WORLD OF SOLUTIONS

mission: zero touch
Warehouse Robotics and Artificial Intelligence
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KNAPP

> **"FROM ROBOTICS TO ARTIFICIAL INTELLIGENCE – WE USE CUTTING-EDGE TECHNOLOGIES TO DRIVE INNOVATION AND ENSURE OUR CUSTOMERS' LONG-TERM SUCCESS."**
>
> – Gerald Hofer
> Chief Executive Officer
> KNAPP

**Dear ladies and gentlemen,
valued KNAPP partners,**

I am pleased you are taking a moment to read this issue of *World of Solutions,* whether digitally or analog. Wherever your day finds you – on a visit to KNAPP, browsing at a trade fair, or taking a breather at your desk – come along as we take you through our newest developments, technologies and customer references. This issue is all about the robotic warehouse, which is a very exciting topic in times like these, when labor shortages and lack of qualifications are on everyone's lips.

But what exactly do we mean when we say robotics? Do we mean robots that look and move like humans? Classic industrial robots that perform the same movement over and over in different planes of movement? Self-driving shuttles – bots – that move in a swarm to perform transports and sequence units on the floor or in storage blocks? Are we talking about the intelligence of networked systems equipped with image recognition and artificial intelligence? Or old-school fully automated systems that are now fully integrated into networks?

The short answer is all of these. We've got shuttles to run in racks and bots that navigate freely as self-sufficient transport systems. Our classic picking robots are now integrated completely, including artificial intelligence and product data capture, and they've also mastered processes such as pick and pack or pick and place. Finally, there is our RUNPICK, in continual motion performing multi-picks and puts, for high-performance store-friendly order preparation on pallets or roll containers.

An experienced person in this field, however, knows that to really get you where you want to go, these robotic solutions require a unified, intelligent solution for goods-in, storage, sequencing and packing, including all processes and their data streams.

That's why we offer our KiSoft suite of software, as well as our SAP EWM by KNAPP solutions, and are continually enriching these with business intelligence from KiSoft Analytics or redPILOT; these provide KPIs that are accessible in real time exactly when they are needed and long-term permanent optimizations that can be simply called up online. In addition to transport and sorting systems, our OSR Shuttle™ family, with 1D and 2D variants and the best pocket sorter system worldwide, including the AutoPocket that is now onstream, form the most important building blocks in our sector-specific all-in-one solutions.

Zero-touch and one-touch fulfillment, these are systems which, despite the enormous quantities and high demands for sequencing and quality, require few or no operative employees to lift, stack or walk through the warehouse. This is not future-thinking – it's long since become reality for almost every area we do business in. What's more, we are very active in our retrofit programs for existing systems, providing the long life and durability our customers count on. This makes us the partner with whom you want to keep talking, or perhaps just start a conversation. In other words: we are your value chain tech partner.

I look forward to the chance to talk with you about these ideas in depth. Please feel free to contact us at any time. After all, the beginning of your success, which we are privileged to support, often starts with an exciting discussion.

Gerald Hofer
Chief Executive Officer
KNAPP AG

TAKING YOUR VALUE CHAIN TO THE NEXT LEVEL

Does controlling processes along the value chain ever feel like a roller coaster ride? Delivery delays, rising operating costs, labor shortages and new business models – even if there's no panacea for these challenges, there are solutions for creating a secure network that will keep your company on the right track while allowing you enough flexibility to react if your course changes. What's the secret? The right technologies for all steps of the value chain and a strong, reliable partner at your side makes staying on the right track easy, even when the ride gets bumpy.

> "AS A STRONG PARTNER, WE PROVIDE TECHNOLOGIES FOR SOLVING ALL THE CHALLENGES IN OUR CUSTOMERS' VALUE CHAINS."
>
> Gerald Hofer
> Chief Executive Officer
> KNAPP

THERE'S A BOT FOR
Robotics & automation

Automatic storage systems
Autonomous mobile robots (AMRs)
Pocket sorters and sorters for flat-packed goods
Palletizing robots
Right-sized packaging

THERE'S AN APP FOR
AI & software

Warehouse management system (WMS)
Warehouse control system (WCS)
Data analytics, dashboards, KPIs
Resource planning
Route management
Qualification as a service

THERE'S A SERVICE FOR
Full life cycle management

Service Desk
Spare parts
IT services
Repairs & maintenance
Digital services
Retrofits & revitalization

Intelligent production networks
Intelligent distribution networks
Intelligent urban networks

How you benefit from having a strong partner:

Lower costs.
Optimized performance.
Improved sustainability.

> **"OUR ZERO–TOUCH FULFILLMENT PRINCIPLE MEANS MAXIMUM EFFICIENCY AND SHIPPING CAPACITY WITH MINIMAL ONGOING COSTS."**
>
> – Johannes Holas
> Vice President, Business Unit Fashion
> KNAPP

WITH ZERO TO HERO

Lowering costs and powering performance with zero-touch fulfillment

Often, new challenges require completely new solutions and ways of thinking. Especially when the pressure is on, there's no room for compromises. Our goal is always to master the challenges of the value chain with innovation, technology and a generous helping of courage. That means managing increasing cost pressure, limited space and personnel shortages. Using intelligent robotics paves a path to the future where we can reduce costs in logistics processes while increasing shipping capacity. We call our new approach zero-touch fulfillment.

ZERO is the goal

Retailers – whether online, brick and mortar or using an omnichannel strategy – share a common goal: to keep customers happy by offering services such as fast delivery times and free returns to stay ahead of the competition. Additionally, order fulfillment must be as efficient as possible with minimal costs and personnel requirements. In the current situation, the demand for new all-in-one solutions that can achieve these ambitious goals, reduce process complexity and lower costs and error rates is high. So, what retailers aim for is this: zero error costs, zero manual interventions in the automated system and zero need to worry about delivery quality or time. We've summed up these goals in the name of our new highly automated, innovative solution: *zero-touch fulfillment*.

ZERO is the solution

As we've already explained, zero is the challenge, the goal and the solution itself. For us, *zero-touch fulfillment* means using intelligent robotics and the highest degree of automation to reduce the number of manual work steps, making it simple to assign employees work efficiently and relieve them from physically demanding and repetitive tasks.

ZERO–TOUCH FULFILLMENT

How order processing works using the zero-touch principle:

1/ Fully automatic storage and retrieval

Automatic storage systems, such as our OSR Shuttle™ Evo, are the heart and soul of today's logistics processes. After an order is received, the shuttles independently store and retrieve items. This reduces unit costs as optimal storage density is ensured in the form of multiple-deep storage and other intelligent storage strategies. The OSR Shuttle™ Evo can transport all kinds of goods. It can even automatically store and retrieve differently sized containers, cartons and trays with loads of up to 50 kilograms (110 pounds), which are then sent to a goods-to-robot work station for processing.

