



KNAPP

CASE STUDY

B&R INDUSTRIAL AUTOMATION

**Smart Logistics
Drives Efficiency in Manufacturing**



Installation
video

Strong Partner for Innovative Solutions

The B&R Industrial Automation GmbH is a world-wide leading manufacturer of automation solutions in Austria and the global center for machine and factory automation for the ABB Group. For more than 45 years, B&R has been one of the leading suppliers of innovative, integrated automation solutions. With a complete portfolio of robotics, control systems and software, the company develops complete solutions with their customers that are both efficient and future-proof. Their headquarters in Eggelsberg, Austria, is both home to manufacturing, research and development and a modern educational and training center and is one of the largest industrial hubs in Central Europe.

Due to highly fluctuating logistics processes, the demand for sustainable increases in efficiency and the desire to reduce the physical strain on employees, B&R decided to automate their logistics processes. KNAPP implemented a customized solution for B&R featuring an automated small parts warehouse, ergonomic work stations and autonomous mobile robots uniting efficiency, flexibility and scalability.

B&R and KNAPP have a longstanding and close customer-supplier relationship: In Eggelsberg, the high-tech logistics system was designed by KNAPP while at the same time, the control systems from B&R form an integral part of KNAPP's autonomous mobile robots. This reciprocal partnership underlines the technical competence of both companies and demonstrates how shared know-how leads to success.



A member of the ABB Group

Sector
INDUSTRY

Location
EGGELSBERG, AUSTRIA

Employees
~ 4,000

Location size
100,000 M²
(~ 1,076,000 SQ FT)

Storage locations
(in automatic storage system)
91,622

Container
600*400*412/278/100 MM
(24*16*16/11/4 IN.)

Business area
**AUTOMATION
SOLUTIONS**

In operation since
2024

Technical solution
**EVO SHUTTLE,
PICK-IT-EASY WORK STATIONS,
DECANTING WORK STATIONS,
OPEN SHUTTLES,
AUTOMATIC STACKER/DESTACKER
STATION FOR CONTAINERS,
KISOFT ONE,
KISOFT FCS**

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Must-haves: efficiency, ergonomics and flexibility

01

Integration into existing buildings

The flexible Evo Shuttle was optimally adapted to the conditions and integrated into the existing building. The Evo Shuttle system comprises two rack line systems of different lengths across four levels. A conveyor suspended from the ceiling connects goods-in with the Evo Shuttle. The Open Shuttles also required no adaptations to the infrastructure in order to be implemented.

02

Maximum storage density

The Evo Shuttle offers tremendous storage density. The rack blocks were adapted to the dimensions of the existing hall, making the most efficient use of the space. Containers are stored double-deep, and some are stacked. With three different level heights in the racks, containers of different heights are stored efficiently, which has raised the storage density for the system even more.

03

Ease employee workload

Changing from a person-to-goods to goods-to-person picking greatly reduced the physical strain on the employee. The ergonomic Pick-it-Easy work stations are specially designed to make working at them comfortable and efficient. At the same time, this way of working reduces the error rate.

04

Flexibility in production supply

B&R's logistic processes are highly dynamic and characterized by changing requirements, but the automated small parts warehouse and autonomous mobile robots are able to readily adapt to these changes. The Open Shuttles supply the manufacturing lines 24/7 and flexibly adjust the routes they take to the conditions in manufacturing.

