

UPDATE

COMPANY MAGAZINE

No.
33

ONGOING SUCCESS STORIES

Further chapters on successful state-of-the-art solutions

THE FUTURE MARKET OF AUTOMATED GUIDED VEHICLES

Expanding AGV competency in cooperation with DS AUTOMOTION

SUCCESS IN E-GROCERY

Intelligent solutions for individual shopping carts

IDEAS, VISIONS & SOLUTIONS FOR INTRALOGISTICS

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SSI SCHÄFER

ARTIFICIAL INTELLIGENCE IN THE SUPPLY CHAIN

Artificial intelligence gains ground and has become part of our everyday lives. Whether it is facial recognition by smartphones or optimization algorithms in logistics processes. Working without AI has now become unthinkable. It is a key technology of the future. At SSI SCHAEFER, we are already thinking about the logistics of tomorrow. With our team of more than 1,100 IT professionals, we know which opportunities exist in AI and that it is opening up new possibilities for customer applications. Discover the world of digitalization in our new whitepaper.

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Artificial intelligence
in logistics - find the
whitepaper here and
at ssi-schaefer.com

SSI SCHAEFER

Dear readers,

Quo vadis, AI? The topic of artificial intelligence (AI) is omnipresent and plays a key role - both in business and private environments. The euphoria in society quickly gives the impression that the technology is already well developed. But looking at operative logistics, it quickly becomes clear that AI is only in the early stages of development.

Our IT experts counter this heterogeneous mood with the new whitepaper, as well as in the column of our magazine: They provide clear definitions of the broad conceptual landscape and also examine which application areas are already suitable for AI today and perspectives arise for logistics.

From the future to the present and with our customers, we develop and implement solutions for individual challenges and visions for your success stories. On the following pages, we will tell you the next chapters: We have made Schaeffler, one of the world's leading automotive suppliers, fit for the mobility of the future with a trend-setting distribution center. And for the Chinese omni-channel specialist Suning, we have designed and successfully implemented a unique logistics concept for maximum flexibility and speed.

Thinking about the logistics of the future today? This is less of a question than a core element of our permanent thinking and acting, which is reflected in all our business areas. On the following pages, we would like to show you what this looks like in practice. By acquiring a stake in DS AUTOMOTION, we are consolidating our expertise in the field of automated guided vehicles. And with our broad portfolio, we ensure that we will find the right



answers to the challenges of the market and to questions from our customers tomorrow. Successful models here are both our standard products such as the PR 600 shelving system and our innovative IT solutions - which include the Enterprise Solutions business segment.

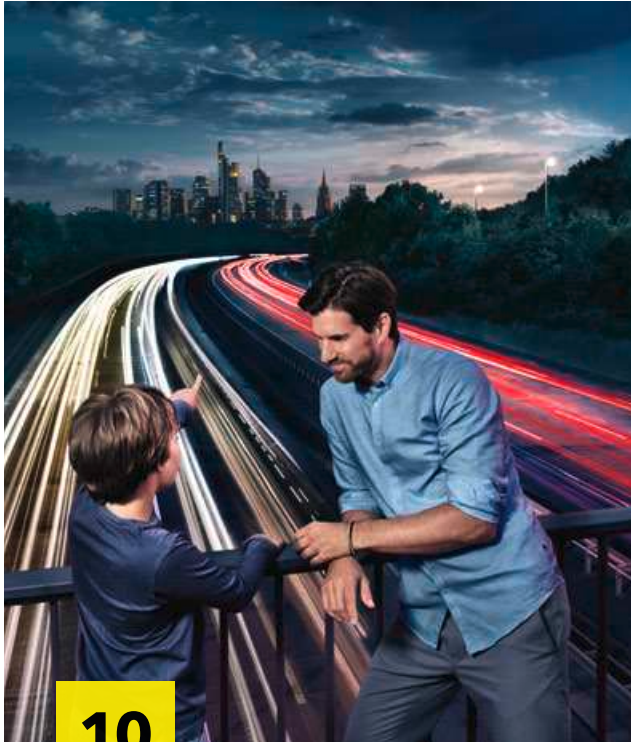
How can companies optimally automate complex material flows within the industrial sector? Which challenges do new business models like e-grocery bring with them, and how do these trends affect intralogistics? In our company magazine, you will find answers to these and other questions.

We look forward to meeting you in person soon and discussing ideas. Together, perhaps we will write the next success story.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Harrie Swinkels'. The signature is stylized and fluid.

Harrie Swinkels
CEO, SSI Schaefer



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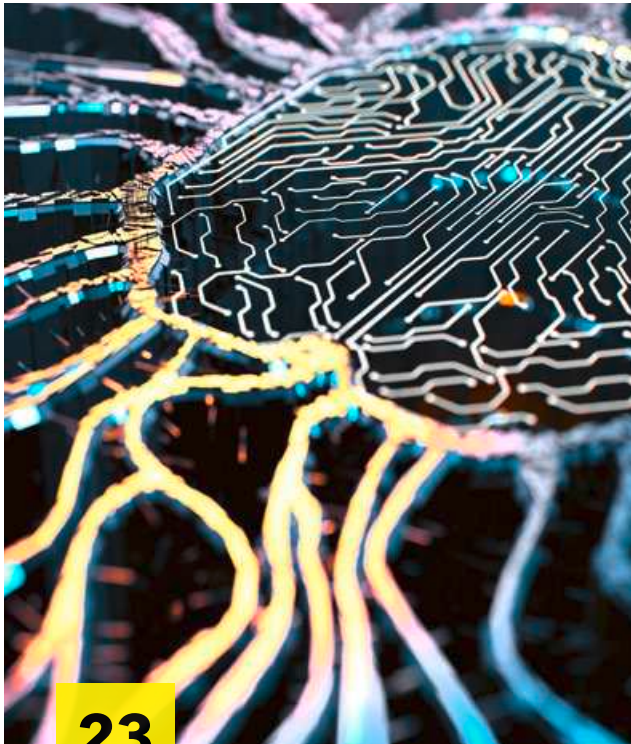
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Imprint