2/ Fully automatic picking

Fully automated robot solutions assemble orders quickly and accurately. In our *zero-touch fulfillment* solution, our picking robot, Pick-it-Easy Robot, loads sorter pockets destined for the dynamic buffer. Different grippers along with AI-based object recognition and grip point determination allow the robot to handle a wide array of items. Pick-it-Easy Robot can even reliably and competently handle items with reflective surfaces that were heat-sealed in foil, such as clothing articles, and place them in a sorter pocket. RFID technology connects the items with the pockets, making them traceable along the entire flow of goods.

3/ Fully automatic sequencing and sorting

Pocket sorters have become indispensable as single item sequence sorters in e-commerce and omnichannel retail. Our innovative AutoPocket system is spicing up the world of overhead conveyor systems. The pockets open fully automatically and deposit the goods in the target at just the right second, whether into a container, carton, roll container or directly into the shipping bag. What also makes AutoPocket special is that it deposits goods while moving at full speed, without having to stop or limit performance.

4/ Full overview thanks to central software intelligence

Along with powerful robotics, intelligent and highly precise software is the final key component for successful *zero-touch fulfillment.* KiSoft, the comprehensive logistics software suite, makes it possible to implement customized software solutions for all processes at all levels of the warehouse, from warehouse management to warehouse control and machine control. There are also tools in the KiSoft suite specifically tailored to business intelligence and preventative maintenance. KiSoft Analytics provides support for making management-level decisions and depicts interconnected data in easy-to-understand dashboards.

- ☑ Optimal storage density
- ☑ Smart storage strategies
- ☑ Reduced unit costs

- ☑ AI-based object recognition
- ☑ Wide array of items
- ☑ Automatic loading

- ☑ Complete sequencing
- ☑ Drop-off without compromising performance
- ☑ Space-effective system

- ☑ Comprehensive, end-to-end logistics software
- ☑ Optimal data value creation
- ☑ Over 1,000 KNAPP software experts

Highly automated systems, robotics and AI are a must in times of increasing market pressure. We would be delighted to explore the benefits robotics could bring to your processes. **Your personal KNAPP contact person is here to help.**

FEEL-GOOD AUTOMATION

Greater freedom and safety for patients with customized services

In healthcare, guaranteed deliveries, fast availability and efficient processes are vital. What's more, patients increasingly expect tailored services and flexible shopping options, such as click & collect and courier delivery. As a strong value chain tech partner for the healthcare industry, KNAPP provides companies active in healthcare with automated and digital solutions that help them ensure seamless and error-free logistics across the board, from production and distribution to the pharmacy.

"PATIENTS WANT TO CHOOSE THE LEVEL OF SERVICE THEY GET WHEN PURCHASING THEIR MEDICINES. WE HELP OUR CUSTOMERS IN THE HEALTHCARE SECTOR EXPAND THEIR RANGE OF SERVICES FOR PATIENTS, ALLOWING THEM TO OPTIMALLY SERVE THEM DIGITALLY AND IN PERSON."

– Matthias Dalkner
Vice President, Healthcare Solutions at KNAPP

Innovation is key for Norwegian online pharmacy Farmasiet

When it comes to developing innovative concepts for digitalization, mobility and the industry, Scandinavians are both tech-savvy and ahead of the game. Scandinavia's special geographic location and, in some parts, scarce population are significant factors to account for in the supply chain – and pharmaceutical online retail is no exception to this.

The largest online pharmacy in Norway, Farmasiet, has therefore decided to invest in cutting-edge automation technology to ensure that their customers receive their medicines quickly. The solution includes the Central Belt System and Pack2Patient technologies by KNAPP. While the Central Belt System picks the fast-moving medicines automatically, Pack2Patient efficiently fills repeat prescriptions, adds patient-based labels and checks the prescription medicines. *"We want to be* *ready for the future,"* explains Elisabeth Haug, CEO of Farmasiet. *"By offering safe, fast online shopping around the clock, we perfectly accommodate the buying habits of the Norwegian people. This investment puts us on good footing for scaling our business and we can reach our objectives for both our customers and proprietors,"* states Ms. Haug with conviction.
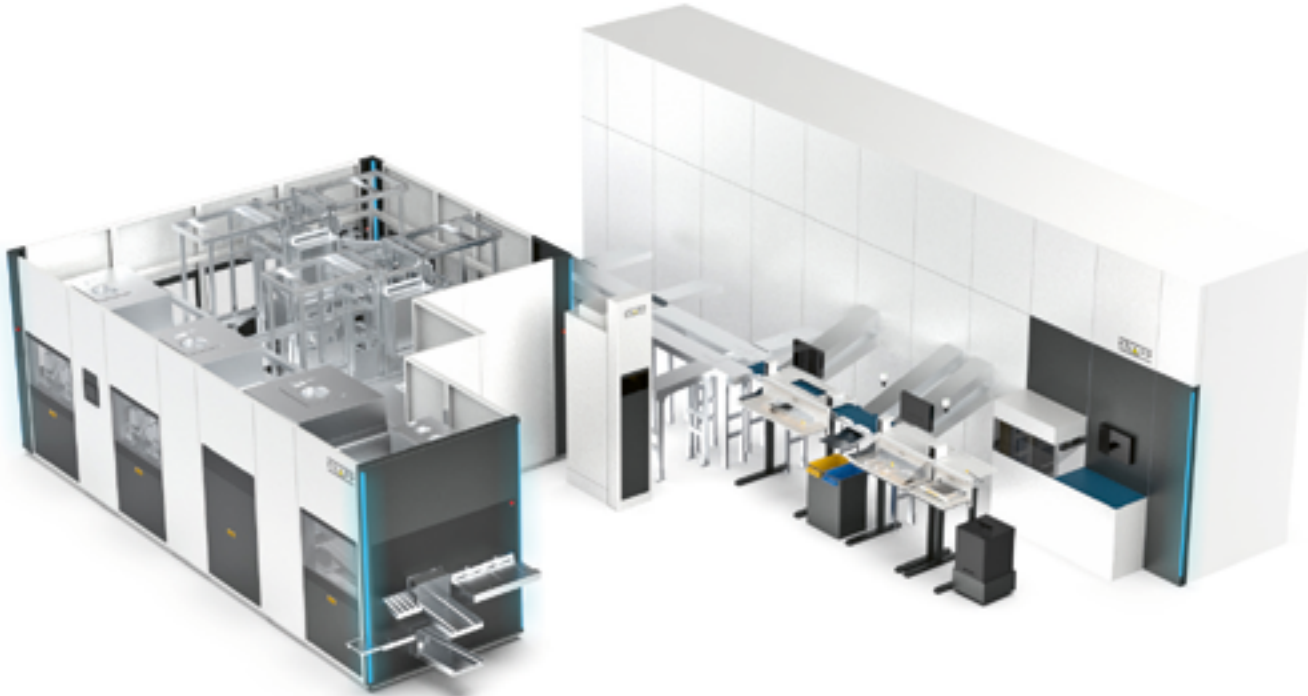
Central Apotheke: a visionary approach to supplying medicines to urban areas

To successfully supply medicines and healthcare products to the population in today's metropolitan areas, Marc Schrott, proprietor of the Central Apotheke in Frankfurt, Germany, envisaged a state-of-the-art "healthcare campus". *"We want products to be ready for delivery within a few hours. It takes an intralogistics solution with extremely short lead times to achieve this,"* explains Mr. Schrott. Together with our logistics experts at KNAPP, Central Apotheke developed a new concept that encompasses cutting-edge automation technology,

robotics and intelligent software. The Healthcare Campus combines the advantages of a local pharmacy with the comfort of online shopping. Medicines and healthcare products are delivered not only to pharmacies, but also to office buildings, hospitals and private customers within a few hours. *"We needed the solution to be expandable. Our supply network provides a number of options for delivering to locations within the city using electric vehicles, in collaboration with other local shops,"* says Marc Schrott.