05

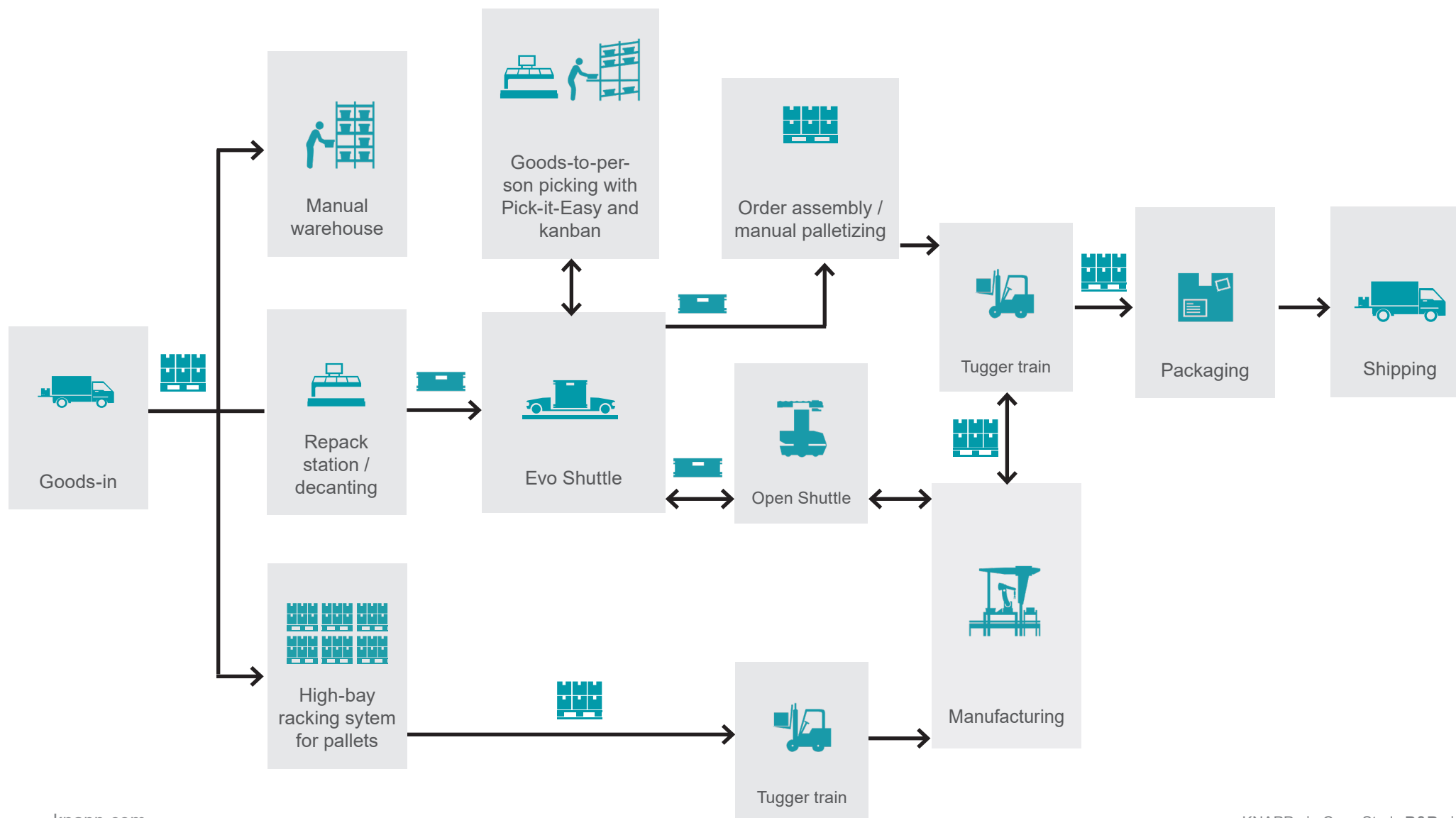
Seamless material flow

The clever combination of Evo Shuttle, Open Shuttles and conveyors means that all the manufacturing areas are efficiently connected with each other. The technologies ensure constant end-to-end material flow, from goods-in to manufacturing to goods-out.

“We chose KNAPP’s automation solution because it gives us clear gains in performance with respect to efficiency and speed and includes greater storage density, faster access to stored materials and an overall increased throughput at the facility.”

Roman Seitweger
Head of Production Austria
B&R Industrial Automation

Material flow



Central warehouse processes



Goods-in

Goods enter the warehouse on pallets. The goods are separated and repacked into containers at the ergonomic decanting work stations. Once registered in the system, the goods are weighed on an integrated scale before being transferred onto the conveyor system. The conveyor system is suspended from the hall ceiling and conveys the containers to the automated small parts warehouse. Mounting the conveyor system to the ceiling left space free in the hall.



