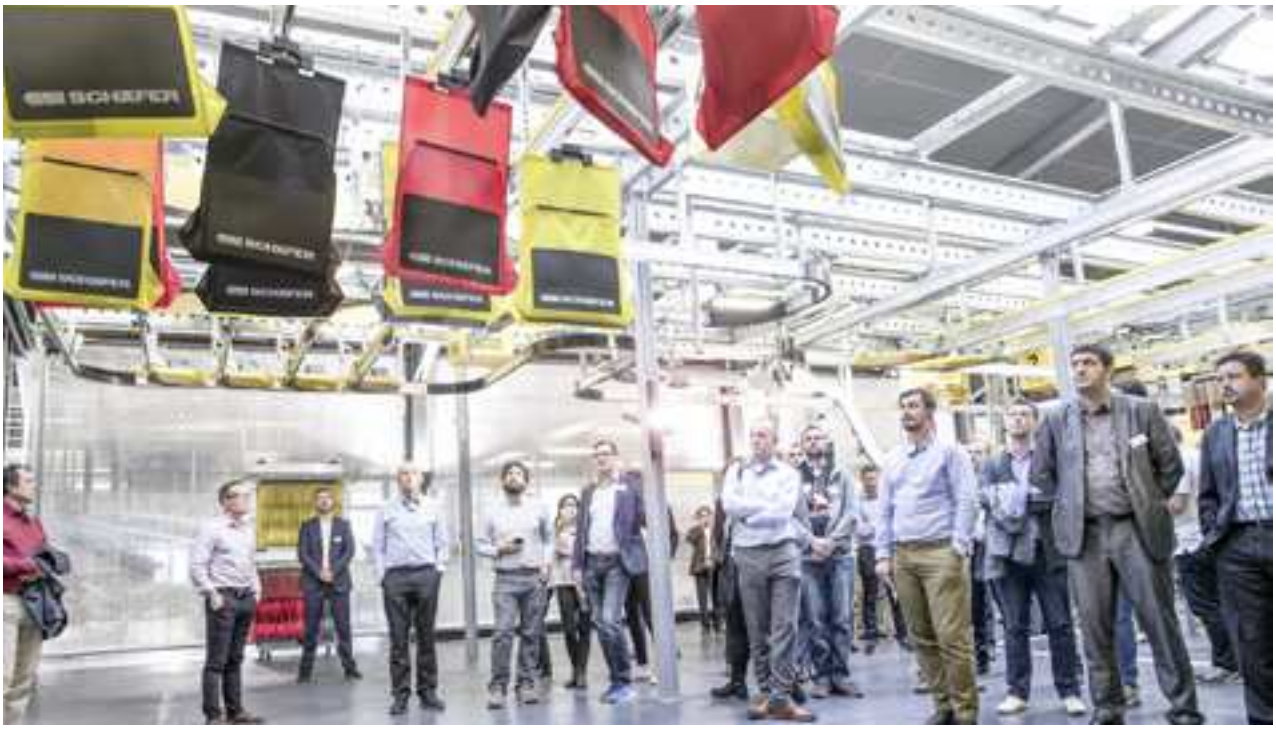
The solution we developed has set a new benchmark in replenishment. However, in future, the market will require further advances in the small-scale and dynamic delivery of items to the point of manufacture. At SSI Schaefer, we are aware of this emerging need, and already offer mini-AGV solutions for customized provisioning of materials and components for customized end-products.

LOGISTICA17: INTERNATIONAL DECISION MAKERS MEET AT FORWARD-LOOKING EXPERT FORUM

Graz, Austria. SSI Schaefer opened the doors of its technology center in Graz, Austria, from 27 to 29 September for one of the world's largest in-house events in the industry, Logistica. The slogan behind this year's event was, "Future-proof logistics solutions – challenges welcome". Well-known decision makers from international business and scientific communities discussed the future of intralogistics, debated current challenges and possible solutions, and witnessed demonstrations of the SSI Schaefer systems live from the new showroom. The renowned expert forum was attended by 202 participants representing 106 companies from 38 countries worldwide, marking a new visitor record.