The Healthcare Campus supplies pharmacies, hospitals, office buildings and private customers in Frankfurt, Germany, within a few hours. This is possible thanks to the highly automated picking and storage solution, which also meets the security regulations specific to pharmacies. Technology and software modules can be added to suit the needs of the growing business.

D³ Daily Dose Dispenser: patient–specific medication directly from the original blister

More and more people require repeat medication or take dietary supplements on a daily basis as part of a healthy lifestyle. But for patients, remembering the number of pills they need to take and when to take them can be a bit of a challenge. A comfortable and safe solution that also offers added value is a patient-specific blister card with pre-filled medication. For pharmacists, carers and contract manufacturers, however, packing medication in blister packs involves a lot of effort. *"To help the healthcare industry, we have developed a novel fully automatic packaging solution, the D³ Daily Dose Dispenser system, which creates blister cards for patient-specific medication,"* explains Michael Muhr, Product Manager at KNAPP.

So what's new? *"In the system, medicines are picked directly from the original blister cards into the patient's*

blister card. During the process, each medication is dosed into the blister card ready-to-take in a controlled environment. The card is then sealed and produced as a whole. Labor-intensive manual steps, such as removing medication from the original blister pack or manually packaging medications, are a thing of the past," continues Michael Muhr. Furthermore, direct dispensing means that clean room conditions are not required for re-blistering. The innovative automated approach to production, together with a sophisticated concept for preventing dust, makes it simple to correctly and safely dose medicine. The innovation allows blister cards to be created on a broad basis, generating added value for patients, relieving pharmaceutical personnel and opening up new business opportunities for healthcare and pharmaceutical companies.

"MICRO FULFILLMENT OFFERS US MAXIMUM FLEXIBILITY, PROFITABILITY AND RELIABILITY WHEN SUPPLYING PEOPLE IN URBAN AREAS WITH GOODS. IT MEANS WE CAN KEEP UP WITH CUSTOMER REQUIREMENTS."

– Cédric Lebastard
Manager of supply chain automation projects
in the e-commerce segment at Intermarché

REDEFINING RETAIL

Automation for vital urban environments

Currently, over 55 percent of the world population is living in urban areas. According to estimates made by the United Nations, that number will grow to over 70 percent by 2050. The urbanization megatrend influences how we live. It affects our standard of living, mobility and, of course, supply and distribution. How can an increasing number of people get the things they need in an increasingly small space? How can they do it quickly and easily? What new opportunities are there for services and sales channels – and how can these requirements be reconciled with sustainable development goals? As a strong partner for automation and digitalization, these are all questions we ask ourselves. It's also why we would like to introduce you to two of our best-practice solutions we specially developed to meet the requirements of urban areas that are already creating added value for successful businesses.

CLICK ME

CLICK ME

URBAN SOLUTION 1

Never far from your customers with micro fulfillment efficiency

The pace of life in cities is fast, especially when it comes to grocery shopping. That's why more and more people are ordering groceries online to either pick up on their way home or have delivered directly to their front door. Micro Fulfillment Centers (MFCs) make integrating this level of service easy and efficient. MFCs consist of a mini automated warehouse system integrated into an existing supermarket and are used for processing online orders.

The advantages of MFCs are obvious. Its high-density storage means that stores can offer their full range of goods in a reduced space. In a very short time, orders are ready for different delivery or pickup options, from eco-friendly home delivery by bicycle couriers to curbside pickup or 24/7 lockers. From Woolworths in Australia to Albertsons in the US and Intermarché in France, many companies all around the world are choosing micro fulfilment as an innovative way of offering the best possible service combined with maximum efficiency in urban areas.

URBAN SOLUTION 2

New, round-the-clock shopping experience with RetailStore

Can cutting-edge robotics and digital solutions revolutionize the shopping experience while creating new sales channels for brick and mortar retail? We here at KNAPP know the answer is YES! Our innovative, fully automatic in-store dispensing robot, RetailStore, combines the best aspects of in-person and online shopping, transforming your shop into a smart store. RetailStore securely stores goods of all kinds, whether clothing, groceries, perfumes, cosmetics, craft supplies or electronics. Customers select items using their smartphones or a touch display and receive them automatically at a pickup window. An integrated payment terminal offers contactless payment.

RetailStore can be integrated seamlessly into urban infrastructure, whether in existing stores, parking lots, university campuses or other public places. It takes the idea of the convenience store to a new level by offering city dwellers a place to shop after hours and is easily reachable by foot, bike or e-scooter. RetailStore shines during normal operating hours, too. Its eye-catching appearance and high-tech operations draw in technophile customers while simultaneously relieving employees from having to work cash registers or stocking shelves. In self-service stores, RetailStore can help extend opening hours while saving personnel costs and offering employees more attractive hours. With RetailStore, consumers, retailers and retail employees alike all benefit from intelligent robotics.

Intermarché is using MFCs in Paris and Lyon. Each location can process 1,000 orders per hour.

A single order may have up to 40 items from four temperature zones. The delivery window is two hours.

Customers can select different delivery options: drive-in at their store of choice, a 24/7 locker or home delivery.

INSTANT AUTOMATION

3 solutions to jumpstart your automation

Uncertainty has become a fact of daily life in today's world of business, whether due to constantly changing environmental and market situations or cost pressure and personnel shortages. Intelligent warehouse robotics solutions offer businesses the tools they need to triumph over these challenges. Additionally, these solutions need to be quick and simple to boost flexibility and profitability while decreasing costs and lead times. For anyone looking to jumpstart their automation processes, we've developed a series of solutions that will allow businesses to enjoy the benefits of logistics robots in just a few months.

High performance storage system in record time: PickEngine

Does an automation project with higher performance requirements have to take more time? On the contrary! Equipped with PickEngine, you're ready to go in record time – in under six months, to be precise. Our high-performance automatic storage system with goods-to-person work stations and control software is delivered as a complete package, including life cycle management, providing the perfect solution for businesses looking to automate their fulfillment or expand capacity fast.

Supercharge your warehouse processes

What's the secret behind PickEngine's quick implementation time? A high level of standardization and tried and tested automation technology are what make PickEngine ready to go in a flash.

Thanks to its modular construction, you can easily tailor it to meet your needs:

1/ Store Module: Rack line system with storage containers and quick storage robots.
2/ Pick Module: Ergonomic goods-to-person work stations for order fulfillment, decanting etc.
3/ Smart Module: All-in-one control software and warehouse stock management.

Multiple PickEngine modules can be connected or added later as needed and up to 5,000 containers per hour can be stored, making PickEngine an automatic storage solution that will remain future-proof for many years to come.

INSTANT AUTOMATION CHECK
PickEngine

IMPLEMENTATION SPEED:
Less than 6 months

SCOPE OF APPLICATION:
Order fulfillment, decanting

CONSTRUCTION REQUIREMENTS:
5.5 x 10 m (18 x 33 ft) width by height, length between 35−80 m (115−260 ft)

STORAGE CONTAINER SIZE:
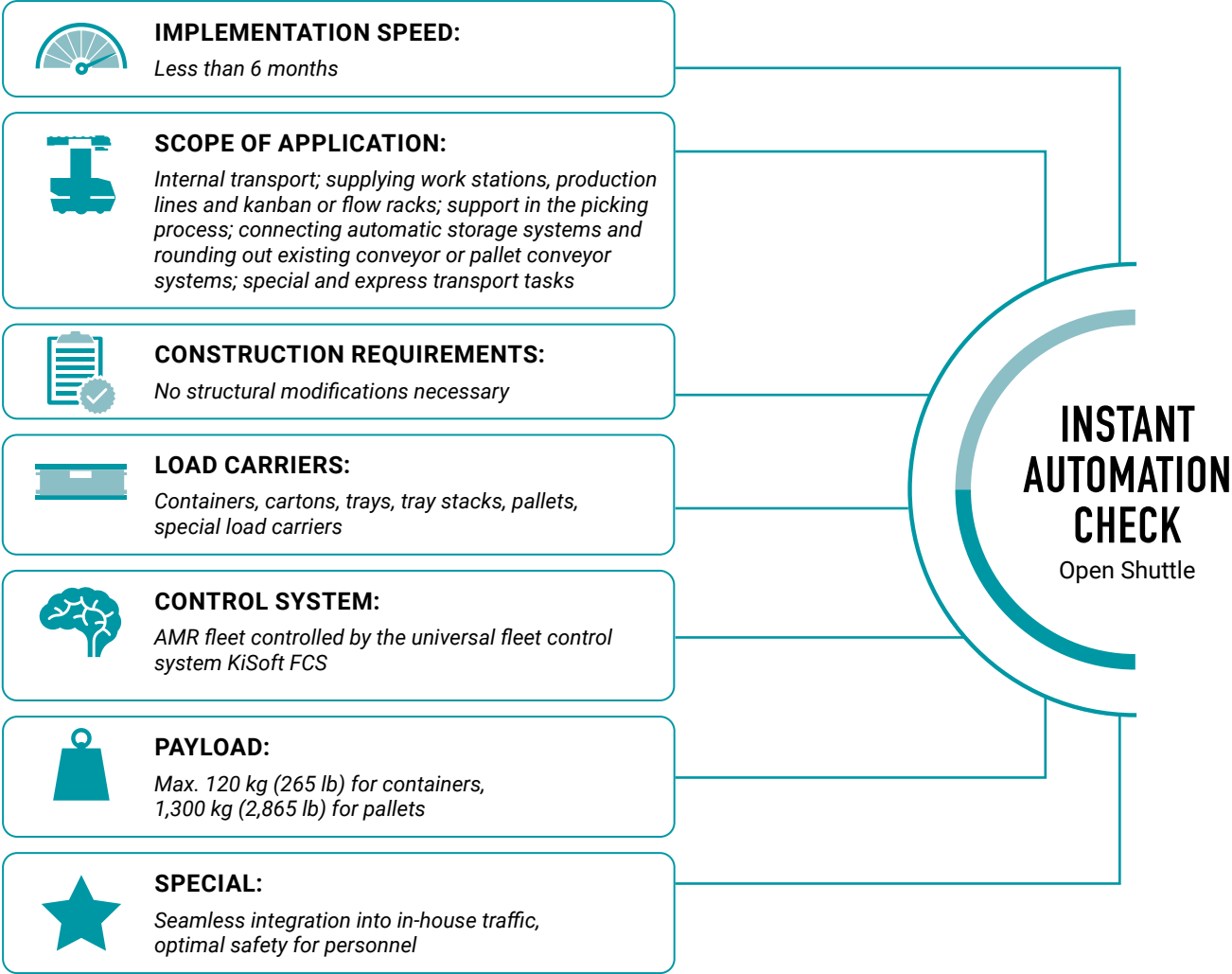*600 x 400 x 320 mm (9.09 x 3.58 x 7.60 in)*

PAYLOAD:
Up to 30 kg

SPECIAL:
The number of PickEngine modules can be flexibly scaled and the number of store bots can be chosen to fit performance requirements.

IMPLEMENTATION SPEED:
Less than 6 months

SCOPE OF APPLICATION:
Internal transport; supplying work stations, production lines and kanban or flow racks; support in the picking process; connecting automatic storage systems and rounding out existing conveyor or pallet conveyor systems; special and express transport tasks

CONSTRUCTION REQUIREMENTS:
No structural modifications necessary

LOAD CARRIERS:
Containers, cartons, trays, tray stacks, pallets, special load carriers

CONTROL SYSTEM:
AMR fleet controlled by the universal fleet control system KiSoft FCS

PAYLOAD:
Max. 120 kg (265 lb) for containers, 1,300 kg (2,865 lb) for pallets

SPECIAL:
Seamless integration into in-house traffic, optimal safety for personnel

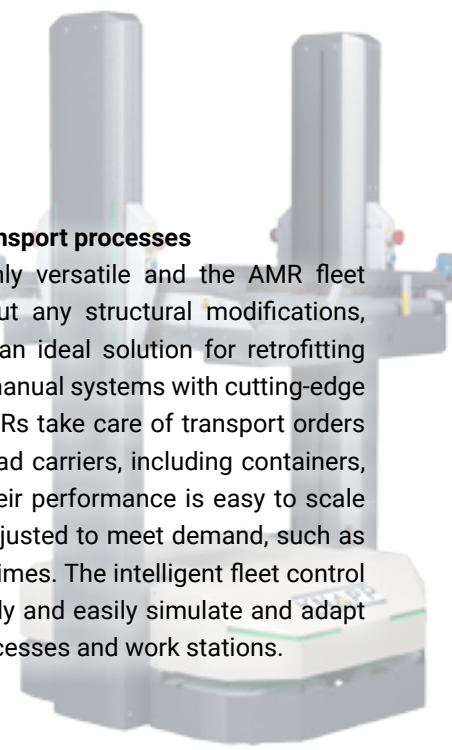### INSTANT AUTOMATION CHECK
Open Shuttle

Optimizing internal transport with AMR fleets: Open Shuttles

Internal transport processes play a major role in the warehouse and in production as they keep the goods flow moving and connect individual locations. Our autonomous mobile robots (AMRs), the Open Shuttles, automate internal transport processes and make responding flexibly and quickly to new demands a cinch. Generally, an AMR fleet can be integrated into your existing processes in under six months.

New momentum for transport processes

Open Shuttles are highly versatile and the AMR fleet can be installed without any structural modifications, making Open Shuttles an ideal solution for retrofitting existing automated or manual systems with cutting-edge robotics. The smart AMRs take care of transport orders for different types of load carriers, including containers, cartons and pallets. Their performance is easy to scale and can be precisely adjusted to meet demand, such as when cushioning peak times. The intelligent fleet control management can quickly and easily simulate and adapt to new travel paths, processes and work stations.

Robotic storage system for rapid growth: Open Shuttle Store

Today, many businesses are facing the challenge of limited storage space coupled with the knowledge that it's better to increase capacity sooner rather than later. Others are faced with constantly changing requirements for warehouse space and performance. Both cases require a quick solution – but what? The robotic storage system Open Shuttle Store, with a total delivery and implementation time of only six months, provides the perfect starting point for rapid automation.

Shuttle Store to grow along with your own business and be expanded step by step. The innovative robotic warehouse, is made up of three basic modules that can be adapted quickly and easily to meet your specific needs and the available space.
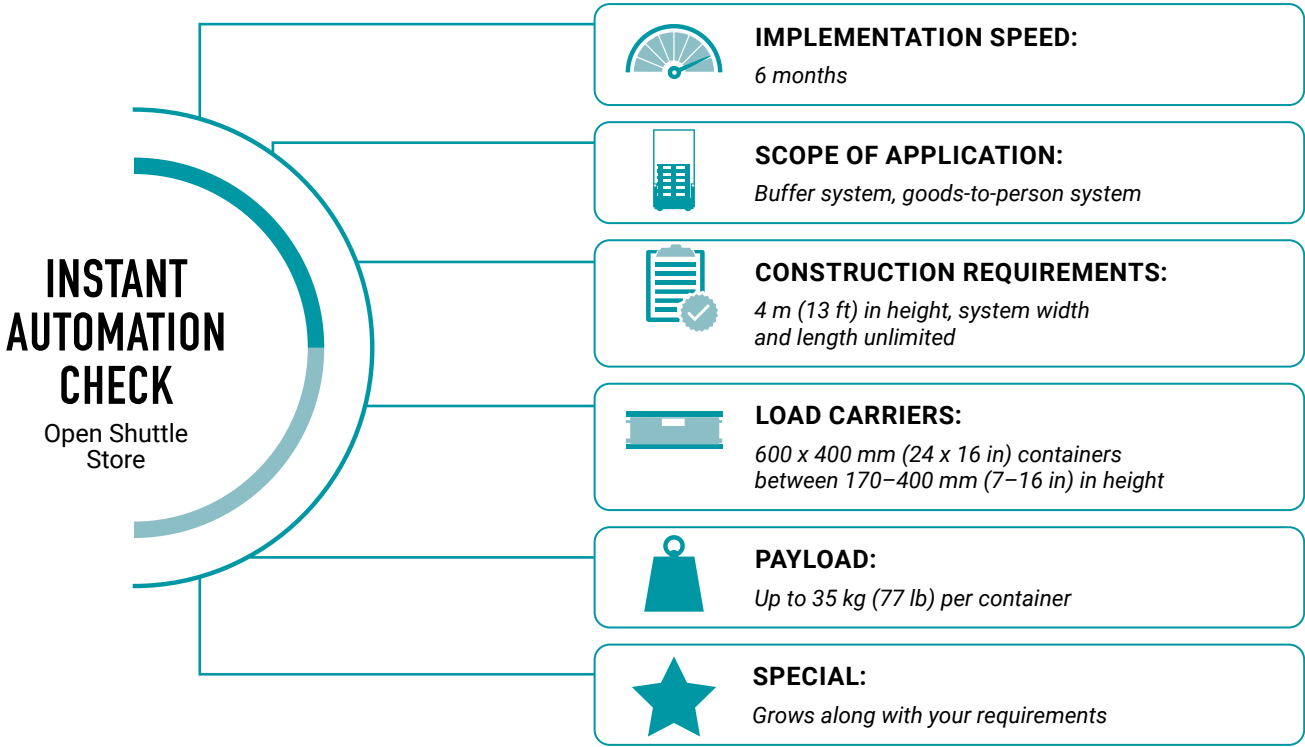
1/ Store Units:
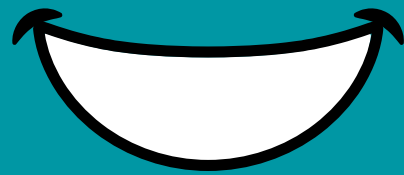Tailored storage capacity thanks to flexible rack modules.

2/ Store Bots:
Intelligent storage robots provide the throughput you need.

3/ Exchange Stations:
Transfer stations where load carriers are brought for further processing.

Ideal for jumpstarting automation

Open Shuttle Store is the ideal system from the very start. The system is efficient for both high and low performance requirements. The flexible construction allows Open

INSTANT AUTOMATION CHECK
Open Shuttle Store

IMPLEMENTATION SPEED:
6 months

SCOPE OF APPLICATION:
Buffer system, goods-to-person system

CONSTRUCTION REQUIREMENTS:
4 m (13 ft) in height, system width and length unlimited

LOAD CARRIERS:
600 x 400 mm (24 x 16 in) containers between 170–400 mm (7–16 in) in height

PAYLOAD:
Up to 35 kg (77 lb) per container

SPECIAL:
Grows along with your requirements

HAPPY WORK DAYS

Digital tools increase employee satisfaction and productivity

How can I get qualified people excited about my company? How do I equip my operations to meet the demands of the new generation of workers? What do employees really want? These are the questions that logistics companies are asking themselves now more than ever. The good news is that companies can shine as attractive employers even in challenging times like these. Innovation, flexibility and recognition are just some of the values that are gaining importance in the workplace. Smart digital tools give footing to these values in the work day, providing value for the employees and company alike.

New times, new challenges

The job as a status symbol is well past its sell-by date. Gen Z, born after 1995, is a new generation on the job market, showing up for work with different values and ready to change from one employer to the next quickly if certain expectations are not fulfilled. In many areas, flexibility, meaningful work and using modern technologies are now trumping aspects such as salary or loyalty to the employer. For companies already facing a shortage of qualified personnel, this brings new challenges. How can companies ensure continuity, quality and customer service in the face of these new employee inclinations? In the volatile environment of logistics, the latest technologies and intelligent software provide an answer.

Digital tools for a modern image

Studies prove that life-long learning and trying new technologies are not just popular with Gen Z. Even older adults value innovative technologies in their workplace and associate this with a more modern corporate culture. In particular, smartphone apps are very popular with all ages. The obvious choice for designing and organizing work processes is relying on a convenient app. The teamAPP offers the option of creating shift schedules right on employees' smartphones. For example, employees can easily request vacation right from their phone. It's not just the tech-savvy who will love this app, because it provides autonomy and flexibility when assigning work and ensures that all the performance goals are met.