Storage

The Evo Shuttle provides dynamic, precise storage for small parts. The system has 91,622 storage locations for three different heights of containers. For optimal storage density, the shortest containers are stored stacked. A special stacker/destacker station with integrated measurement technology was developed and installed with the solution. Its purpose is to ensure these containers are stacked or separated fully automatically during the storage and retrieval processes. Large parts are stored in the existing high-bay racking system for pallets.



Picking

Goods are picked for either manufacturing or shipping at one of the four ergonomic Pick-it-Easy work stations, which are spread across 2 levels. The required components are supplied to the work stations from the shuttle warehouse according to the goods-to-person principle. Both kits for manufacturing and orders for shipping are picked and buffered in the Evo Shuttle. Fast moving components are picked at kanban racks equipped with pick-to-light displays.



Retrieval of goods

After a shipping or manufacturing order is completed, the containers are retrieved from the Evo Shuttle via the conveyor. Whole orders are processed by employees and placed on the respective order pallet which is then picked up by a tugger train. Individual containers with components for manufacturing are supplied to the transfer position for the Open Shuttles. The software generates the transport orders for the autonomous mobile robots.

Central warehouse processes



Supply to manufacturing

Tugger trains and Open Shuttles connect the automatic small parts warehouse seamlessly with the manufacturing lines. The AMRs transport containers with components to manufacturing, placing them on a conveyor for the employee. Empty containers and finished parts are picked up by the Open Shuttles and transported back to the Evo Shuttle for temporary storage.



Shipping

Tugger trains pick up pallets from the goods retrieval area at the small parts warehouse and transport them to the packaging area. The completed orders are packed into cartons and shipped. Empty containers are then returned to the shuttle system and stored.



“From the warehouse to production, from goods-in to outbound delivery – automation makes it possible to react to changes faster and more flexibly while simultaneously becoming more efficient and productive.”

Michael Humer
Country Managing Director Sales Austria
B&R Industrial Automation

Maximum storage density and efficiency

The Evo Shuttle system is the heart of the new automation solution. Providing 91,622 storage locations across four levels, it is truly a high-density storage system. Inside the system, 80 shuttles zip back and forth on 40 levels, storing containers of different heights double deep in the racks.

The Evo Shuttle stores empty containers, semi-finished and finished products all in one system. Maximum storage density is achieved by having different heights in the racks on different levels. The shortest containers are automatically stacked and unstacked, a method that provides maximum storage density per storage location.

The Evo Shuttle handles the following processes:

- Dynamic storage and retrieval of components
- Space-effective double-deep storage of container stacks
- Order assembly and picking
- Highly efficient goods-to-person picking

Installing the Evo Shuttle system led to a significant increase in performance with respect to efficiency and speed. Thanks to the higher storage density and faster access times, the warehouse throughput was increased by 35 %.