Digital transformation, speed, intelligent software, high availability of goods, future-proof automation solutions, and flexible omni-channel strategies are just a few of the challenges that customers place on internal material flow processes, and thus on SSI Schaefer. As one of the global market leaders and innovation drivers in intralogistics, which looks after corporate groups and medium-sized enterprises around the world with its vertical integration and 1,000 IT experts, no other company is as ideally placed as SSI Schaefer to turn these challenges into future-proof solutions and shape the future of intralogistics. "Our mission for the future is to take the challenges posed by our customers, in particular in this age of digitization, and to fulfill them," said Michael Mohr, Executive Vice President Sales Automation, at the start of the three-day event.

Video:
"Logistica17: Insights and comments"



MODERN INTRALOGISTICS FOR METRO SUBSIDIARY

Kozomín, Czech Republic. MAKRO Cash & Carry ČR s.r.o., the wholesale subsidiary of METRO GROUP Wholesale and Food Specialist company, has tasked SSI Schaefer with the creation of a modern logistics center. SSI Schaefer is implementing a holistic logistics solution, which includes the establishment of an extensive conventional racking system for various temperature zones, a 10-aisle automated miniload system, 16 Schäfer Carousel Systems, a bin conveying system, three picking stations with sequencing towers as well as the implementation of SSI Schaefer's WAMAS® logistics software.

IT SUBWAY MAP

Friesach, Austria. SSI Schaefer is now featured in the IT Subway Map for warehouse management systems in recognition of WAMAS®, its functionality-rich and customizable intralogistics software. The IT Subway Map allows potential user organizations to gain an overview of existing software products and providers in this space. For more information, see: **itsubwaymap.com**

ONE-STOP SOLUTION FOR SAINSBURY'S

London, United Kingdom. Sainsbury's, one of the UK's largest retailers, tasked SSI Schaefer with implementing a one-stop, state-of-the-art distribution center. At the heart of the facility, that will serve e-commerce customers, is an 18-aisle shipment and consolidation buffer with 19,200 storage positions for dry, fresh and frozen food. The buffer comprises 36 Navette multilevel shuttles and 40 lifts. It is able to process almost 700 orders and 3,600 containers per hour. Picking and shipment tasks are now separated, and goods can be consolidated and sequenced before the delivery trucks are loaded.

SECURE ID SYSTEM

Iserlohn, Germany. The German Federal Office for Information Security (BSI) has awarded an IT security certificate to the IMELO, an SSI Schaefer container identification system. Extensive tests were performed on behalf of BSI by TÜV IT. With positive results, IMELO ID systems are officially certified for both low-frequency and UHF scenarios (BSI-DSZ-CC-1013-2017).

IMELO is also a pioneer in other ways, as a developer of a web-based portal that allows citizens to arrange appointments for the collection of bulky waste. It is already used by a number of local authorities in Germany. The German-language portal can be found at: **sp.imelo.online**

BUSINESS ACQUISITIONS ACROSS EUROPE

Belgium/France. To expand its reach in engineering and software in the Benelux countries, SSI Schaefer has acquired Belgian specialist ABM (Automation Beyond Measure). In pursuit of the same goal, the company has also purchased French software developer GRN Logistic. The moves underline SSI Schaefer's ambition to offer the broadest possible intralogistics portfolio on the international market.

REFRESHINGLY EFFICIENT

Rising productivity requirements in the beverage industry increase the need for optimal storage and picking solutions. Fortunately you can rely on SSI SCHAEFER, one of the most powerful solution providers of material handling products and systems worldwide. Whether you're looking for tour-dependent pallet handling, dynamic production supplies or flexible solutions for manual to fully automated picking, our industry experts will revitalize your business. From the initial idea to an entire turnkey system, SSI SCHAEFER offers you everything from a single source with scalable, future-proof system and software solutions. Suiting your taste!

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