GEN Z
RECOGNITION
INNOVATION
FLEXIBILITY
FREEDOM
DIGITAL TOOLS

Flexibility is the key to satisfaction

Flexibility is at the top of the wish list for many employees at their current or future workplace. More flexibility is also one of the most useful tools for reducing employee turnover. According to studies, flexibility is even more important than pay – for both recruiting and employee retention. One option for logistics companies looking to increase employee satisfaction is offering flexible shift models or more varied tasks. But this begs the question: how can you reconcile flexibility with the quantity of orders that must be processed at any given time? Again, smart apps come into play, as teamAPP and PLANNER are complementary. Combining teamAPP with PLANNER provides the coordination needed between the employees' desire for work flexibility and the company's desire to meet performance targets and get the orders processed on time. In teamAPP, employees enter the times they would like to work. The redPILOT PLANNER compares this information with the order data and automatically generates a suitable shift schedule. This is how smart apps make personnel assignment planning more precise and efficient. Cooperation and communication between shift supervisors and staffing agencies are also improved.

Digitalization leads to a sense of achievement

What else do logistics employees need to work at their best? According to one survey, recognition and a sense of achievement are what it's all about. In manufacturing, logistics and fulfillment, where performance and time pressure are par for the course, how can the workplace climate be changed for the better? *"One option is integrating intelligent digital work stations, such as our ivii smartdesk. It supports the work process with image recognition and artificial intelligence and its gamified approach creates a sense of achievement, making learning easier,"* explains Peter Stelzer, CEO of ivii. This member of the KNAPP group specializes in futuristic work stations for industrial applications. Their work stations make it easier for employees to work while, at the same time, raising performance and quality in manual processes. For example, items can be checked or identified in real time without an article number or a barcode. The feeling of success is instant when the green light from the system indicates that everything is correct. This saves a lot of work, for example, when registering incoming goods or making final checks in goods-out. *"Using our ivii smartdesk, employees are instantly assured that they have done everything correctly,"* enthuses Peter Stelzer. The operation is as simple as a smartphone app. New or inexperienced employees in particular learn all the work steps quickly and correctly by interacting with the system and are very soon able to keep up with the required work tempo. *"We call this approach qualification as a service – whereby we enable companies to recruit from other pools of labor and help people adjust to new occupations – all without a long period of training,"* adds Peter Stelzer.

Digital tools offer something special

Even as automation continues to advance, employees remain central to logistics processes and companies. Digital tools can support the human factor in the industrial setting, but not replace it. The race for the best employees will go to those companies that respond the fastest to the new job market. Smartphone apps, new technologies and intelligent software can all help make the logistics work environment more attractive.

Mobile apps, such as redPILOT's teamAPP, support flexibility and autonomy at work, ensuring that the right employees are always available to work the shifts.
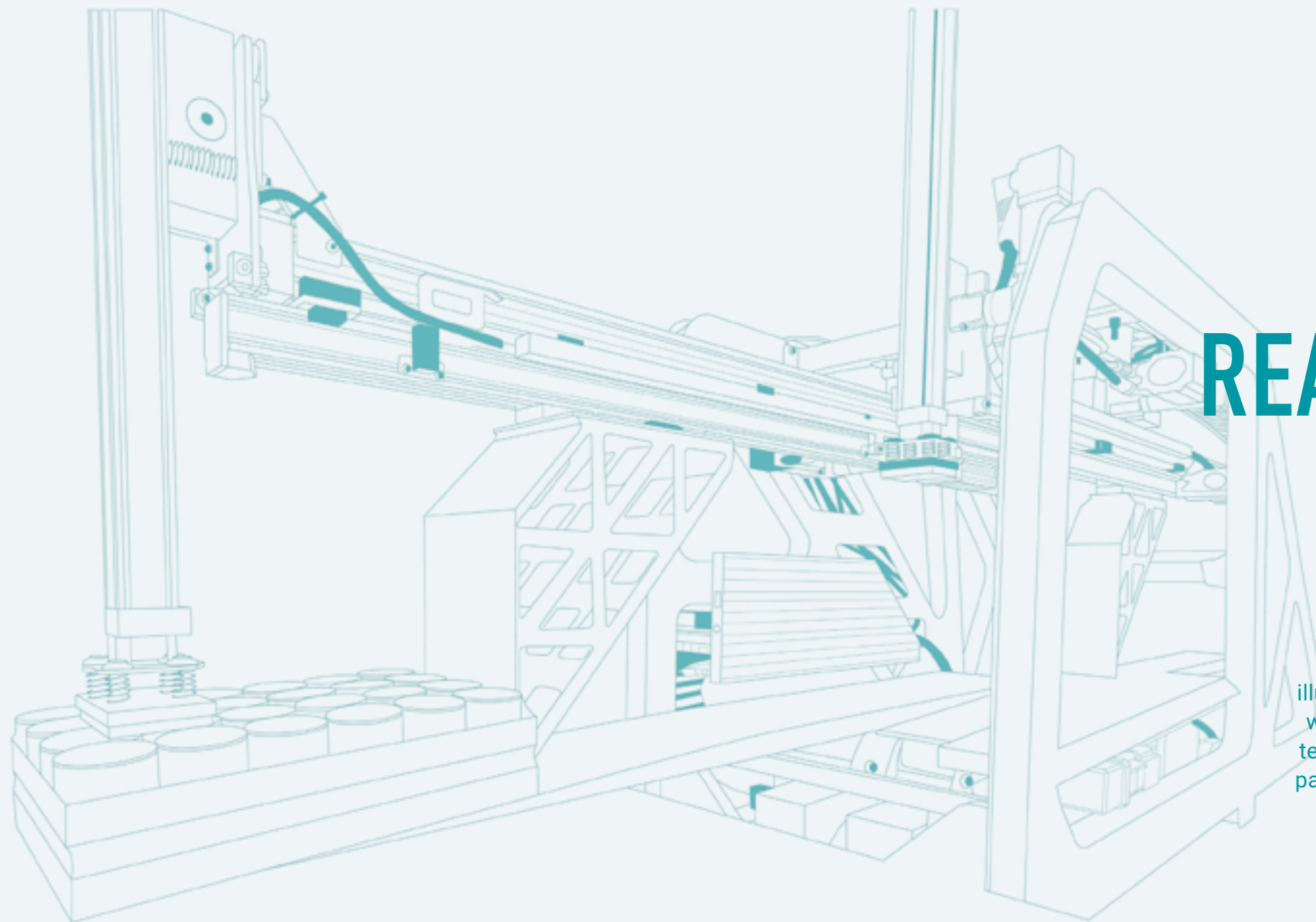

Checking parts in goods-in and goods-out efficiently and reliably with ivii smartdesk. The innovative work station uses artificial intelligence to create a motivating, state-of-the-art work environment.
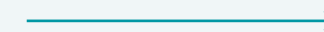
IVII.EU

REDPILOT.COM

REACHING NEW HEIGHTS WITH ROBOTICS

Fully automatic delivery for food retail

E-grocery isn't the only branch of food retail that has been booming over the past few years. Brick and mortar retail continues to play an important role in the food supply chain. The top ten food retailers illustrate this perfectly with a combined total of more than 62,000 stores worldwide. Supplying stores is associated with several challenges that test the limits of the traditional food warehouse. Fully automatic robotic palletizing from RUNPICK – short for Robotic Universal Picker – will help you take your food logistics operations to new heights.

→

There are many obstacles on the path towards efficient store delivery. RUNPICK is up for the challenge and will make you champion of your supply chain.

1/ Shortened delivery intervals and quick order completion

Thanks to its ability to perform multiple picks, the fully automatic robotic solution RUNPICK masters this first challenge with ease. In just one cycle, RUNPICK combines different products and assembles mixed layers, maximizing throughput and increasing performance compared to existing systems. Another advantage is automatic error handling. The robot can autonomously resolve certain errors. For example, defective items are automatically diverted and the software re-calculates the active orders, making it possible to continue automatic picking.

2/ Different store layouts

Size, location, store layout and item range vary from store to store. To save as much time as possible when stocking shelves, the delivery must be adapted to the store. RUNPICK also scores a perfect ten on this challenge thanks to its intelligent packing algorithms and selectable picking criteria – and its ability to process different types of packaging. Our KiSoft Pack Master software calculates the packing patterns, creating tailor-made order pallets that provide optimal density, stability and structure. Items can also be grouped physically. That means that a target load carrier may contain goods just for one specific aisle, saving a significant amount of time and costs.

3/ Consistently high-quality order fulfillment

When it comes to delivering quality, RUNPICK once again comes out on top thanks to its intelligent and specialized software. The KiSoft software transmits all commands to the overall system and determines the required containers, their sequence and position on the target load carrier. KiSoft then calculates the packing pattern so that RUNPICK can stack the items perfectly. All this is made possible by perfectly managed master data, which provides RUNPICK with all the information it needs to assemble the order fully automatically. KiSoft also determines the movements of the robotic arm, ensuring high performance and gentle handling of items.

4/ Labor shortage and physical strain

Our fully automatic robotic solution RUNPICK relieves employees of physically demanding tasks. The system is always ready for a marathon – from start to finish – and can even perform at maximum capacity day and night. RUNPICK's complete automation helps food retailers mitigate the effects of the labor shortage. Workers involved in the palletizing process can move to other areas of the warehouse, while employee satisfaction increases thanks to less physical stress. At the same time, RUNPICK lowers personnel costs.

4/ LABOR SHORTAGE
Top performance with full automation, 24/7

3/ QUALITY, EFFICIENCY AND PERFORMANCE
Fully integrated special software, intelligent packing pattern calculation

2/ STORE LAYOUTS
Unique layouts, selectable picking criteria, stable pallets, saving costs and time

1/ DELIVERY INTERVALS
Higher performance thanks to multiple picks, mixed layers and intelligent error handling

FUTURE SERVICE PROSPECTS

Digitalization for intelligent service solutions

Modern automated logistics systems also need a modern service approach. Formerly, services only addressed the technical availability of the logistics systems for the operation in a warehouse. Today, they need to cover much more. And here is where our digital tools come into play: Manfred Fuchs, Vice President of International Customer Service at KNAPP, provides an overview of how requirements for services have changed and introduces a selection of our digital tools.

> "FUTURE LOGISTICS SYSTEMS WILL DECIDE AUTONOMOUSLY WHICH SERVICES ARE TO BE DEPLOYED AT WHICH TIME AND QUANTITY."

– Manfred Fuchs
Vice President International Customer Service
KNAPP

In your opinion, and speaking from a service point of view, how will system support change from a service point of view?
Manfred Fuchs:
In order for our customers to achieve the extraordinarily high growing output targets which are necessary to meet the current and future market demands, the spectrum of system analysis as well as the supporting service portfolio must be expanded extensively. Full system support will not only be limited to technical availability in the future. Comprehensive service support must also take the actual system performance, the utilization of the overall system including the quality of the operational processes throughout the warehouse into consideration. Optimizing and balancing those four parameters will decide on the ultimate success of the business cases.

How has KNAPP responded to these changes?
Manfred Fuchs:
The traditional KNAPP service portfolio with the likes of spare part supply, repairs, hotline, maintenance, on-site interventions, training, etc. has to be complemented by a full new generation of digitally assisted services developed inhouse by the KNAPP service team. To gain the full potential of this advanced service approach, future logistics systems will decide autonomously which services are to be deployed at which time and quantity. This allows the operation to meet pre-set output targets of the warehouse. The newly developed and adjusted KNAPP digital tool package delivers instant data and information about the technical and logistics status of any operational component and process in the warehouse.

What is new in the service tool portfolio?
Manfred Fuchs:
These digital tools are part of the KNAPP KiSoft family. They include Condition Based Monitoring, KiSoft CMMS (Computerized Maintenance Management System), KiSoft Analytics, Spare Parts Management, Knowledge Data Bank as well as digital tools for personnel management and quality assurance.

They are fully integrated and activate and deploy all necessary service activities selectively as desired. Permanent monitoring of the actual condition of the logistics system, technically as well as logistically, will immediately detect any deviation from any set limit and threshold as well as formerly recorded negative logistical behavior patterns. Corrective actions will be taken timely to avoid unnecessary downtimes in a preventive as well as predictive manner.

What are the main advantages of re-structuring services?
Manfred Fuchs:
The achieved benefits are a reduced Total Cost of Ownership through a reduction of employed resources and system idle time, a reduced amount of goods returned as well as a reduction in the operating costs itself. By the same token, an increase of system output and customer satisfaction due to correct in-time deliveries will be reached. This subsequently results in higher turnover and higher business case profit.

Thank you for these interesting insights!

DIGITAL SERVICE TOOLS

Condition monitoring:
Sensors record comprehensive live data in the system during ongoing operation

KiSoft SCADA:
Visualization of real-time machine statuses in the entire system and detailed statuses on the component level (runtimes, switching cycles etc.)

KiSoft CMMS:
Top system operation thanks to efficient servicing and repair management

redPILOT Operational Excellence Solution:
Comprehensive tool for resource planning and optimization

KiSoft Analytics:
Big data solution for analyzing and visualizing system status and optimizing the entire logistics system

DIGITAL TRENDS IN LOGISTICS

4 software trends for successful value chains

Software plays an integral role in automation, interconnecting goods, processes, people and places along the entire value chain. It's hard to imagine value chains without digitalization and its benefits, such as cost savings, transparency and an overview of all processes. In this article, we're putting four current digital warehouse trends into the spotlight, from WMS to analytics and machine learning.

WMS templates

What makes template versions of warehouse management systems (WMS) so useful is that they can be scaled as needed and rolled out at multiple locations. These templates are created on the basis of all logistics processes of the warehouses they're destined for, making them tailor-made solutions that incorporate the standard procedures of each individual warehouse. Besides making WMS implementation more efficient, this approach is flexibly scalable, helping users to respond to future changes in the market, business and location. *"Using SAP® EWM templates, we have rolled out WMS for four and up to 50 warehouses at a time, across different sectors from healthcare to retail,"* explains Gerald Lassau, Managing Director of KNAPP IT Solutions GmbH.

Predictive analytics, AI & machine learning

Being able to plan capacities correctly is essential both in normal operation and at high capacity. With the right solutions, warehouses can handle sales peaks such as Black Friday with ease. To stay on top of things before and during peak periods, KNAPP offers predictive analytics tools such as KiSoft Analytics, which make it possible to flatten peaks in advance. *"For us, KiSoft Analytics is just the right tool. We can take an in-depth look at data in real time, which is optimally visualized for us. KiSoft Analytics helps us to make the right decisions quickly, based on a solid foundation of data,"* says Oliver Kraftsik, Vice President of International Logistics at lifestyle and fashion retailer ASOS.

Tracking and transport management

Real-time data is key when it comes to solving logistics and transport problems. Kwizda Pharmahandel views all shipping data, such as information on routes and fleets, in their control center. *"Using SAP® EWM by KNAPP in combination with Google Maps, we can track and trace our routes, from the warehouse all the way to the location of delivery,"* says Thomas Brosch, Director of Kwizda Pharmahandel GmbH. With KiSoft Delivery Management, our KiSoft suite also includes a solution that finds ideal routes and plans ongoing transports automatically.

How to create data value

The best automation solution is only as good as its master data. For robots, shuttles and other systems to work optimally, they need a comprehensive and extensive set of data. But this is easier said than done. Usually, goods arriving at warehouses come from different suppliers and the quality of their data varies profoundly. The master data has to be painstakingly recorded manually, often requiring considerable effort from multiple employees and involving a high risk of error. However, this can be solved with our KiSoft Genomix software, as Patrick Hörmann, Head of Warehousing at food retailer SPAR, confirms: *"Thanks to KiSoft Genomix and MultiScan, 90 percent of master data management is taken care of automatically."*
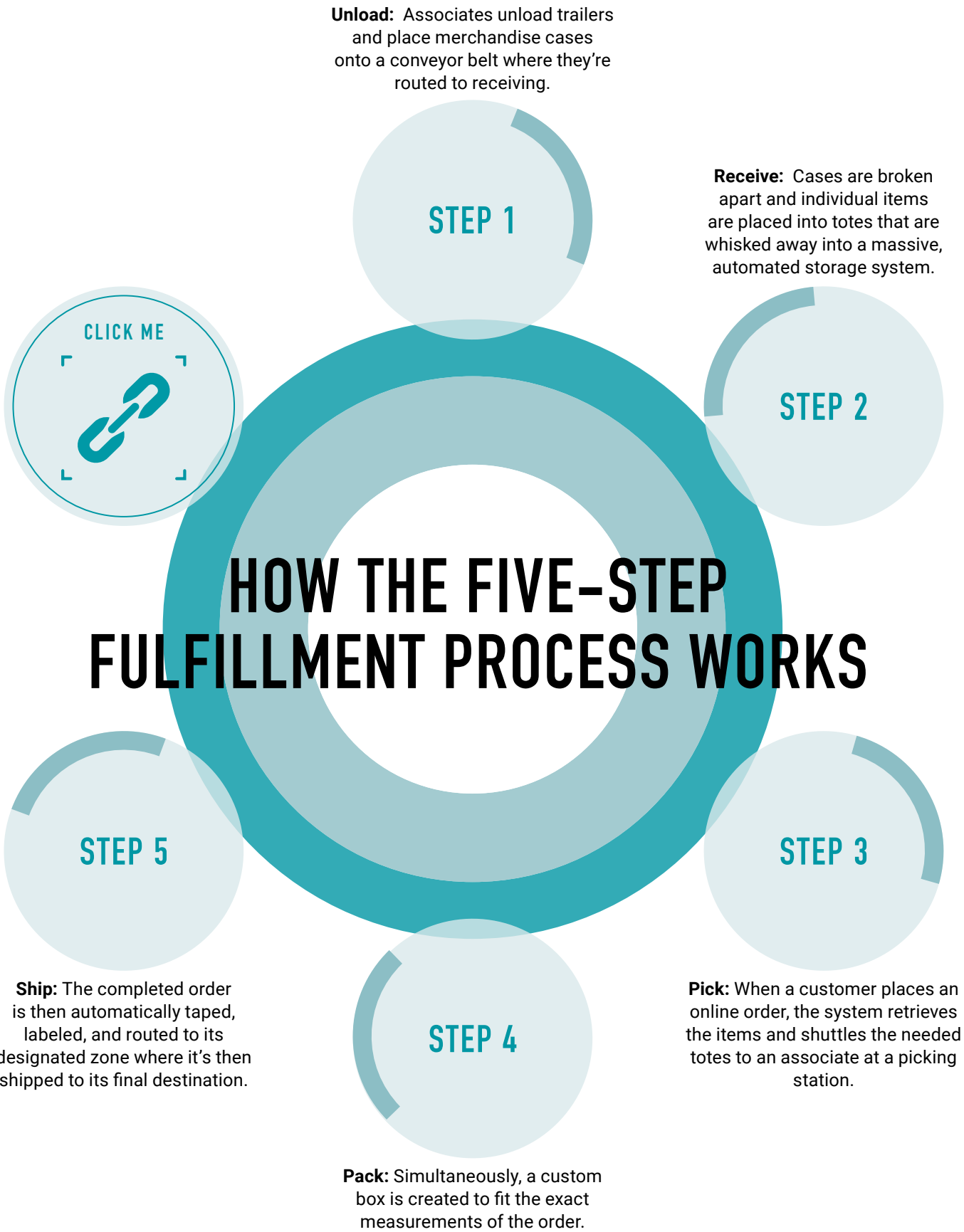
A NEW ERA OF FULFILLMENT

Introducing Walmart's Next Generation Fulfillment Centers

When it comes to earning customers' trust, fast shipping and delivery is of utmost importance for the US retail company Walmart. Today, 31 dedicated eCommerce fulfillment centers and 4,700 stores are used to fulfill online orders at exceptional speed. But it does not stop there.

From twelve to five process steps

Walmart wants to enter a new era of fulfillment to further exceed customers' expectations. Together with KNAPP, this shall be achieved with four next generation fulfillment centers (FC) which will be the first of their kind for Walmart.

The FCs consist of high-density storage systems that streamline a manual, twelve-step process into just five steps. The benefits include more comfort for associates, double the storage capacity and double the number of customer orders per day.

HOW THE FIVE-STEP FULFILLMENT PROCESS WORKS

CLICK ME

STEP 1

Unload: Associates unload trailers and place merchandise cases onto a conveyor belt where they're routed to receiving.

STEP 2

Receive: Cases are broken apart and individual items are placed into totes that are whisked away into a massive, automated storage system.

STEP 3

Pick: When a customer places an online order, the system retrieves the items and shuttles the needed totes to an associate at a picking station.

STEP 4

Pack: Simultaneously, a custom box is created to fit the exact measurements of the order.

STEP 5

Ship: The completed order is then automatically taped, labeled, and routed to its designated zone where it's then shipped to its final destination.

Your AS/RS in Record Time

Is your business growing rapidly? Are your order numbers soaring? Do you need more capacity right now? We've got the performance you need.

Up to 5,000 order lines per hour

Modular system

Live in under 6 months

Curious? Your **KNAPP contact person** is happy to help!

PickEngine
Performance. Delivered. Now.