EVO SHUTTLE

91,622
storage locations

1,600
putaway and retrieval
movements/hour

80
shuttles

+ 35 %
throughput

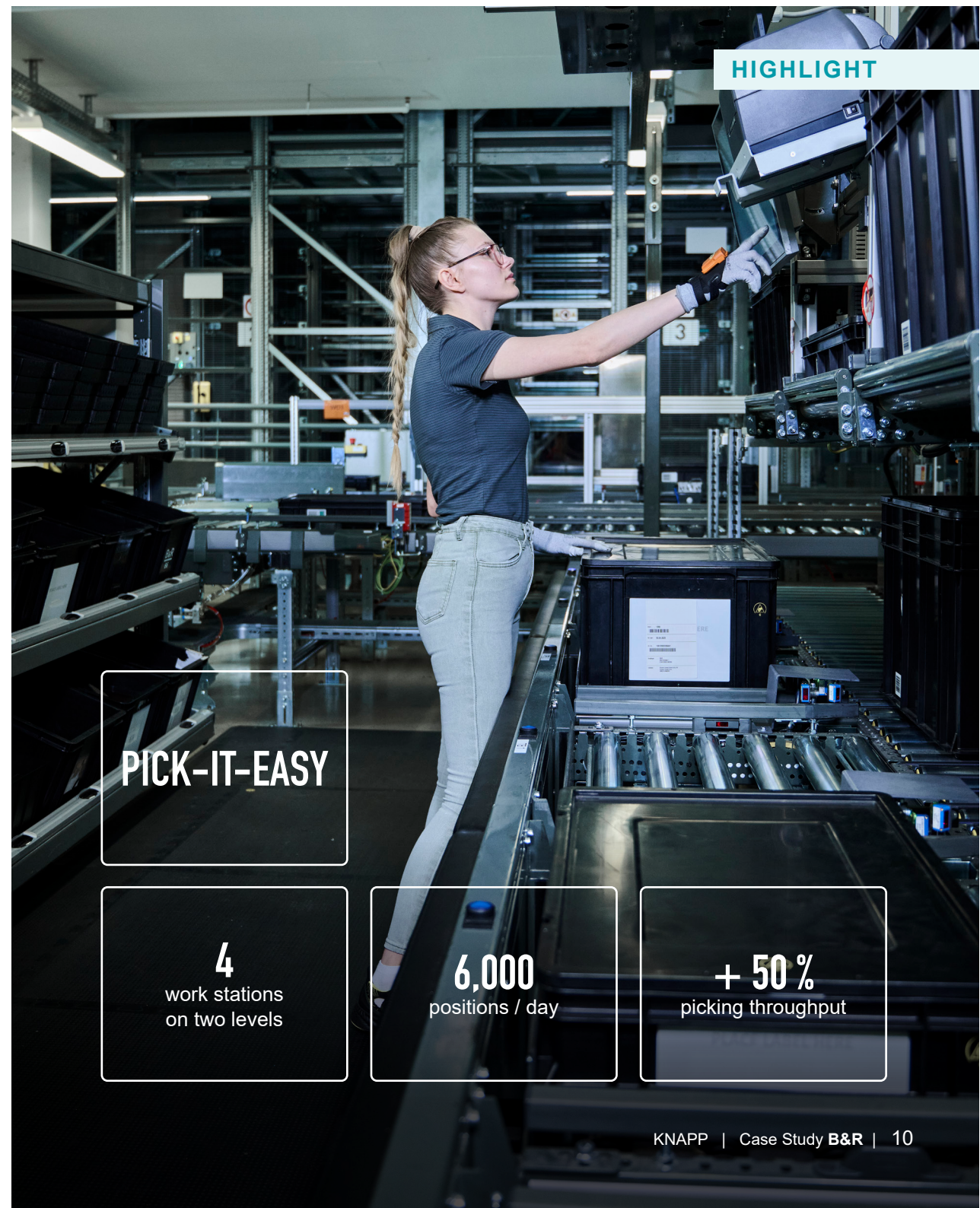
Error-free, ergonomic picking

B&R takes the well-being of their employees seriously. Before the warehouse got its makeover, picking was carried out manually, which was physically quite challenging and came with a relatively high error rate. By introducing automation into the picking process, with ergonomic goods-to-person work stations, process quality as well as employee satisfaction improved.

Kits for manufacturing and shipping orders are picked at four modern work stations. Kanban racks equipped with Pick-to-Light displays are also part of the picking process.

Combined with the Evo Shuttle, the new work stations have allowed B&R to achieve:

- 50 % greater picking throughput
- processing of up to 6,000 positions per day
- clear relief for the employees
- faster response times for customer requests



OPEN SHUTTLES

3

autonomous mobile robots

EASY
INTEGRATION

Autonomous, flexible transport

Working together, the autonomous mobile robots and automated storage system provide flexible, efficient transport of items to manufacturing areas at B&R. The Open Shuttles transport materials to supply manufacturing, leading to end-to-end automation. They deliver components to manufacturing and then take completed parts or empty containers away. They run through various parts of the halls which are separated by rapid action doors that the Open Shuttles themselves are able to control.