Update

The company magazine
of SSI SCHAEFER
No. 33, 2/2018

Editor

SSI SCHÄFER
FRITZ SCHÄFER GMBH & Co. KG
Fritz-Schäfer-Straße 20
57290 Neunkirchen
Phone +49 2735 70-1
info@ssi-schaefer.com

Responsible for the content

SSI SCHAEFER Group
Enrico Gazzano

Editorial team

Lea Werthebach, Laura Tump,
Lena Keßler

Layout

Andrea Buchner

Picture credits

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p. 19: iStock.com/karandaev, fcafotodigital,
p. 24/25: Marco Bicci/EyeEm, Getty Images

Frequency

"Update" is published twice a year.

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M. Hummenberger, W. Hillinger, R. Schmit (from left to right)

CREATING THE AGV MARKET TOGETHER

With its investment in DS AUTOMOTION, the world's leading manufacturer of highly dynamic automated guided vehicles (AGVs), SSI Schaefer intends to integrate flexible and reliable systems from Austria into holistic logistics solutions and further advance technologies long-term. In the interview, Manfred Hummenberger and Wolfgang Hillinger (both Managing Directors at DS AUTOMOTION), and Rob Schmit (EVP Technology & Innovation at SSI Schaefer) give insight into the background and future plans of the partnership.

DS AUTOMOTION GMBH

- Headquarter: Linz
- Number of: 220 employees
- Founded in: 1984
- Realized AGV: more than 6,000



Mr. Schmit, SSI Schaefer recently announced its partnership with the Linz AGV specialist DS AUTOMOTION. What were the reasons behind this decision?

R. Schmit: This participation is a strategically important step for SSI Schaefer and, as a result, we supplement our expertise in this promising field and are delivering what the market demands. In addition, the partnership is in-line with our strategic positioning. We will increasingly work with partner companies where we are ideally involved.

Mr. Hummenberger, how do you justify the decision to cooperate with SSI Schaefer in the future?

M. Hummenberger: DS AUTOMOTION is a world leading supplier of AGVs and since 1984 has specialized in the development and production of automation solutions for a wide variety of applications and industries. These years of experience and individual solutions enable users to become flexible in the management of internal material flows. With SSI Schaefer, we have found the right partner to serve this future market, especially as a holistic solution provider.

Existing partnerships with AGV manufacturers and your own products already characterize your wide range of services in this area. How would you describe the development?

R. Schmit: SSI Schaefer was one of the first providers in the industry to implement holistic intralogistics solutions with AGVs. At a very early stage, we were able to meet the increasing customer requirements for barrier-free and flexible transport. With the acquisition of the Belgian startup MoTuM NV, Mechelen, SSI Schaefer has been driving forward extensive research and development work in the areas of swarm intelligence and decentralized control technology since mid-2015. In addition, with partners like the Finnish provider Rocla, we have a broad network that we rely on in our day-to-day business. We are particularly proud of our own product too - the WEASEL®, an AGV for small load carriers. It even received the prestigious IFOY Logistics Award in 2016. With our participation in DS AUTOMOTION, we are constantly developing our AGV expertise. We supplement our scope of supply and services with system implementations based on individual customer requirements as well as with solutions for special applications, such as manufacturing operations. Consequently, users benefit from a comprehensive portfolio for both small load and large load carriers, which integrate into holistic logistics solutions.

Mr. Hillinger, what does the future market for AGVs look like? And what are the implications for intralogistics?

W. Hillinger: Especially in the context of Industry 4.0 applications, of further system integration, and of digitalization, AGVs represent essential elements of modern intralogistics. Based on rapid developments in the areas of navigation technology and software, there is increasing demand for solutions. Simultaneously, it is essential to offer a wide range of vehicle types, which we are already implementing as we continue to develop our portfolio.

R. Schmit: At the same time, the specification of the vehicles depends very much on the particular application. For example, an application may utilize standardized vehicles, but another application may use custom vehicles. Therefore, both standard and custom AGVs are in demand. This results in special challenges for intralogistics. Custom vehicles and concepts meet individual requirements of the transport tasks that need to be performed. With our new partnership, we are increasing the market coverage in the area of customized device configuration and taking this development into account.

What expertise at DS AUTOMOTION complements the existing service portfolio of SSI Schaefer and vice versa? Last but not least, what does it mean for your customers?

R. Schmit: The new partnership will bring many benefits: Increased variance of vehicle types, increased expertise in navigation technology, and comprehensive project management. In addition, DS AUTOMOTION has a strong presence in the areas of production logistics, automotive, hospital & healthcare, agriculture, and industry. Plus, DS AUTOMOTION automates mass-produced vehicles to complement the product range. SSI Schaefer benefits in turn as the partnership allows us new market access. By combining the AGV expertise of our two companies, we are well positioned in this future-oriented market on the basis of global performance, a wide product portfolio, and our comprehensive IT expertise.

M. Hummenberger: We have many years of experience in implementing both flexible and reliable AGV systems with different technologies - especially in large-volume market sectors. Plus, we offer an extremely broad AGV portfolio for every application. Together with SSI Schaefer we are more than able to meet the increasing demand for agile systems.



INTELLIGENT MATERIAL FLOW FOR THE INDUSTRY

The challenges facing the industry require tailor-made solutions for complex material flows in production-related warehouses. Holistic concepts, which can be represented by manual, partially automated, or fully automated systems, are essential for intralogistics processes.

Producing high-quality products as cost-effectively as possible while also saving time and resources - this requires new working methods, such as the intelligent use of man and machine. However, collaboration not only enables higher throughputs in production, but also short distances for employees and the time-saving use of human resources. In fact, this has a positive long-term effect on ergonomic work processes.

Intelligent solutions for internal material flow

The importance of logistics processes to value creation, in the automotive industry, for example, has been increasing for years. One solution to customer-specific challenges are automatic small parts warehouses, where a wide variety of articles can be stored in containers, boxes, and trays to save space. Conveying systems or automated guided vehicles (AGVs) connect them to the warehouse and production. Likewise in mechanical engineering, the increasing demand for mini or special series poses major challenges to logistics. Scalable shuttle systems ensure optimized warehousing with fast material transport and short access times - in short, efficient processes. The deciding factors here are above all flexibility in terms of capacity and the high performance of the shuttle systems - SSI Schaefer offers this with its high-performance shuttle portfolio.

Intralogistics 4.0

SSI Schaefer's solutions have long enabled the intelligent interconnection of people, machines, systems and products - which is at the heart of Industry 4.0. In this context, IT has a central role to play in terms of planning, management, controlling, and communication. Tailor-made and customer-specific software solutions from SSI Schaefer offer the complete spectrum from material flow control



and warehouse management to consulting and execution based on the own warehouse management system WAMAS® or SAP. The logistics cockpit WAMAS® Lighthouse combines conventional visualization tasks with the presentation of logistics KPIs. This gives customers the ability to read and analyze the heartbeat of the system - a basis for confident decisions.

An autonomously navigating and intelligent solution

AGVs have become an integral part of the solution portfolio for automated intralogistics systems, providing forward-looking answers to the current challenges of intralogistics. In the industry, this means ensuring an intelligent flow of materials from the warehouse to production or assembly, right through to the shipping department. In the case of tight storage areas, flexibility is required above all - internal performance is then guaranteed as well. SSI Schaefer offers a wide range of AGVs for the various requirements and fields of application: WEASEL® for Euro containers or larger vehicles with fork lift or conveyor elements for pallets, as well as roll containers for transport, storage, and order picking tasks for large load carriers.

EXPERTISE IN ONE OF THE KEY FUTURE TECHNOLOGIES

Congratulations on 35 years RO-BER



In 2016, SSI Schaefer acquired the majority interest in RO-BER Industrieroboter GmbH, sustainably strengthening its expertise in one of the most important future technologies. "We congratulate our partner on 35 successful years and look forward to jointly exploiting the promising integration and development potential for highly innovative automation solutions in the long-term," says Rob Schmit, EVP Technology & Innovation at SSI Schaefer.

"With our standardized robot systems, we perfectly complement the product portfolio of SSI Schaefer. In the future, we would like to make even better use of the synergies of our partnership-based cooperation - through the seamless integration of our solutions into the overall concepts of SSI Schaefer," explains Elmar Stöve, Managing Director at RO-BER. "Interface optimization is a central element in our development process and promotes maximum agility in project execution - from which our customers benefit in the long term."

During the RO-BER anniversary and in-house exhibition, the robotics specialist presented the service portfolio developed over 35 years in the context of a robot show. Numerous visitors and customers were able to experience sustainable solutions for layer-by-layer depalletizing, end-of-line palletizing, and the handling of large-format and flat products first hand. Area storage systems, demo grippers and vision systems for detecting small load carriers on trays and boxes in small load carriers were presented and demonstrated. In addition, SSI Schaefer's automated guided vehicles (AGVs) WEASEL® demonstrated how flexible AGVs can be integrated into innovative gantry robot systems.

Specialist presentations from our partners, who invited open discussions, followed a review of the company's history at the beginning of the event. SSI Schaefer representatives provided an overview of current trends and discussed sustainable technologies that address them.

THE BEST PART OF A SUCCESS STORY? THE NEXT CHAPTER.

With the state-of-the-art distribution center for Schaeffler and the innovative omni-channel solution for Suning, SSI Schaefer is opening two more chapters.



CHAPTER 3: SCHAEFFLER
**ON THE WAY TO A
MOBILE FUTURE**



Experience the project
interactively at
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WITH THE TREND-SETTING DISTRIBUTION CENTER FOR THE SCHAEFFLER EUROPEAN SUPPLY NETWORK

The new European Distribution Center (EDC) of the automotive and industrial supplier Schaeffler rises over Kitzingen's technology park on a 148,000-m² site. In the future, it will serve as the heart of the new European supply network for important industrial customers. The distribution center represents the most important topic that Schaeffler has dedicated itself to - the mobility of tomorrow.



State of the art: In Kitzingen an unparalleled intralogistics concept has been created. SSI Schaefer installed a 7-aisle high-bay warehouse, comprehensive pallet and bin conveying system, as well as an electric rail-guided vehicle system. Seven high-performance, energy-efficient, Exyz type two-mast storage and retrieval machines will serve the 28,000 Euro pallet storage locations and 56,000 Düsseldorf pallet storage locations in the high-bay warehouse. They are each equipped with two load handling devices and simultaneously accommodate two Euro pallets or four Düsseldorf pallets. The small parts storage takes place in a 6-aisle miniload system, where 12 Schäfer Miniload Crane storage and retrieval machines operate on two levels one above the other, thus ensuring high throughput rates. Around 100,000 LTB containers, also part of the SSI Schaefer scope of delivery, will be circulated through the entire system in the future. Fully automated robotics applications for depalletizing and palletizing containers as well as ergonomic work stations complete the delivery and service package.

AT A GLANCE

- Optimization of the supply chain in terms of cost, speed, and flexibility
- Increased product availability and efficiency in order processing
- Significant delivery time reduction: consolidated shipping of orders within 24 to 48 hours in Europe
- Increased logistics performance through lean processes to bundle complex order structures
- Improvement of the delivery capability of customers through holistic logistics processes
- Solution package for predictive monitoring and semi-automated maintenance
- Visualization of the system components in the WAMAS® Lighthouse logistics cockpit



"When designing our European distribution center in Kitzingen, our goal was to get away from preventive maintenance with static maintenance intervals to condition-based maintenance and semi-automated maintenance."

Egon Grief
Maintenance Manager EDC Central at Schaeffler



MAINTENANCE 4.0 FOR INTRALOGISTICS

With the “Maintenance 4.0 for Intralogistics” concept, SSI Schaefer, as system integrator, and Schaeffler, as system supplier, together realize an integrated solution package for condition monitoring of operation-relevant drive systems and semi-automated maintenance for warehouse logistics. Practically applied, 58 Schaeffler SmartChecks in the EDC Central perform condition monitoring of the storage and retrieval machines for the engines and transmissions of the travel and lifting drives. The alarm status of the SmartCheck devices as well as other warehouse systems is visualized in the WAMAS® Lighthouse logistics cockpit. In addition, centrally controlled Concept8 lubrication systems with specially developed lubricating pinions on chain conveyors and roller conveyors ensure continuous and precise relubrication during operation.





DISTINGUISHED AS BEST PRACTICE: INNOVATIONS 2018



The concept of SSI Schaefer and Schaeffler is one of the winners of the “LOGISTRA Reader’s Choice Best Practice: Innovations 2018”. The award in the context of votes confirms the innovative character and future viability of the solution for condition monitoring and semi-automated maintenance.

With its selection, the practice magazine seeks to present the most exciting innovations of the year. The editorial staff of the trade magazine, LOGISTRA, featured a total of 24 innovative products and solutions in eight categories. Approximately 900 readers voted for their favorites in each category.

“We are delighted to be recognized in this way for our future-proof system development,” says Peter Berlik, Chief Technology Officer at SSI Schaefer. “The award in the storage and order picking category confirms for us our decision to integrate solutions for predictive monitoring and maintenance of plant-relevant systems into our service portfolio with the predictive maintenance building block.”



CHAPTER 4

SUNING
苏宁物流

THE IMPOSSIBLE MADE POSSIBLE



PROVIDING CUSTOMERS WITH THE SAME SHOPPING EXPERIENCE - REGARDLESS OF CHANNEL

Chinese omni-channel specialist Suning demonstrates how it works - with its state-of-the-art warehouse in Nanjing, China, among other places. From here, both brick-and-mortar Suning stores and the rapidly growing number of e-commerce customers are supplied with products from an extremely broad portfolio. The successful completion of the logistics center operating multiple distribution channels proves the expertise of SSI Schaefer as a partner with a high solution capacity for intralogistics challenges.



“The crucial factor for our decision in choosing SSI SCHAEFER was that the system provider is not only able to plan such an omni-channel logistics center, but also organize its implementation and equip it with its own products.”

Meng Lei Ping
Vice President Suning Research Institute

Perfectly coordinated

Founded 25 years ago as an electronics retailer, Suning now offers a broad range of electronics and office supplies, books, toys and household goods, cosmetics, fashion items, and groceries in more than 4,000 stores and its standard-setting online platform suning.com. The company successfully applies an online-to-offline (O2O) strategy to create a one-stop-shop shopping experience for its customers by fully linking various distribution channels. The prerequisite is a state-of-the-art distribution center.

Flexibility and quality

With the custom-designed system, Suning is responding to the ongoing boom in omni-channel retail and meeting the growing demand in e-commerce. It is all about high speed with simultaneous delivery quality and flexibility as well as maximum ergonomics in all intralogistics processes. The distribution center stores around 20 million items and processes up to 1.8 million items per day. Maximum availability, safety, and cost-effectiveness round off the demands on the logistics solution to react even more dynamically to the increased market requirements in the face of further expansions for the company.

Ingredients of the success story

The Suning logistics center impresses with multiple components - the high-bay warehouse and the miniload system form the backbone of a highly dynamic system solution. In addition, the integration of the Schäfer Carousel System is one major benefit in terms of picking efficiency.

Thanks to the ergonomics@work!® program, not only were the warehouse processes beneficial, but all the employees benefit from sophisticated order picking and work stations. Powerful sorters and a return center supplement the internal material flow. While the existing SAP system is used in warehouse and stock management, the associated WAMAS® logistics software from SSI Schaefer demonstrates its strengths at the control level.

But it's not just the numbers and internal processes that are the deciding factors in the end. Above all, the partnership between Suning and SSI Schaefer was, and is, important. In particular, the bundling of the global strength of the intralogistics experts with its local expertise in China was able to contribute to this. The synergies are used perfectly - with a team on site and other specialists guiding the project from Europe.



Read more about the success story of Suning and SSI Schaefer at ssi-schaefer.com

E-GROCERY: INTELLIGENT SOLUTIONS FOR INDIVIDUAL SHOPPING CARTS

The rapidly growing sector of online retailing places a high demand on intralogistics for grocers. Constant cost restraints, the growing demand for order today and deliver today, along with the need for higher process efficiencies, mandate companies apply the dynamics of e-grocery to their supply chain.

To meet the growing demands of consumers in terms of delivery time and location, perfectly coordinated processes are essential to online shopping cart service. Various delivery options must include the planning of logistics processes: From home delivery, to pick-up at the store, to pick-up from transfer boxes. At the same time, similar preferences for ordering and delivery times of online shoppers result in strong fluctuations in demand, which must be mitigated using holistic, intelligent systems.

Sophisticated assortment diversity

Weekly recurring peaks in addition to consistent expiry date and batch number tracking as well as gentle product handling place the highest demands on the intralogistics of grocers. This applies, in particular, to the process of consolidation, since the combination of different items of different temperature zones requires flexible system layouts for a perfectly coordinated, integrated cold chain, which takes into account the individual characteristics of the assortment. The result: A much more time-consuming and cost-intensive order processing compared to traditional branch delivery.

In addition, online food retailing has a different order structure compared to traditional store delivery: While

packaging units have to be consolidated for branch delivery, individual products are picked in e-grocery. The compilation of orders from the smallest trading units of different types of packaging results in high demands on the efficiency of logistics. By comparison, in the supermarket, the customers perform this logistical step by picking their own items. And unlike in the case picking warehouse for classic branch delivery, the distinctive variety of forms of consumer products does not permit full automation and robotics handling without further effort.

Served up: a variety of solutions for every taste

Process efficiency thanks to tailor-made automation is, therefore, the focus of system planning for online supermarkets and enables a significant increase in employee productivity. Flexible and high-performance system layouts that intelligently combine automation and manual processes are in greater demand than ever before. Barrier-free transport media such as compact automated guided vehicles are increasingly replacing the rigid and permanently installed transport routes of classic conveying systems out of desire for greater flexibility. Ergonomic and productivity-optimized work stations allow quick and accurate picking. The automation of non-ergonomic ancillary activities, such as the loading of transport racks contributes to the further improvement



of resource utilization. At least as important are powerful, efficient consolidation buffers - in other words, a solution for decoupling delivery and picking. This enables the optimization of order picking algorithms and the associated higher picking performance. In addition, workload peaks from demand fluctuations can be smoothed out and processes better planned.

Looking beyond the warehouse

These solution components enable the efficient preparation of deliveries for the last mile. The last mile significantly influences the logistics concept. To be able to master challenges such as same-day and same-hour delivery in the future, a holistic view of the supply chain will be essential - not only, but above all in e-commerce.



Read more at
[ssi-schaefer.com](https://www.ssi-schaefer.com)

WAMAS® FOR TRANSPARENT PROCESSES



Less is more when it comes to complex logistics processes. SSI Schaefer has equipped numerous premises of the Swiss retail and wholesale company, the COOP Group, with a single logistics software system, WAMAS.

Since 2001, COOP has been placing its trust in the competence and expertise of SSI Schaefer. COOP uses SSI Schaefer's proprietary logistics software WAMAS to manage its stock. "We made a conscious decision to opt for a decentralized solution for availability reasons," explains August Harder, COOP Group CIO. "This means that, instead of everything being controlled from a central location, it is done individually at the respective warehouse locations."

Scalability is key

At the start of the project, SSI Schaefer carried out a thorough review of the existing process and identified any additional requirements. Ultimately, this is the only way that logistics software can be designed to meet individual customer challenges. Additionally, at COOP, the scalability of the solution and a modern software architecture needed to be taken into account. The diverse range of company sites and stakeholders with varying logistical processes made this software modernization project a major challenge. In production, distribution, and e-commerce alike, a standardized WMS solution is gradually being introduced at many sites for manual, semi-automated, and fully automated logistics processes. New customer demands mean that this project is undergoing constant development. The result is a version of WAMAS with custom COOP elements. Management of the existing WAMAS versions in operation and in development proved to be extremely challenging. One element that proved particularly challenging was the need to replace several connections to external partners and existing

subsystems with new interfaces during normal operation.

Setting new standards

Pilot projects were held at five warehouse locations throughout 2016. By April 2017, SSI Schaefer had managed to support five further rollouts, and, by the end of 2019, 20 modernizations will have been implemented - along with 50 more to soon follow.



THE FUTURE OF ACTIVE SUPPLY CHAIN CONTROL

The Enterprise Solutions business segment at SSI Schaefer is defined as the logistical control instrument between warehouse, transport, and customer. In short, it is about sustainably and holistically fulfilling customer requests.

EVP Enterprise, Hannes Neubauer, explains how this works in practice and what is behind these intelligent solutions.



What is the idea behind the uniform logistics platform?

Consumer behavior has changed dramatically over the past few years in terms of individualized production, increasing customer expectations, and ever shorter product life cycles. As well as this, classic distribution channels are now only a few of the many ways that goods can be transported to customers. This alters the whole logistics chain and poses many new logistical challenges: Warehouses are supplying directly to customers while shops are becoming increasingly responsible for picking, outbound deliveries, and acting as collection points for possible customer returns.

Forecasting and artificial intelligence (AI) systems are able to anticipate customer demand and trigger an appropriate transfer of goods in the logistics network, in order to ensure that actual customer orders are fulfilled as quickly as possible. This means that an individual warehouse management or transportation management system that only covers one or a few warehouses has a much too limited scope to tackle the challenges of this new world on its own. In order to adapt to these market conditions, it is necessary in the medium term to have - alongside the above-mentioned systems - a central higher-level logistics planning platform to control all the fulfillment partners in the process chain.

The demands being placed on logistics software are increasing as it grows in importance. What do we need to look out for here?

The planning platform plays a strategic role within these transformative processes in terms of the intelligent networking of material flows, processes, and supply chain partners. It is essential to have a higher-level control system to optimize, control, and monitor all the data and goods flows within the supply chain, in order to be able to clearly trace relevant goods movements and postings. All orders, master data, stock and stock changes, actors, and the status of every stakeholder is linked in real time. This means that the supply chain can be fully and actively checked and controlled.

In other words, the logistics platform needs to be understood as a central solution, operating the process chain with the highest efficiency on one hand and preventing possible interface problems on the other.

How is SSI Schaefer optimizing the logistics processes of the future?

At SSI Schaefer, it is our clear goal to expand the WAMAS® software suite to include suitable components. This will mean that in the future, our customers will also have overarching control of the supply chain with our holistic software systems. The logistics platform is our way of ensuring the future integration of all our fulfillment partners and to provide our customers with an efficient and effective overall system.

THE PR 600 COMPLETE RACK: A RACKING SYSTEM OF THE HIGHEST CLASS

Whether for flat pallets or other loading equipment - SSI Schaefer complete racks allow immense flexibility for fast material handling. The scalable PR 600 complete rack system is suitable for the pallet storage of medium and large volume goods with medium to maximum loads - for example, for logistics services or in the distribution warehouse. Thanks to the modular system principle, the PR 600 can be optimally adapted and preconfigured to individual customer requirements - and can also be expanded later at any time. Matching accessories and a diverse range of complementary offers make it possible to create an uncomplicated and individually tailored racking solution with unlimited versatility.

Maximum standard of quality, stability, and safety

High-quality materials characterize the PR 600 and a field load of 100% is guaranteed - regardless of the number of fields. Verified static design of the shelves offers maximum stability as well as maximum safety in the warehouse.

The complete racks of the PR 600 pallet rack system are available with frame depths of 850 mm and 1,100 mm as well as in different heights, which accommodate up to five storage levels. The rack frames are bolted and designed for the highest loads.

Automotive industry: efficient spare parts logistics

DB Schenker supports a large number of its customers with reliable storage and transport services. To ensure a fast supply chain in the Swiss market, the company is setting up a new distribution center for the automotive industry in Effretikon. Thanks to its modularity, the PR 600 pallet system has proven to be the ideal solution for Schenker's requirements. Tires are stored on Euro pallets in an area specially designed for this purpose. For route optimization, a passage was also created for people and forklifts. Windshields and rear windows are safely and carefully stored using chipboard for longitudinal girders and vertical dividers.



Read more about
the PR 600 at
[ssi-schaefer.com](https://www.ssi-schaefer.com)



Markus Klug
Team Leader Data Science &
Simulation at SSI Schaefer

HUMAN CREATIVITY AND ANALYTICAL AI – A SUSTAINABLE COMBINATION

Artificial intelligence (AI) is opening up new possibilities for us in both the private and industrial spheres. Applications with intelligent language assistants or supercomputers for computing and analyzing otherwise unsolvable tasks have now successfully demonstrated huge potential and have the ability to surpass the human capacity for processing enormous volumes of data. But are these technologies sufficiently advanced to actually replace humans and their professional expertise? Or can machines even go beyond this and develop their own innovative and creative mental capacity?

Increase in productivity versus lack of creativity

Nowadays, AI systems can process huge volumes of data and information and, by applying complex algorithms, are capable of choosing from previous and therefore familiar decisions. This allows them to provide recommendations for actions and thereby support the decision-making process. The systems are therefore carrying out work, which was previously considered the preserve of humans alone. One undeniable advantage is that they often work more precisely and with unvarying reliability. This results in huge gains in productivity, but also brings radical changes regarding the range of decisions in the professional world. Even though machines are acquiring more and more

intellectual capacities, the capacity for innovative and creative thinking beyond known approaches to a solution remains unique to humans.

As many experts concede, AI is still in the early stages of its development. Compared to human life, AI was in its infancy until recently when it was able to distinguish between basic concepts ("mom", "dad") for the first time with a key word for an image or pattern recognition. Machines are now capable of solving more complex problems having been instructed accordingly and based on training data; the human guides the systems and "teaches" them.

Better performance in the warehouse

In logistics, self-learning systems are already performing tasks in customer service. Bots, for instance, manage logistics processes by applying optimization algorithms and also enable the early recognition of risks within the supply chain based on the holistic evaluation of various factors. And there is justification for predicting that AI will take intralogistics processes to a new and more flexible level. Due to automation and extensive opportunities of digitalization, productivity in the warehouse is set to increase significantly. AI technologies also optimize picking performance thanks to more reliable forecasts and stock level adjustment. Intelligent systems have a positive effect on picking performance as AI-controlled robots shorten picking times and increase reliability.

Therefore, this raises the performance of the entire warehouse to a new level. At the same time, the integration of AI requires a lot of processing power as well as initial development and programming, which many companies

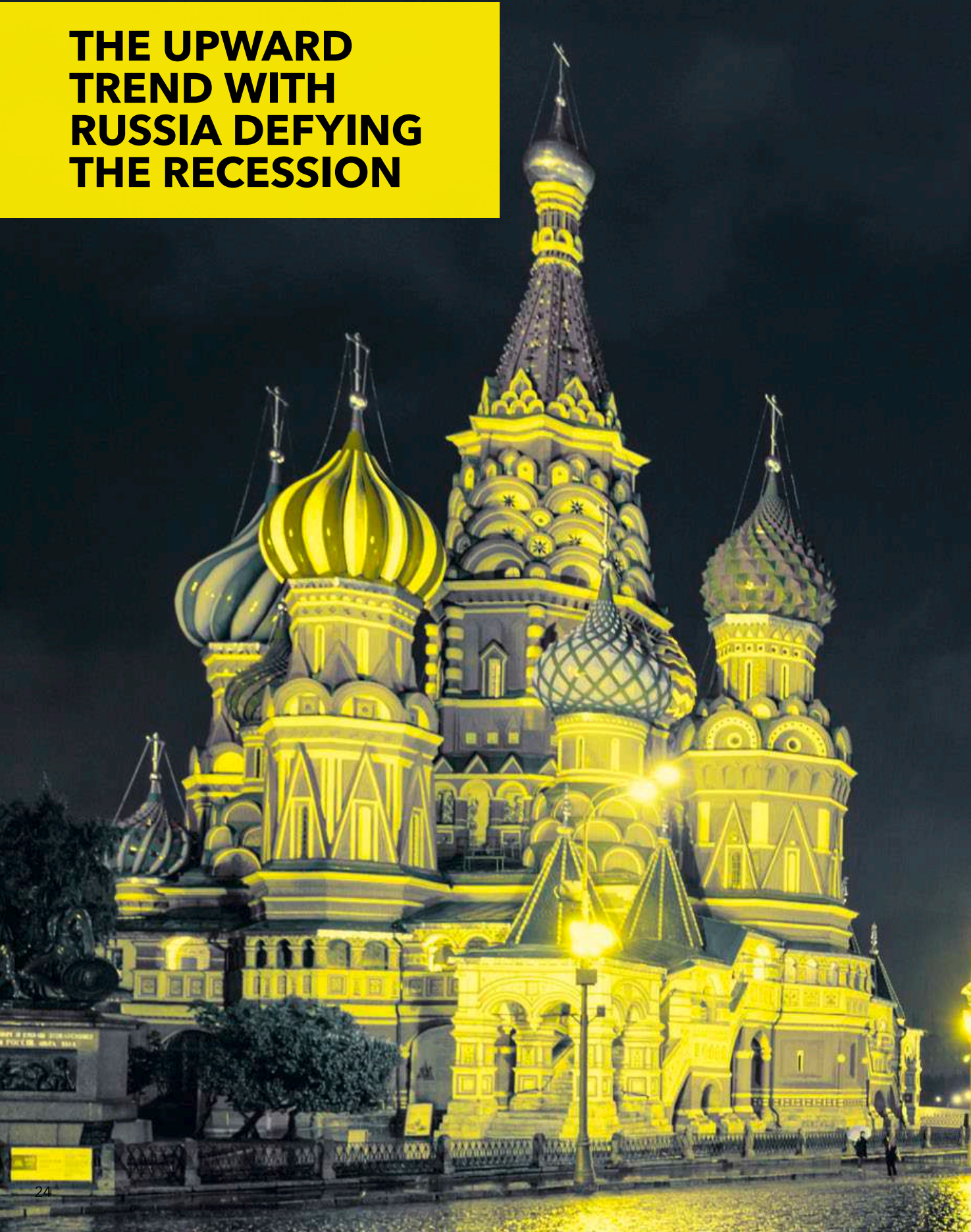
are not (yet) willing or able to afford. This calls for considerable investment in staff and technology and a change in perspective in terms of project handling. Whether or not this will pay off in each individual case remains to be seen. Small- and medium-sized companies in particular are better off employing external service providers who can help them benefit from AI (similar to the use of cloud technologies) whilst taking their personal and financial capacities into account.

Holistic approach for success with AI

SSI Schaefer, just like many other enterprises, considers AI a central part of its company strategy and a decisive factor for the future core business and the emerging new wave of digitalization. A holistic approach is primarily being adopted here. Only by monitoring all interfaces and technologies, is it possible to ensure that self-learning systems have sufficient information for decision-making.

A full-service provider such as SSI Schaefer offers the option of horizontal and vertical integrability of all components and system parts as the basis for implementing new AI technologies. The interaction of hardware components and the corresponding software tools serves as the basis for allowing machines in the flow of goods to learn from each other – including across different levels – and ensures intelligent (local) control without compromising on quality or performance. Despite these technological advances, the level of success achieved by AI in ensuring (local) control is always determined by the individual benefit the customer gains from greater optimization, flexibility, and dynamism in warehouse operations.

**THE UPWARD
TREND WITH
RUSSIA DEFYING
THE RECESSION**



At 17 million km² in land area, Russia is the largest country in the world but it is still suffering from a recession during the past few years. What sounds like a catastrophe from the outside has made domestic manufacturing and production sectors gain from these struggles. The market has been rising ever since and creates a lot of potential for intralogistics processes in different industries.

Russia is a very large and multifaceted country which boasts a wealth of natural resources and human capital. Each region is unique in terms of its focus on specific industries and investment appeal. The quest for intralogistics solutions is huge due to businesses creating new production facilities, opening up new markets and adopting new warehouse technologies.

Russia continues its recovery amidst relatively high oil prices, enhanced macroeconomic stability, gradual monetary loosening and ongoing momentum in global economic growth. Back in 2015, low oil prices and Western sanctions have led to an economic decline in Russia accompanied by a decrease in gross domestic product (GDP) (-2.8%). Followed by a relatively positive trend in 2016 (-0.2%) and a positive growth value yet in 2017 (0.6%). Especially the e-commerce sector profits from this development. The forecast estimates USD 626 million for 2018 compared to USD 585 million in 2017 in online sales. Additionally e-commerce user penetration is predicted to 55.6% in 2018 and to 59% in 2022.*

As a result of the recent recession, certain structural changes in the economy and consumer behavior have opened up greater opportunities in domestic manufacturing. This is particularly true in regards of substitutions on imported goods and in the retail sector overall. In fact, there are already signs of increased investments in warehouse logistics in both of these areas.

*Statista, 2017; Ecommerce Foundation, 2017.

Rethinking intralogistics processes in times of e-commerce

The e-commerce market still remains one of the fastest growing markets in Europe. The rising number of online orders on the Russian market is exerting ever greater pressure in companies' intralogistics. For the last two years, companies in Russia started to invest heavily in warehouse automation. The reason for this? They have to handle high demand with single-piece picking to be both cost-effective and fast, as well as high-quality.

Finding the right degree of automation

Following a period of many years, when a high rate of manual warehouse operations has dominated Russia, companies are now focusing on the fast return on investments (ROI) of automated solutions. They recognize that the increased productivity, even with basic conveying systems, will allow them to significantly improve ROI. An increase of that trend and an even higher demand for automated solutions respectively are expected in the future.

In order to remain competitive in the market, companies now start to pay ever greater attention to the implementation of automated warehouse technologies - of both semi- and fully automated solutions. Among the most popular products are conveying systems, vertical lifts, shuttle systems and carousels.

“In Russia, there has been an incredible development in the past few years. Thus, with our strong local team, we are already talking about major SSI Schaefer automation projects.”

Andrey Belinskiy
Managing Director of SSI Schaefer Russia

AGV FLEET FOR SUN GARDEN



Malanów, Poland. SUN GARDEN, is one of Europe’s market-leading manufacturers of mattresses and cushions. For a new distribution center at its production site in Malanów, the enterprise needed a one-stop intralogistics solution - and turned to SSI Schaefer for the answer. As an integral part of the solution, a fleet of automated guided vehicles (AGVs) will soon enable the flexible, obstacle-free transfer of goods. SSI Schaefer was tasked with creating and simulating an effective material flow concept, and constructing a five-aisle automated high-bay warehouse. The project also includes the establishment of a semi-automated picking system served by AGVs in line with SSI Schaefer’s proven 2Pick® concept. WAMAS® logistics software will monitor and manage all warehousing and material flow processes.

SSI CARRIER RECEIVED “HANDLING AWARD 2018”

Munich, Germany. High performance transport, accumulation, dynamic buffering, sequencing and sortation - with these characteristics for optimized processes in e-commerce and omni-channel distribution, the SSI Carrier pouch sorter convinced the independent industry award jury: On 9 October 2018, the SSI Schaefer pouch sorter received the “handling award 2018” in the category “Warehousing, order picking and intralogistics”. The renowned industry award is granted in four categories and signifies novelty value and innovation, customer use, sustainability and commercial viability of technical innovations that are crucial for industry 4.0.

STATE-OF-THE-ART DISTRIBUTION CENTER FOR IKEA

Montreal, Canada. IKEA has decided to build a new distribution center and commissioned SSI Schaefer with the implementation. Core elements of the project are an automatic shuttle warehouse designed according to the 3D-MATRIX Solution® concept, a high-bay warehouse (HBW) with 245,000 pallet storage locations, ergonomic multi-order-picking work stations, and the logistics software WAMAS®.

“At IKEA, we always strive to be more accessible, affordable, and more sustainable for our customers. This requires an innovative logistics with fulfilment activities in various shapes and formats, all enabling IKEA to be a multichannel retailer”, explains Claudio Marconi, Head of Logistics Development of Inter IKEA. The completion of the Montreal project is scheduled for spring 2020. As a result of the positive and coactive cooperation, SSI Schaefer will also implement two follow-up orders for IKEA in Torsvik (Sweden) and Lyssach (Switzerland).



SAP RECOGNIZED EXPERTISE

Walldorf, Germany. SAP Germany SE honors SSI Schaefer with the SAP Recognized Expertise certificate, thereby confirming the extremely high competence level of the intralogistics expert for SAP solutions in supply chain management.

The award with this seal of quality emphasizes the success of the long-standing cooperation between SAP and SSI Schaefer, a success which is also confirmed by the continuously increasing number of implemented SAP applications. In addition to the official SAP partnership as “Service Partner” and “Value Added Reseller/Channel Partner”, now the SAP Recognized Expertise also points out SSI Schaefer’s competence in the field of supply chain management to potential customers. This not only concerns the product know-how but also SSI Schaefer’s experience regarding project implementation and project monitoring. Prerequisite for this certification are experienced and qualified consultants in the company and a reliable and effective implementation of SAP solutions.



EXTENDING FACILITY IN GIEBELSTADT

Giebelstadt, Germany. Construction of a new, state-of-the-art office complex for the SSI Schaefer competence center in Giebelstadt, Bavaria, will support ongoing business growth. The focus of operations at the Giebelstadt site is turnkey solutions for the international market, leveraging highly innovative, automated intralogistics solutions and corresponding logistics software. With its extensive performance, SSI Schaefer covers the entire value chain and develops versatile solutions in the industries of its customers. At the same time, teams of

dedicated experts continue to conduct research into pioneering systems based on Robotics, AGVs and Industry 4.0 technologies, while addressing the specific challenges of individual market sectors.

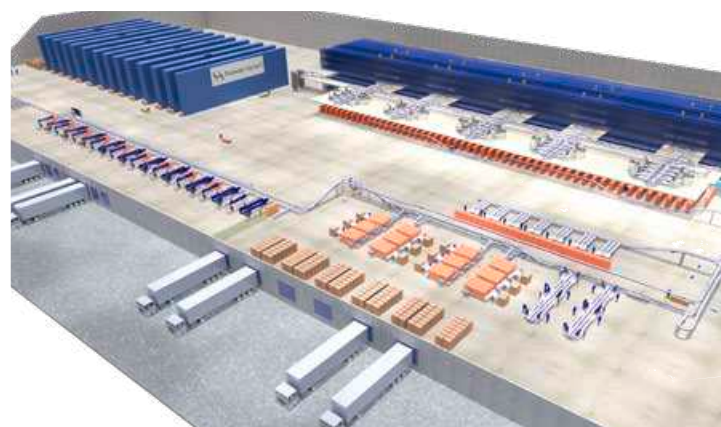
“We are successfully rolling out this strategy worldwide; it allows us to develop customer-specific products and to identify and respond early to new challenges,” state the Managing Directors, comprising Brigitte Thalmann, Peter Berlik and Peter Lambrecht. The five-story complex comprises a central element with two wings and is scheduled for completion in 2020. It will offer 7,000 m² of space suitable for 450 office work stations, plus conference rooms.

PREMIER FARNELL: SYNERGY IN TECHNOLOGY

Leeds, United Kingdom. SSI Schaefer is pleased to announce it has signed a contract with global technology development distributor, Premier Farnell, to equip the company’s new Leeds distribution center with a state-of-the-art order fulfillment solution. Construction work commenced on the high-quality 361,000 square feet distribution unit at Muse Developments’ flagship Logic Leeds site on 29th March. The distribution center project, which will be the largest ever warehouse development in Leeds, is scheduled to be completed by the end of the year.

SSI Schaefer has been working closely with Premier Farnell for nearly two years to develop a solution which will enable Premier Farnell to meet considerably increasing business demands, while delivering a high return on investment. At the heart of the fully integrated solution is SSI Schaefer’s highly efficient Navette Matrix System, which operates alongside vertical lift storage machines and conveyors backed up by conventional shelving and pallet storage. All elements of the solution are controlled by

SSI Schaefer’s WAMAS® warehouse management system and processes have been designed to consider the nature of the product and the current regulations governing its handling and storage.



**ALL CHANNELS
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