Using Open Shuttles comes with advantages:

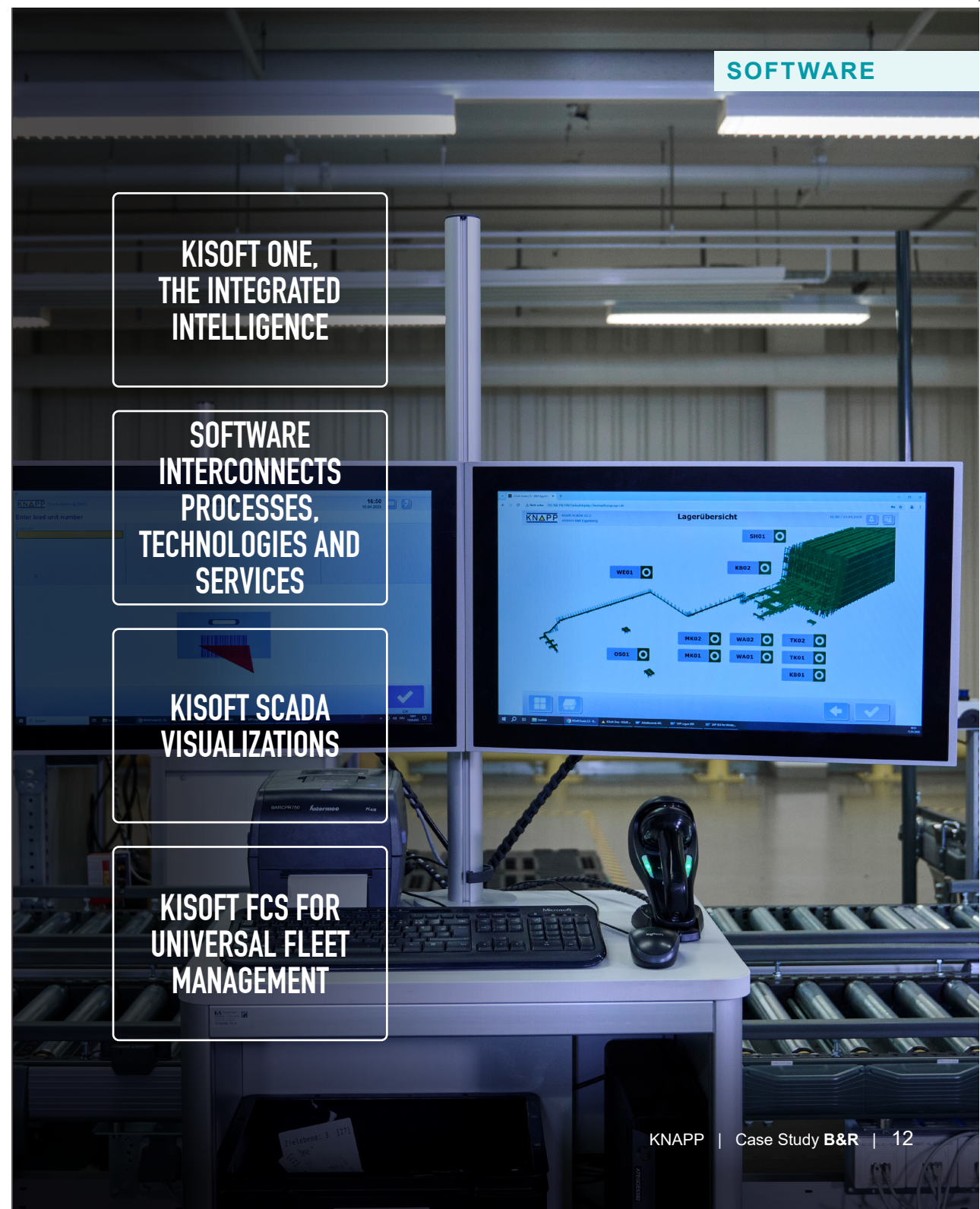
- easy integration into an existing building without making infrastructure changes
- flexibly adapt to new paths and processes
- automatic supply to manufacturing
- maximum security thanks to signal lights and integrated scanners

Intelligent networks

A customized KNAPP software solution for warehouse logistics rounds out our offer as a value chain tech partner. The mind of the automation solution for B&R is called KiSoft One, a software solution covering all hierarchy levels from warehouse management and warehouse control to machine control – from start to finish in one system. KiSoft SCADA does the task of visualizing all the warehouse components, providing a clear depiction of the machines making operation significantly easier.

KiSoft FCS is the fleet control system for the autonomous mobile robots. This software not only offers a digital overview of all the Open Shuttles but also manages, controls and coordinates all transport orders in one system.

The whole software solution is seamlessly connected to B&R's SAP® system through a web service interface, providing seamless processes and maximal transparency.



**KISOFT ONE,
THE INTEGRATED
INTELLIGENCE**

**SOFTWARE
INTERCONNECTS
PROCESSES,
TECHNOLOGIES AND
SERVICES**

**KISOFT SCADA
VISUALIZATIONS**

**KISOFT FCS FOR
UNIVERSAL FLEET
MANAGEMENT**



CUSTOMER SERVICE

KNAPP SERVICE DESK

24/7 availability for unexpected incidents.

KNAPP IT SERVICES

Maintenance and updates to ensure a stable IT system landscape.

KNAPP TECHNICAL SERVICES

Preventive maintenance to ensure the system has a long service life.

Complete service for maximum availability

At KNAPP, we offer a complete package of reactive and preventative services. Should unforeseen problems occur, the KNAPP Service Desk is available around the clock seven days a week. The incident is first clarified and specified in the 1st Level of the Communication Center. Based on this information, a technician on the 2nd Level team handles the issue. Should the 2nd Level technician need support, 3rd Level experts from Software Development or Engineering are brought in to help. We can solve about 95 percent of the incidents in our 2nd Level.

A comprehensive service package ensures stability and security across the entire system landscape. Both the IT infrastructure and capacity utilization of individual components are continually monitored, while Secure Protect ensures a high level of system security. To keep everything running smoothly, updates are regularly carried out. Additionally, we analyze the backup system and B&R's IT infrastructure once a year, so system operation can be quickly and reliably restored in the event of a serious incident. These services are based on a structured IT life cycle plan.

Having preventative maintenance done on the system twice a year is needed to ensure a long service life. The maintenance technician works supported by the digital SAP Field Service Management Tool. Every system component is checked against a detailed maintenance schedule; wear parts are replaced, and any repairs are carried out. B&R does the maintenance on the Open Shuttles themselves, based on a comprehensive training program. The online platform e-insight provides B&R access at all times to the relevant information and service requirements of the logistics system.



Michael Humer (Managing Director Sales Austria, B&R Industrial Automation) and Christian Brauneis-Lieb (Managing Director, KNAPP Industry Solutions) know that working together is a win-win situation for their companies and look forward to working together on automation projects in the future.

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Innovation. Expertise. Trust.

These three words describe the successful years of collaboration between KNAPP and B&R. Although it began as a classic customer-supplier relationship, it developed into a strategic partnership. KNAPP has relied on the control and safety technologies from B&R for many years for building their autonomous mobile robots, the Open Shuttles. The implementation of the intralogistics solution at the Eggelsberg location has now raised the partnership to a whole new level.

"It is a cooperation between two globally acting companies who are each known for innovative power and expertise in their respective sectors and who want to provide their customers with the competitive advantage," is how Michael Humer, Managing Director Sales Austria for B&R Industrial Automation, describes the win-win situation. *"On the international stage, it's important for Austrian companies to define themselves through innovation. Only by constantly developing and questioning ourselves can we*

remain successful on into the future," adds Christian Brauneis-Lieb, Managing Director at KNAPP Industry Solutions.

Strong partnerships are the key to real innovation. The manufacturing of the future will be smarter, safer and more resilient thanks to automation and robotics. B&R is already thinking ahead: *"Automating our intralogistics has made our internal processes a lot more efficient. Now we're working to seamlessly integrate adjacent processes, such as manufacturing control, replenishment processes and packing,"* says Michael Humer. Their goal: To better mesh the logistics solutions with the operational process for flexible, intelligent manufacturing that is fit for the future.

We look forward to continuing this strong partnership.



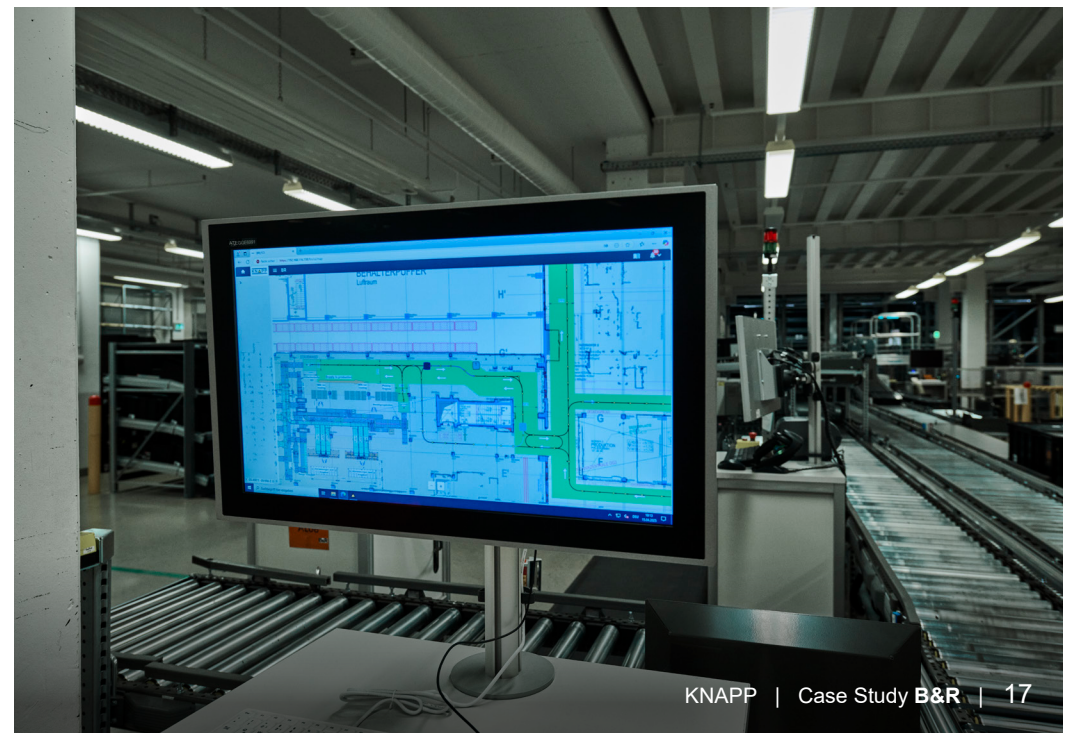
“The KNAPP solution was particularly convincing because it wasn’t a standard solution, but one that was tailored to our specific logistics processes.”

Roman Seitweger
Head of Production Austria
B&R Industrial Automation



The B&R solution:
efficient, flexible and ergonomic







VALUE CHAIN TECH PARTNER

Expand your competitive advantages

We work together with you to design and build a system tailored to suit your logistics requirements, growth targets and investment strategy.

At KNAPP, we don't deliver systems off the rack; we take the time that's needed to learn about your needs, business model and the challenges in the industry. Whether you want micro or macro, a semi-automatic system to help you get started or a fully automatic distribution center for top performance – we have just the right all-in-one solution for you.



We look forward to
hearing from you:
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follow us:

