



Global enabler.

With more than 60 years of experience in intralogistics, Jungheinrich AG is one of the world's three largest suppliers of material-handling equipment, logistics systems and services.

Moreover, we offer you a comprehensive product portfolio and act as general contractor for complete logistics solutions – independent of the degree of automation.

We plan and design your tailor-made solution – a solution that does not exist anywhere else.

Even after finishing your intralogistics solution, we are at your side: with more than 4,800 Jungheinrich service technicians worldwide, we have one of the densest service networks in the industry. Each solution is individual – just like your company. Read more about our satisfied customers and their industries with their specific intralogistics requirements on the following pages.

Is there a need for optimisation and handling in your warehouse? You want to reduce costs and increase the efficiency of your warehouse? Learn more on our website www.jungheinrich.com or contact us directly: info@jungheinrich.com.

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Chemical industry and pharma. Solutions for chemical logistics.

Safety is everything.

The chemical and pharmaceutical sectors place extremely high demands on logistics processes. We offer our customers from these industries optimum solutions to suit their individual requirements, ranging from hazardous goods storage with explosion protection to warehouse automation.

Logistics in the chemical and pharmaceutical industries is particularly challenging. Stringent legal provisions, along with maximum safety and hygiene requirements when handling sensitive, often even dangerous, substances, are guaranteed in this area. This applies as much to the transport, storage and correct handling of hazardous substances as it does to the priority of occupational and environmental safety.

More than in any other field of logistics, mistakes are simply not an option in the chemical and pharmaceutical sectors. Jungheinrich is well equipped to face this challenge head on. We offer comprehensive solutions to optimise your goods flows and raise their efficiency, all the while upholding the most exacting quality and safety standards.



Grifols S.A., Dublin site, Ireland

Industry:

Medical products and services

Task:

Two automated warehouses for medical end products

Project duration:

02.2014 - 08.2015

Services:

- Fully automated high bay warehouse for cold store area at −35 °C
- Fully automated high bay warehouse for the temperature range at +5 °C
- 2 stacker cranes with double shuttle
- Jungheinrich Warehouse Control System (WCS)
- Basic software support service
- Interval service contract inclusive repair maintenance
- Spare parts package for stacker cranes and conveyor system

Most important results:

- Safe storage of highly sensitive products
- Higher throughput speed
- Efficient controlling of warehouse processes and high levels of transparency
- Highest levels of availability through reliable support

Market leader in blood plasma products

Grifols S.A., headquartered in Barcelona, Spain, is a global healthcare company with bioscience, diagnostics and hospital divisions. Founded in 1940, Grifols develops, manufactures and markets innovative products and services for healthcare professionals in more than 90 countries worldwide. One focus is on the manufacture of medical intermediate and end products in the blood plasma sector. Grifols is the recognised market leader in transfusion medicine and offers a wide range of solutions for clinical laboratories, blood banks, and transfusion centres.

Holistic solution wanted

For its strategic Dublin site, Grifols looked for a holistic intralogistics solution from a single source: from planning to implementation to day-to-day operations including support with maintenance work. The new system is designed to reliably meet the high demands for storage technology and safety that are inherent in delicate blood plasma and medical devices.

Comprehensive planning and realisation concept

Jungheinrich planned and implemented a holistic solution featuring two storage areas with temperatures of +5 °C and -35 °C. The intralogistics concept covers all administrative processes in the pharmaceutical company as well as the prescribed final quality controls in the medical supply chain.

The requirement

Safe storage and fast throughput

Grifols has its centre for life sciences in Dublin. Construction of a new high tech warehouse on company premises was envisaged as being the basis for continued worldwide expansion and globalisation. Clients from around 70 countries are supplied from the site in the Irish capital. Storage and handling of highly sensitive blood plasma and its derivatives places extremely stringent demands on intralogistics. The warehouse technology also has to be extremely reliable, even at -35 °C, so that these lifesaving products can reach the recipient as quickly as possible. Processing capacity is around 10 million ampoules per year. It was particularly important for Grifols that automated logistics processes were integrated into their in-house IT system.

The solution

Two automatic warehouses with two temperature ranges

The area of the single-aisle, high-bay silo warehouses designed by Jungheinrich totals 22,000 m². Up to 2,972 pallets can be stacked and retrieved in quadrupledepth storage channels in the warehouse set to a temperature of +5 °C. The rack operating system reaches a ceiling height of up to 26 m. The load lifting takes place transversely via double shuttle. Quality assurance on products takes place in an integrated laboratory, and there are also work areas for labelling, packing, and centralised distribution of complete pharmaceutical products for all markets except for the USA and Spain, the country of origin. The second storage area belonging to the Dublin logistics facility is a single-aisle, high bay silo warehouse with capacity for 1,152 pallets. This cold store area with a temperature range as low as -35 °C is suitable for the safe stacking and retrieval of blood plasma. Here, Jungheinrich has designed quadruple-depth storage channels for Grifols, and the load is handled crossways by a double

shuttle. The stacker crane designed in-house for use in extreme temperature conditions reaches a height of 14.3 m. Grifols uses this system as a central warehouse for blood plasma from the USA. The entire warehouse complex is designed for the transport and safe storage of medical devices on both Euro and US pallets (1,219 x 1,016 mm) and is controlled by the Jungheinrich Warehouse Control System (WCS). Due to the high degree of automation in the whole warehouse complex, the throughput speed was increased considerably. A fast Jungheinrich service ensures the high degree of availability

The statement

A demanding project, reliably implemented

"The combination of wide-ranging warehouse logistics expertise with excellent service and support availability, which has made Jungheinrich a world-leading provider of holistic intralogistics solutions, convinced us to commission Jungheinrich with the entire project. Jungheinrich proved that they can implement such major projects 'on time' and on target", said Managing Director Albert Grifols after the opening.

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Sauer GmbH & Co. KG, Föritz, Germany

Industry:

Manufacturer of plastic parts

Task:

Construction of an automatic pallet high-bay warehouse with stacker cranes, conveyor technology peripherals and a connection to the Jungheinrich WMS

Project duration:

08.2014 - 05.2015

Services:

- Fully automatic pallet high-bay warehouse in silo design with three double-deep racking aisles
- Three MIAS stacker cranes
- Interval maintenance contract
- Conveyor technology including a centring station
- Jungheinrich Warehouse Management System (WMS) and material flow computer
- Premium software support service

Most important results:

- High handling performance
- Fast access options
- Low error rate
- High degree of space utilisation

Decades of success

Sauer has been processing plastic parts since 1957, originally for the domestic toy industry. Today's core business includes the development and production of bottles and containers for the cosmetics, chemical, pharmaceutical and food industries as well as technical parts, such as infant car seats, or large blow-moulded parts like sleds. As a service provider, Sauer offers its customers the entire process of development, production and logistics.

State-of-the-art, double-deep pallet high-bay warehouse

Jungheinrich supplied a wide range of products, including a 130 m long, 23.5 m wide and 38 m high double-deep silo storage system, conveyor technology with a centring station, a pallet doubler and labeller, fire protection gates, a ramp as well as three stacker cranes with telescopic forks from the Jungheinrich subsidiary MIAS.

IT connection

In addition, the entire software and IT for the high-bay warehouse were supplied by Jungheinrich, consisting of the control technology and the WMS with an integrated material flow computer. The WMS controls the entire logistics processes of the plant and enables Sauer to manage different production batches.

The requirement

Smooth process flow

Sauer's investment into the intralogistics system resulted from a growing production output due to the positive business development and the corresponding expansion of the operator's truck fleet. This intralogistics system by Jungheinrich was designed for the automatic storage of finished parts and the delivery of full pallets. For Jungheinrich as the system integrator, the goal was to create an economical solution with fast access options, a low error rate and a high degree of space utilisation.

The solution

New storage concept with automatic stacker cranes

Prior to storing the palletised plastic parts, the conveyor system of the automatic intralogistics system transports them to a centring station. This is followed by a hood stretcher, which places a film on top and around each loading unit, and a contour check. Subsequently, the pallets are transferred on the conveyor system to the three-aisle automatic high-bay warehouse, which has more than 25,500 pallet locations split across eleven storage levels. At the end of the high-bay warehouse, the stacker cranes take over the loading units from the storage lines and place them on the front or rear pallet location specified by the Jungheinrich WMS. Designed for double-deep load handling, each of the telescopic forks of the stacker cranes can pick up a loading unit. This version of the stacker crane works much more economically than one that can simultaneously pick up two load carriers but is equipped with a stronger mast or a double mast. The stacker cranes place loading units that are transported out of the warehouse on retrieval lines. From there they run on the previously installed conveyor system, where they can be labelled partly on the front and on the long side. This is followed by a pallet doubler, which enables the stacking of two load carriers with a maximum

length of 1,500 mm on top of each other. Subsequently, a transverse shuttle transports the loading units in a time-saving manner to the gravity tracks, which supply the outgoing goods department.

Customer statement

Short construction time and high system availability

"The advantage of the solution primarily lies in the high throughput. This is based on the concept of the stacker cranes and their telescopic forks as well as on the use of the transverse shuttle, which allows the load carriers to be available at the outgoing goods department more quickly. For the operator, an additional plus is that the customer service for the automatic warehouse comes directly from Jungheinrich," says Norbert Manger, who has been responsible for the realisation of the system as a project manager from Jungheinrich. Apart from this, Sauer points out the short construction period, the favourable price-performance ratio and the high system availability. In addition, the system's operation is userfriendly, even for new employees. The customer also appreciates the possibility of extending the high-bay warehouse, which is already designed for three-shift operations, by yet another aisle.



Automatic pallet high-bay warehouse, Sauer GmbH & Co. KG, Föritz, Germany

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Coko-Werk GmbH & Co. KG, Bad Salzuflen, Germany **Industry:**

Plastics industry

Task:

Increased efficiency of the narrow-aisle warehouse through automated high-rack stackers and conveyor systems

Project duration:

10.2013 - 05.2014

Services:

- Jungheinrich Warehouse Control System (WCS)
- Basic software support service
- Wi-Fi solution with directional antennas
- Automation of narrow-aisle warehouse
- High-rack stacker ETX 515a
- Conveyor system including control system
- Hardware service with interval contract

Most important results:

- Increased efficiency
- Reduced energy consumption
- Increased overall availability
- Reduced wear

From one supplier for almost 90 years

The company Coko-Werk GmbH & Co. KG has made a name for itself in the plastics industry. Its key markets include the construction of tools and plastic items, injection moulding and the assembly of components, painting, foaming, welding and printing. Its customers are based in the automotive, medical and mechanical engineering industries. The global company manufactures products in Germany, Poland and Turkey and achieves annual sales of approx. 140 million euros.

Convincing overall concept

Following an extensive capacity and process analysis, two service providers offered plans for an automated narrow-aisle warehouse. Coko decided to accept Jungheinrich's offer on the basis of the complete needs analysis, the convincing overall concept and not least the price-to-performance ratio. Another important factor was that Coko has already been using Jungheinrich forklift trucks for a long time, and is very happy with them in terms of quality, service and price.

Customised logistics system solution

To increase throughput efficiency and cost-effectiveness, a high-bay warehouse with space for approx. 3,240 pallets has been built at the main site in Bad Salzuflen. Following extensive economic efficiency analyses, the decision was made to implement an automatic narrow-aisle warehouse. In order to meet the requirements in terms of reliability, efficiency and warehouse safety, this required a complete logistics system solution. This includes warehouse control using the Jungheinrich Warehouse Control System (WCS), for example.

The requirement

Improvement of warehouse processes

Since 2008, Coko has used an ERP system introduced by SAP. The consequence of this is that only one shipping storage location and only block storage areas are available in SAP. Goods which belong together must therefore be stocked separately, which results in the picker taking a long time to locate items.

The solution

Automated high-rack stackers in a narrow-aisle warehouse

In planning an intralogistics project, Coko was guided by the economic efficiency analyses of Jungheinrich, and invested in three automated ETXa high-rack stackers, a narrow-aisle warehouse and the conveyor systems to take items to and from storage. The ETXa is equipped with a swivelling fork and designed for an optimal lift height of ten metres. In order to avoid downtime during battery changes, the ETXa has been designed to be powered by busbars. The energy reclamation during lowering of the load handler and during regenerative braking confirms the high energy efficiency of the automatic high-rack stacker. In addition, the ETXa travels diagonally to the storage locations, with an optimised speed profile, which saves time. The required throughput efficiency is exceeded for the whole system.

Following a system and performance analysis carried out in advance, a controller-based Wi-Fi solution was implemented in the automatic environment. An advantage of this radio data solution is that the central administration of the connected Access Points is possible both directly and remotely. The challenge with regard to implementation is in covering a narrow aisle approx. 80 metres long with directional antennas in the 5 GHz frequency range. Data is exchanged between the vehicle terminals and the implemented SAP WM via the Jungheinrich WCS, which serves as a material flow controller, controls the conveyor system and manages the 3,240 pallet positions.

The Jungheinrich WCS is also responsible for the authorisation and calculation of target locations in the narrow aisle. Additionally, the system optimises storage and stock removal by using double cycles. Another feature is 'aisle balancing', where the Jungheinrich WCS does not store an item exclusively in one aisle, but rather stores it in several aisles at the same time. This lowers the risk of being unable to deliver an item – e.g. due to a blocked aisle. The delivery specification also includes a label printer, mobile workstations and truck terminals for reach trucks.

Customer statement

Increased efficiency and higher supply capability thanks to custom-designed total solutions

"Since we invested in the automatic narrow-aisle ware-house, we have known which items are in which storage locations. This means we can now work according to the FIFO principle and fulfil the corresponding guidelines of the automotive industry. Furthermore, we benefit from significantly more efficient logistics processes," states Jens Kastning, Head of Logistics at Coko-Werk GmbH & Co. KG. Furthermore, he stresses: "The number of high-rack stackers means we benefit from a high level of efficiency, resulting in improved supply capability. An advantage which can be used to good effect with our customers."



Jens Kastning, Head of Logistics, Coko-Werk GmbH & Co. KG in Bad Salzuflen.

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Solupharm Pharmazeutische Erzeugnisse GmbH, Melsungen, Germany

Industry:

Pharmaceuticals

Task

Automated intralogistics solution in accordance with GMP guidelines

Services

- Automated Guided Vehicles ETX 515a
- Jungheinrich Warehouse Control System (WCS)
- Area access control
- Racking
- Conveyor technology
- Basic software support service
- Hardware service with interval maintenance contract for AGV

Most important results:

- High level of flexibility
- Process reliability of the solution
- Elimination of mix-ups and incorrect loading
- Efficient use of employees

Leading contract manufacturer for parenteral preparations

Solupharm Pharmazeutische Erzeugnisse GmbH is a midsized family business and a leading contract manufacturer for parenteral preparations. The portfolio of Solupharm includes water preparations for injection purposes, electrolytic solutions, vitamin preparations, pain relievers, herbal and homeopathic preparations as well as sterile anaesthetics.

Individual and process support

Solupharm fills glass ampoules and glass vials with sterile medicinal products. Great emphasis is placed on individual and process-related support for international customers. This ensures that customer orders can be processed quickly and flexibly without bureaucratic complications and in compliance with GMP.

Flexible logistics system solution

To increase its storage capacity and to ensure compliance with the GMP directive in the future, Solupharm invested in a narrow-aisle warehouse with automated high-rack stackers. The new building can accommodate a total of 1,680 pallet space positions for semi-finished and finished goods.

The requirement

Intralogistics in accordance with GMP guidelines

Solupharm specialises in the production of sterile injection and infusion preparations. For this reason, the requirements of Good Manufacturing Practice (GMP) had to be taken into account when the automated warehouse was constructed. In addition to this requirement, Solupharm expressed a desire to relieve the employees of operational tasks in the future in order to utilise the employees more effectively for administrative tasks.

The solution

Automated high-rack stackers in a narrow-aisle warehouse

As a general contractor, Jungheinrich planned and implemented a narrow-aisle warehouse for Solupharm with two automated high-rack stackers. The ETXa high-rack stackers are designed for 25 double cycles per hour. They process their orders in two aisles, each 35 metres long. The ETXa models stack and retrieve goods up to a maximum depositing height of six metres. Their energy is supplied by open bus bars arranged on the racks. This ensures availability 24 hours a day, seven days a week, with no breaks for battery charging or battery exchange. As a result, the company is able to perform quality assurance in accordance with GMP requirements without having to reinforce the team.

The Jungheinrich Warehouse Control System (WCS) offers process reliability and increased efficiency. The possibility of mix-ups and costly incorrect loading of Solupharm's expensive goods will also be a thing of the past. The Solupharm ERP system posts movements of goods and initiates the intralogistics processes. Then the ERP system reports the transport orders for the pallets to the WCS. The WCS assigns warehouse orders to the automated high-rack stackers via WLAN. Automation ensures permanent availability of the system. This makes it possible to work from Monday morning until Saturday noon without

interruption and without having to schedule additional employees for on-call night duty.

One special feature of the total solution designed by Jungheinrich specifically for the customer Solupharm is the installation of an emergency access to the narrowaisle warehouse. If an unexpected malfunction occurs or maintenance is required, the warehouse can still be operated using manual devices.

Customer statement

Custom-designed total solution offers potential for expansion

"Jungheinrich has also proven to be a very flexible collaborative partner, particularly when the question arose at a very advanced stage of implementing the project whether we should set up a refrigerated warehouse in one of the aisles. Jungheinrich ultimately designed the relevant aisle so that a cold store could be retrofitted. This flexibility confirmed the positive experiences we already had with Jungheinrich even before investing in the narrow-aisle warehouse with trucks. Despite the challenge, everything went optimally. If higher throughput levels are needed in the future, we are prepared. The warehouse is designed so that it can easily be expanded to four high-rack stackers," explains Dr Tobias Schönberg.



Dr Tobias Schönberg, Manager Production Warehouse, Solupharm Pharmazeutische Erzeugnisse GmbH, Melsungen.

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Retail and wholesale.

Solutions for retail and wholesale logistics.

Speed is your key to success

Speed, flexibility and optimum cost efficiency are key when it comes to logistics processes in retail and wholesale trade. The e-commerce boom in particular has made intelligent solutions an essential requirement for all customers. After all, every minute counts!

E-commerce and online retail are on the rise. Retail and wholesale customers have very clear expectations: rapid delivery and additional resources during seasonal sales

peaks or campaign periods. When combined, these individual factors require storage and order picking with maximum flexibility. Are you looking for a holistic, flexible and scalable solution? Or perhaps you require an omnichannelling distribution centre for all incoming order types? Then you have come to the right place! We offer tailored logistics solutions for the world of retail and wholesale trade.



Fahrzeugbedarf Kotz & Co. KG, Seewalchen, Austria **Industry:**

Wholesale

Task:

Construction of a new distribution centre including the entire storage facility with forklift trucks, conveyor technology and connection to the Jungheinrich WMS **Project duration:**

07.2016 - 09.2017

Services:

- Complete range of equipment for the distribution centre: Wide-aisle, high-bay warehouse for 2,000 pallet spaces, 3-storey modular racking system for 6,000 storage spaces, 2 vertical lift racking systems (LRK) for 1,200 storage spaces and cantilever racks
- Various vehicles
- Conveyor technology
- Jungheinrich Warehouse Management System (WMS)

Most important results:

- Increase of efficiency by centralising the warehouse
- Increase of total capacity
- Shorter delivery times
- Lower error rates

Supplier of spare parts for commercial vehicles and trailers

The company Fahrzeugbedarf Kotz & Co. KG from Austria was founded more than 50 years ago. Throughout its history, the company has traded in original equipment for the production of vehicles and trailers. Later, the range was supplemented by parts for repairs that reflect the vehicle's current value. With its range of products, the company has managed to establish an extensive clientele.

Challenging spare parts management

The spare parts business has been playing an increasingly important role since the late 1990s. The new building was necessary in order to centralise the various spare parts warehouses previously located throughout Austria. The right parts were always in stock, but often in the wrong location. Therefore, the decision was made to build a central distribution warehouse.

Jungheinrich – Everything from a single source

Fahrzeugbedarf Kotz decided to handle the organisation and supervision of the construction project in-house. This decision allowed them to remain informed about every detail. In order to avoid dealing with individual contractors, they were looking for a full-service supplier. The decision was quickly made in favour of Jungheinrich.

The requirement

Efficient spare parts management

One of the main requirements of the new warehouse: it had to handle 75 to 80 % of all Austrian parts deliveries. Fahrzeugbedarf Kotz accounts for 90 % of its sales with around 5,000 parts from the product portfolio. Nevertheless, category B and C parts must also be available in the warehouse. Therefore, the design of the warehouse had to be tailored precisely to these needs and other specific requirements of the spare parts business for commercial vehicles.

The solution

Enhanced performance thanks to complete intralogistics solution

A suitable property in a convenient location for transport logistics purposes was found in Seewalchen. From there, all deliveries can be shipped throughout Austria within 24 hours. A large part of the warehouse area is occupied by the wide-aisle, high-bay warehouse with 2,000 pallet spaces and equipped with cantilever racking towards the front. In addition, there is a 3-storey modular racking system with 6,000 storage spaces. Two LRKs also enable the storage of small parts, providing space for another 1,200 storage spaces. While the high-bay storage is operated by two reach trucks, four pallet trucks are used for

internal goods transport. The warehouse is also connected to the Jungheinrich WMS. Thereby, orders from the ERP system are sent directly to the WMS, which controls the scanner-controlled order picking operations. Every day, around 65 to 70 pallets and 120 to 150 packages leave the new distribution warehouse.

Customer statement

A complete carefree package

"Our experiences with Jungheinrich were extremely positive. We received a complete carefree package," explains Andreas Rappold, CEO at Fahrzeugbedarf Kotz & Co. KG.



Andreas Rappold, CEO Fahrzeugbedarf Kotz & Co. KG, Seewalchen in Austria.

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Automated Guided
Vehicle System based on
Jungheinrich stacker truck
ERC 215a, e-commerce
logistics centre, Werne.
Efficient automation of
shipping processes.

DUNGHEINRICH

Project:

Leading online mail-order company, Werne, Germany **Industry**:

Mail-order business, e-commerce

Task:

Automating previously manually operated transport of pallets from the order-picking area to the packaging workstations along a route of 500 m, including the return of empty pallets

Project duration:

07.2016-10.2016

Services:

- Automated Guided Vehicle System (AGVS) for pallet transport
- Five Automated Guided Vehicles pedestrian stacker ERC 215a
- Fully automated receiving station and pick-up station
- Order generation with tablets and wireless data transmission via Jungheinrich Logistics Interface

Most important results:

- Shortening routes and reducing the strain on staff
- High flexibility with possibility for changes to the warehouse layout
- Stand-alone system with short implementation time
- Investment in the system paid off within one year

From e-commerce pioneer to online trading giant

Initially offering a selection of books, CDs and videos, the American online mail-order company now sells a wide range of products, including its own electronic devices for media use as well as an integrated sales platform for other companies. In Germany alone, the company operates nine logistics centres, which in some cases enables deliveries within only two hours.

Automated Guided Vehicle System in flexible mixed operation with manual vehicles

The Jungheinrich AGVS consists of five ERC 215a Automated Guided Vehicles for loads of up to 1.3 tons. Laser navigation enables precise approach and automatic operation of the receiving and pick-up stations. As standard, all vehicles are fitted with a personal protection scanner and sensors.

Installation and IT integration

Before installing the vehicles, a layout was created and the route was measured and illuminated with reflectors. The delivery specification also included a control unit operated by the user via a tablet, using the middleware Jungheinrich Logistics Interface. The existing WLAN infrastructure is used to communicate with the ERC 215a. In addition to its technical commissioning, Jungheinrich also trained the staff using the vehicles in operating the system.

The requirement

Reducing transport routes for staff

The aim of the optimisation was to relieve staff of transport-specific tasks such as transporting fully picked goods for shipping. Existing routes were to be used, while also enabling mixed operation of automated trucks, manual trucks and staff. For Jungheinrich as a system integrator, the requirement was to implement a fully automated, safe and highly available AGVS with the option of manual operation that can be flexibly expanded and adapted to the environment if required.

The solution

Simple operation and significantly less strain thanks to automated processes

The order pickers start their work with a hand pallet truck and a pallet with an attachment. Once all items have been picked, the completed pallet is moved to the next automated receiving station. The Jungheinrich Logistics Interface software enables the Automated Guided Vehicles to be operated via a tablet. Job orders are easily input via an intuitive dialogue. The next AGV receives and processes the order in a fully automated sequence. The employees then remove the empty pallet from the station and continue their order picking.

Customer statement

Short amortisation period and flexible application options

"Our warehouse layout is very versatile and we always look at how we can optimally adapt to customer requirements. In order to maintain this flexibility, we needed a system that was just as flexible," explains Julius Hartje, Senior Operations Manager at the e-commerce logistics centre. Also, the investment in the system was to be paid off within one year. This goal was achieved in addition to a high level of acceptance of the AGV: "Not only have our employees learned how to operate the system, but they can also see how harmonious the processes have become and how the AGVS relieves the physical stress to which they were subjected. And if there is a fault or we need the truck for a different process, the truck can be operated in manual mode at any time."



Julius Hartje, Senior Operations Manager.

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Keller & Kalmbach GmbH, Hilpoltstein, Germany **Industry:**

Connecting elements and fastening technology

Tack:

Construction and expansion of the central warehouse with a high degree of automation

Project duration:

Phase 1: 2008 – 2009 Phase 2: 2014 – 2016

Services:

Construction phase 1

- Automated high-bay warehouse (HBW) for 35,000 pallet positions
- Automated small parts warehouse (ASW) for 160,000 cartons
- ASW for 8,000 trays
- 1,000 m conveyor technology
- Jungheinrich Warehouse Management System (WMS) Construction phase 2:
- Maintenance 3 times a year
- Expansion of the HBW by 37,000 pallet positions
- Expansion of the ASW by 137,000 cartons
- Premium software support service
- Expansion of the ASW by 15,000 trays
- Doubling of the conveyor technology capacity and order-picking capacity including palletising robots

Most important results:

- Increase in volume of goods as well as total capacity
- Maximised order-picking performance
- More flexibility for short-term orders
- More efficient processes and ergonomic design of the picking workstations

Leading service provider for C parts management

Keller & Kalmbach was founded in 1878 in Munich as a wholesaler for screws and blacksmithing supplies and is now one of the leading service providers for C parts management. With around 800 employees, the company generated EUR 270 million in sales in 2016. That is almost twice as much as in 2009, when the first construction phase of the new central warehouse in Hilpoltstein was finalised under Jungheinrich project management.

Expansion and rationalisation investment

The company's strong focus on C parts management for industrial customers demanded special requirements of the intralogistics processes in the warehouse for goods to be delivered to customers at the right time, to the right place and in the right quantity. This resulted in larger storage volumes and an increased diversity of items, which meant that storage space became increasingly scarce. Consequently, in 2008, the management decided to build a new central warehouse and, following continued growth, to extend it in 2014.

Jungheinrich – everything from a single source

When the contract was awarded, it was important that the service provider was able to supply everything from a single source and offered a special after sales service. During both the construction and extension of the warehouse, it was clear that Jungheinrich as a partner offered the required knowhow. As an expert in intralogistics, Jungheinrich was responsible for the planning, development and implementation of the entire intralogistics system in both phases of construction.

The requirement

High degree of complexity in the planning and assembly

For some time, the former central warehouse in Unterschleißheim near Munich, with its 9,000 pallet locations and around 60,000 storage locations for small parts containers, had been unable to meet the needs of Keller & Kalmbach. An expansion at this location was not possible, but the growing demand for warehouse capacity could no longer be absorbed by the smaller branch warehouses in southern Germany. In order to cope with the growth, in terms of both quality and quantity, it was necessary to build a new, modern distribution centre.

In view of the continuing growth of the company's activities, the central warehouse had to be enlarged after five years, without affecting its operation. The extension of the conveyor technology during ongoing operation was very complex, in terms of both planning and assembly. New conveyor systems and two pallet lifts had to be installed in the confined space of the existing warehouse. The construction and test phase required very precise coordination. On the one hand, any negative impact on the three-shift operation had to be avoided at all times and, on the other hand, it was absolutely necessary to meet all deadlines. Despite all this, it was still possible to commission parts of the new warehouse while expansion work was still in progress.

The solution

New central warehouse for flexible use, even with changes to the business

In the first phase of construction, the central warehouse was divided into four areas. These were a high-bay warehouse (HBW), an automated small part warehouse (ASW) for cartons, an ASW for trays and a warehouse for bulky goods. The warehouse areas were configured in such a way that it would be possible to respond to future developments with an option to extend. The Jungheinrich WMS controls these areas as well as the complex order-picking processes. The order-picking system works according to the 'goods to operator' principle. Here, the corresponding conveyor system runs from the HBW and the two ASW on several levels. Thus, a high degree of flexibility is achieved by the manual removal and decentralised transfer with the goods and containers being supplied automatically. One special feature was the ergonomic design of the workstations.

In the second phase of construction, the HBW was extended by a total of five aisles. The expansion of the ASW for cartons

by an additional six aisles followed in early 2016. Consequently, the overall materials handling capacity and thus the orderpicking output was doubled. This area's concept was especially adapted to business demands of industrial customers. Using eight ergonomic workstations, ordered items are still picked according to the 'goods to operator' principle. Software then calculates the layer formation for the palletising robots and transmits to the Jungheinrich WMS the sequence in which the containers are to be retrieved from a commissioner. The palletising robot ensures flexible order picking, which is able to handle even major orders with little notice and without any problems. In addition, thanks to the robot, employees no longer have to lift containers, some weighing up to 20 kg.

Customer statement

Smooth flow guaranteed by trustworthy cooperation

As early as 2009, Dr Ingomar Schubert, Head of Supply Chain Management at Keller & Kalmbach, pointed out that the new central warehouse ensured flexible use even in the event of changes to the business. "In 2014, we needed a relatively large increase in warehouse capacity relatively quickly," Schubert recalls. Regarding the resulting expansion of the central warehouse as well as its sheer scale, Schubert is also impressed by the complexity of the overall system backed by computing and database processes. "The step-by-step commissioning was not originally planned that way. But it enabled us to use the warehouse area even prior to complete commissioning. We were impressed by the trusting collaboration with Jungheinrich over the entire period. We remained on schedule and even below the originally proposed budget. We would be happy to work with Jungheinrich again on any future expansion," praises Schubert.



Dr Ingomar Schubert, Head of Supply Chain Management, Keller & Kalmbach GmbH, Hilpoltstein.

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Birner Gesellschaft m.b.H, Vienna, Austria

Industry:

Automotive parts and accessories

Task:

Realisation of a central distribution centre for efficient spare parts logistics

Project duration:

05.2016 - 09.2016

Services:

- Complete central warehouse: two-storey modular shelving, two-storey steel construction platform, pallet storage, special exhaust system and long goods storage as well as drive-through racks
- Various trucks
- Jungheinrich Fleet Management (ISM Online)
- · Charging concept
- Various Profishop articles
- Hardware service with interval contract

Most important results:

- Efficiency increase by exploiting synergies
- Execution of shorter delivery time frames
- Improved inventory management
- Earthquake-proof racking system

Austria's market leader for automotive parts and accessories

Founded in 1931, the family-owned company Birner is Austria's largest distributor of automotive spare parts. The company has 350,000 available items – 150,000 of which are constantly in stock. With a total of 29 locations and 560 employees throughout Austria, the company generated a yearly turnover of around 140 million euros in 2016.

Challenge of spare parts management

Latest market trends led the Birner Group to develop a new logistics strategy and to invest in a modern distribution centre. In particular, the changing and constantly growing diversity of products played a decisive role. In order to meet these requirements, Jungheinrich implemented a centralisation concept, which places additional emphasis on safety and stability due to the location in an earthquake zone.

Everything from a single source

Birner was looking for a full-service provider as well as a single contact person with project responsibility for the construction of a new central distribution centre for Austria. As a general contractor, Jungheinrich participated in a tender, prevailing ahead of three other competitors to realise a tailor-made solution of different racking systems for Birner Gesellschaft m.b.H.

The requirement

Complex circumstances for statics

At first sight, the concept did not impose any special requirements regarding the technical implementation by Jungheinrich. In fact, the real challenge was that the premises in Wöllersdorf-Steinabrückl was a used property from the 1990s. That is why it had to be updated to the modern requirements of Birner Gesellschaft m.b.H. as well as to the e-commerce trade. In addition, the area of the distribution centre turned out to be an earthquake zone. As a result, this topographical situation led to special requirements for the statics of the racks and the stability. The rack frames could not be placed evenly, as common elsewhere, but had to be adjusted to the floor of the warehouse and its concrete slabs.

The solution

Earthquake-proof

For the optimisation of the spare parts management, a new storage system from Jungheinrich was implemented with a usable area of 11,600 m². The tailor-made solution, consisting of modular shelving, a steel construction platform and the pallet racking system, ensures an efficient and continuous workflow of the spare parts distribution processes, from the delivery of the suppliers to the delivery of the picked products. The individual areas are connected by pallet and container conveyor technology. As a result, the current storage capacity covers almost 5,700 pallets and over 160,000 modular shelving spaces. In addition, various vehicles from the Jungheinrich product portfolio are in operation.

Customer statement

A win times three

Head of logistics Stefan Ulz: "Jungheinrich has proven to be a partner who – after three tenders for the racking systems and the three-storey order-picking warehouse – was able to provide us with the best racks and safety concept. We are especially impressed that all partial solutions are seamlessly connected to create one complete logistics solution. We will continue to rely on Jungheinrich's services in the future, for example when we are planning on an expansion of the distribution centre."



Stefan Ulz, Head of Logistics, Birner Gesellschaft m.b.H., Vienna, Austria.

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A. S. Watson Health & Beauty Benelux, Heteren, the Netherlands

Industry:

Health and cosmetics

Task:

New racking system for a higher volume of goods and improved fire protection

Project duration:

07.2015 - 09.2015

Services:

- Storage system with 36 channels and five levels
- 72 drive-through racking sections with three pallets each
- Three Under Pallet Carriers (UPC)
- 144 UPC-channel racks with 12 pallets each
- Order-picking tunnel with a length of 5,400 mm

Most important results:

- Increase of the volume of goods as well as of the overall capacity
- Improvement of working conditions
- Reduction of fire risks

Daily supply of the stores

A.S.Watson is the holding company of retail formats such as Kruidvat, Trekpleister and Priksmepper. With more than 1,300 stores, logistics plays a decisive role in ensuring their daily supply. The company's distribution centre in

Heteren covers 68,000 m² and is among the most modern distribution solutions in the world. Depending on the amount of orders and the season, 500 to 800 employees work there every day. For this purpose, around four million packages can be processed every week.

Higher goods volume plus increased fire protection

In case of fire, the high number of bulky goods previously stored in the block storage in Heteren posed a hazard, as it could only be insufficiently reached with water. In addition, it was difficult for the order pickers to travel between the stored goods. For this reason, a compact storage was chosen

Individual solution by Jungheinrich

Although drive-in and drive-through rackings are the most common solution for a compact storage, Jungheinrich suggested a racking system consisting of channel racks with UPC and drive-through racking sections, which they deemed most suitable for the operation. With this solution, the efficiency of the entire material flow was optimised and the overall capacity increased significantly.

The requirement

Increase of goods volume, safety and efficiency

To begin with, the task included ensuring enough storage capacity on 600 m² as well as a sufficient supply of products at the picking stations.

Additionally, in case of emergency, highly flammable products such as napkins and tissues had to be reached by a sufficient supply of water.

The solution

Jungheinrich channel racks with UPC and order-picking tunnel

In order to achieve an optimal overall capacity, a fivelevel storage system with 1,944 pallet locations was built on a floor area of 600 m². The upper four levels consist of 36 channel racks for UPC. Each channel rack has a capacity for 12 pallets and also ensures a gap of 75 mm on both sides. These gaps guarantee an ideal water supply in emergency situations. The bottom storage level is an order-picking tunnel, enclosed by 72 drive-through racking sections on both sides. Pallets move automatically to the picking location and, thus, reduce the reaching depth for the order picking personnel. This minimises physical strain and ensures the optimal accessibility of the goods. In addition, the driver can control the UPC on his terminal while driving, thus avoiding waiting times. For the annual maintenance and inspection of trucks and UPCs, A.S. Watson opted for an interval contract.

Customer statement

Productive and safe order-picking

"In order to achieve an annual increase in our goods volume, it was time to find a new solution that suited our specific requirements," says Steven Beerens, Project Manager of Supply Chain Development. "We are very satisfied with the achieved results. As far as we know, this is the first truck-operated pallet shuttle system in this country," says Beerens.



Steven Beerens, Project Manager of Supply Chain Development, A.S. Watson in Heteren.

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Lyreco Switzerland AG, Dintikon, Switzerland **Industry**:

Wholesale

Task:

Construction of a fully automated pallet high bay warehouse with stacker cranes, conveyor technology and connection to the Jungheinrich WMS

Project duration:

02.2014 - 08.2015

Services:

- Fully automated, three-aisle pallet high bay warehouse in silo construction
- 2 stacker cranes
- Pallet conveyor technology on 2 floors
- Jungheinrich Warehouse Management System (WMS) and system control
- Basis software support service
- Hardware service with interval contract for pallet and small parts conveyor technology
- Spare parts package for pallet and small parts stacker cranes

Most important results:

- Optimised warehousing of various products
- Higher throughput speed
- Reliable control of warehouse processes
- Ready for expansion

Global office and workstation solutions

Lyreco has a product range of more than 9,500 articles and a further 5,000 specific customer articles. This is complemented by a diverse range of services. Swiss customers are served from its site in Dintikon. Be it a traditional office item, a customisable promotional item, personal protective equipment, drinks, snacks or toiletries, Lyreco offers a one-stop solution for the workplace from a single source.

Ordered today, delivered tomorrow

The extensive product range has to be delivered to the end user in the right quantity and by the right time. Lyreco places a high value on service and strives to adapt to individual customer requirements. To constantly maintain these high levels of service, Lyreco decided to erect a new, fully automated high bay warehouse. The aim of this project was to supply its large customer group according to the principle: "What customers order today, they get delivered the next day."

Trust in partners

Lyreco Switzerland AG decided to realise this project together with Jungheinrich. The main factor in its decision was Jungheinrich's expertise in consulting, planning and realising innovative, high performance and cost-effective logistics systems.

The requirement

Higher throughput for diverse items

Any company that sells a variety of products, such as office items, drinks, snacks, protective equipment or promotional items, has special requirements in terms of the warehousing and sale of these products. The wider the product range, the higher the requirements for efficient warehousing and order picking, not to mention shipping. The products ordered have to be received by the customer or consumer in industry and retail within 24 hours, whenever possible. It's a complex task for a high-performance logistics centre.

The solution

Designed for growth

One of the most important components of the new warehouse constructed by Jungheinrich is a racking system in silo construction with up to 13,200 pallet positions, pallet conveyor technology across two floors, two stacker cranes with system control and the Warehouse Management System (WMS). The system control and logistics software that forms the interface to the WMS, rack operating system and conveyor technology components were realised by Jungheinrich. The high bay warehouse is connected with the "Lyreco Service Cube" automated container warehouse, in which 116 shuttles collate customer orders. 50,000 standardised setup containers, each holding one product, are housed in a compact space. Thanks to its new high bay warehouse, Lyreco can further expand its core range of products and services in the future, since the high bay warehouse was developed to allow later expansion through the commissioning

of a third aisle during operation and without structural changes, increasing the total pallet positions from 11,000 to 13,200. Jungheinrich's services also include extensive training and intensive support in the first few weeks after commissioning the system.

The statement

Closer to the customer

The decision by Lyreco Switzerland AG to choose Jungheinrich as its partner for the automation project has paid off. Thanks to a fully automated high bay warehouse, customer service has been significantly improved – documented by quicker response times and almost 100 % delivery capabilities within 24 hours. The excellent cooperation during the project planning and realisation phase left a lasting impression.



Fully automated, three-aisle pallet high-bay warehouse, Lyreco Switzerland AG, Dintikon, Switzerland.

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Optimising the logistics processes in 24-hour operation.





Project:

Steinbach VertriebsgmbH II, Schwertberg, Upper Austria **Industry**:

Wholesaler for swimming pools and accessories as well as sale of wool

Task:

Fully automated high-bay warehouse as distribution centre

Project duration:

05.2014 - 01.2015

Services

- Automated three-aisle high-bay warehouse, drive-in construction, for more than 19,000 Euro pallets
- Three stacker cranes with wireless shuttle
- Production trucks with radio data components
- After sales
- ISM Online

Most important results:

- 24-hour operation
- Optimising the logistics processes

Expansion of the warehouse capacities

Steinbach supplies swimming pools and accessories to customers across Europe. Around six years ago, company head Peter Steinbach began to completely restructure his company in several stages of expansion. The sixth and, for the moment, the last stage of expansion comprises a second plant: a fully automated high-bay warehouse as a distribution centre. The planning partner for this was the intralogistics specialist and forklift truck manufacturer Jungheinrich.

A fully automated high-bay warehouse

In just five months, Jungheinrich brought on line a fully automated high-bay warehouse with a capacity of more than 19,000 pallets and a height of approximately 33 metres, which moves fully sorted pallets directly to the loading ramps. The warehouse comprises a loading area with nine docking bays and fully automated transfer from 240 suspended conveyors. The goal is to facilitate the collection of products 24/7, to shorten the length of time HGVs remain at the warehouse during peak times to the absolute minimum and to achieve a frequency of just a few minutes for dispatch.

The loading area and bottom plate were already completed in 2012 and the steel structure was replaced by a lightweight building construction for a period of two years. The handover of the high-bay warehouse took place on time at the beginning of 2015.

Steinbach has been a customer of Jungheinrich for many years. The company relies on Jungheinrich in all areas from manual fork lift trucks, customer service, ISM Online, manual racking systems and radio data components to automated solutions. The advantage is that Steinbach is able to clarify everything with one contact partner and is very well looked after.

The requirement

The ever-increasing demand for warehouse capacity

Seasonal peaks in demand for pools, etc. in the retail chains pose the greatest challenge for Steinbach's logistics. Hot summers with long heatwaves encourage a great many consumers to invest in a pool for their gardens. So this demand must then be satisfied quickly. Ensuring the high availability of products for retail required the construction of a further fully automated high-bay warehouse.

The solution

From meadow to fully automated silo

Jungheinrich Austria proved to be the right partner for the expansion project. Scarcely one year after the last project, it became clear that Steinbach would soon have to respond to the ever-growing demand for warehouse capacity if it also wished to safeguard the product availability factor in the future. The site was confirmed: a large meadow, approximately 800 metres as the crow flies from the company site. Jungheinrich took over the precise planning for a new automated warehouse. Time was short: from placing of the order to the scheduled completion, there were only a few months available to Jungheinrich. The racking system for Plant II is similar in design – the so-called silo – to that of Plant I, yet significantly larger. The new, three-aisle high-bay warehouse has a capacity of more than 19,000 pallets. Three stacker cranes (with wireless drive-in truck) stack on up to 13 levels. When planning the silo, Jungheinrich had to take into account building regulations, resulting in the unusual, doubly stepped shape of the building on the outer aisles. The silo is encased with airtight wall cladding.

Customer statement

Logistics solutions well conceived down to the smallest detail

"When turnover increases tenfold within a short time, then this is an exciting playing field for each supply chain manager on which they can let off steam. With a reliable partner at our side, we are very consistently pursuing the path of full automation and are supplying the whole world with our high-performance logistics machinery," says Peter Steinbach, CEO of Steinbach Group. "Jungheinrich took on the role of general contractor, responsible for construction of the two racking systems, and ensured that our day-to-day operations were undisturbed throughout the construction period. The result is logistics solutions well conceived down to the smallest detail and characterising the intralogistics landscape in the long term."



Peter Steinbach, CEO of the Steinbach Group, Schwertberg, Austria.

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Wessels + Müller AG, Hedemünden, Germany **Industry**:

Wholesaler for vehicle parts, tyres, workshop equipment

Task

Planning, development and construction of a new central warehouse

Project duration:

06.2012 - 03.2014

Services:

- High-bay warehouse with nine aisles
- Automatic small parts warehouse with 15 aisles
- Complex order picking and conveyor system for pallets and containers including control technology
- Forklift trucks and racking for conventional warehouse areas
- Jungheinrich WMS

Most important results:

- Capacity expansion
- Increased productivity
- Reduced errors
- Complete set-up of IT and logistics processes

Expansion of the logistics centre due to positive market developments

Wessels + Müller AG places great importance on constant further development and the international expansion of the company. The wholesaler for car and commercial vehicle spare parts and accessories currently already has 95 branches in Germany, four in Austria and the Netherlands, and five in the United States. In addition, the company also has a logistics centre. Overall, 175,000 items are listed at Wessels + Müller.

Prepared for growing market demands

The timely delivery of items to customers is of the utmost priority at Wessels + Müller. This is facilitated by the new central warehouse in Hedemünden planned and commissioned by Jungheinrich. The construction of a new logistics centre was inevitable because the opportunities for optimising the old site in Lotte had been exhausted. All Wessels + Müller AG sales outlets in Germany, the Netherlands and Austria are supplied daily overnight with goods from the new central warehouse in Hedemünden, Lower Saxony.

The requirement

A rapidly growing industry needs space – and automated processes

Wessels + Müller AG was on the lookout for a strong partner for the planning and construction of the new central warehouse to serve as general contractor with responsibility for all the logistics. Jungheinrich fulfilled this requirement profile: as a complete service provider for intralogistics, not only do we offer our customers overall project management from initial customer contact to final acceptance, but we also provide the required forklift technology and IT environment of the warehouse. This enables the customer to implement the complete package required for the operation of its warehouse with a single contact partner.

Given the abundance of listed products as well as the guarantee of short delivery times to its customers, Wessels + Müller needed a larger and more productive warehouse. In addition to planning the new warehouse, the focus of the project was on increasing the overall efficiency of the entire material flow. A high degree of automation and the error-free connection of all trucks to the Jungheinrich WMS posed the greatest challenge.

The solution

Automated and manually operated warehouse areas

In cooperation with Wessels + Müller, a completely new warehouse was planned and constructed. In order to accommodate all the items listed by Wessels + Müller in the required quantities, an automatic pallet warehouse with 42,480 pallet positions was constructed. The 40-metre tall high-bay warehouse is accessed by nine sets of rack operating equipment. The automatic small parts warehouse has 149,760 container storage locations

that are arranged to a double depth and distributed across 15 aisles. Automation of a large proportion of the warehouse avoids incorrect stacking, increases productivity multiple times over and ensures greater process reliability overall. Goods receipt, automatic warehouse areas, order-picking zones and dispatch are connected with each other via a complex and extremely powerful conveyor system for pallets and containers. The logistics centre also has a manually operated wide- and narrow-aisle warehouse, which is operated entirely with forklift trucks from Jungheinrich and is based on our own racking systems and warehouse equipment.

The automated management of all processes in the warehouse, including the truck guidance system, takes place via the Jungheinrich WMS. The Jungheinrich warehouseNAVIGATION system is also used to navigate the narrow-aisle trucks via the Logistics Interface to their destinations on an optimised movement curve. The Jungheinrich WMS supports employees with visual information, improving process reliability when order picking in the automated small parts warehouse. In addition spare parts packages for contol and conveyor technology are available as well as a premium support service for the WMS and the control technology. The Pick-by-Light function uses a laser dot to identify the source container in the relevant sector from which the operator should pick. The Put-to-Light function then indicates the target container by means of a signal light.

In addition, the 'Empties management' module has been adapted to suit the customer's specific needs. The empties balance is not only registered for the supplier, it may also be used to determine the precise number of load carriers located in the stores at any time. This function thus creates a significantly higher level of transparency and cost control for empties. The interplay of the many Jungheinrich products used facilitates the perfect coordination of all processes running in the warehouse.

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Watermann GmbH & Co. KG, Dortmund **Sector:**

Screws and fastening systems

Assignment:

Set up an automated small-parts warehouse and ergonomic workstations

Project duration:

01.2012 - 11.2012

Services:

- Automatic small-parts warehous
- Warehouse Control System
- Ergonomic order-picking stations
- Conveyor system
- Manual narrow-aisle warehouse

Most important results:

- Ergonomic workstations
- Significant increase in efficiency
- Lower error rate

Continuous transformation for steady growth

Since it was founded over 80 years ago in Dortmund, Watermann GmbH & Co. KG has developed from a regional commercial enterprise for mining products into an international dealer for connection and fastening technology. In sales the company relies on efficiency and quality to ensure rapid delivery within 24 hours. The company headquarters are in Dortmund. There are also two additional branches in Poland and Hungary.

"Goods to operator" instead of "operator to goods"

To automate warehouse processes, an automated small-parts warehouse was implemented at the head-quarters in Dortmund with 25 rack levels, 40,000 storage locations, 10,000 storage channels and Warehouse Control System. An automatic solution allows for regular relocations of less frequently picked containers to rear levels.

Customer-specific solution

Watermann was looking for a special solution with the most space-saving storage possible for its containers and efficient order picking, thereby allowing for delivery of its products within 24 hours. The order-picking stations also had to be designed ergonomically.

The requirement

The requirement was to design a system that offers options for expansion so it will be fit for the future. Special attention was also paid to work ergonomics. This was all the more important as unusually heavy containers are handled by Watermann in the small-parts warehouse with two different dimensions ($600 \times 400 \text{ mm}$ and $400 \times 300 \text{ mm}$).

The solution

Optimum restructuring of intralogistics through an automated small-parts warehouse, Warehouse Control System and ergonomic order-picking stations

After a material flow analysis, results-based planning and project planning, the company restructured its intralogistics. We delivered an automated small-parts warehouse and the Control System. With a special focus on ergonomics, four new order-picking stations with the following configuration were set up:

- Label printer
- Built-in checkweigher, counting scale
- Monitor and handheld scanner set up

The delivery specification also included the conveyor systems to move items to and from storage and a manual narrow-aisle warehouse. In order to ensure fast and reliable repair work, a premium software support service for WMS including control technology was completed. In addition, Watermann opted for an interval contract with maintenance for stacker cranes and AGVs as well as for a safety and electrical inspection.

The statement

"The automated small-parts warehouse makes our intralogistics processes easier and forms the desired basis for additional growth. We process nearly 80 percent of our orders through the automated small-parts warehouse. We had planned for 75 percent. The only parts we still order pick manually from pallets are heavy parts. It is also possible to expand the automated small-parts warehouse to almost 60,000 container slots with a third aisle," says Managing Director Peter Esser (Dipl.-Ing.). Jungheinrich was especially impressive in terms of special solutions: "We placed requests with ten providers and ultimately decided on Jungheinrich. They provided us with a special solution offering large containers that can be filled with goods weighing up to 70 kilograms and picked up two at a time by the rack operating equipment. The precondition for this was load handling attachments with greater load capacity for the rack operating equipment."



Bernd Pöche,
Watermann GmbH & Co KG,
Dortmund.

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DS Produkte GmbH, Gallin, Germany

Industry:

Wholesale and retail

Task:

Introduction of the Jungheinrich Warehouse Management System (WMS)

Services:

- Jungheinrich Warehouse Management System (WMS)
- Premium software support service
- System and serial trucks, racking systems
- Finger scanners for order picking
- RFID technology
- Flex-service for hardware incl. maintainance

Most important results:

- Accelerated processes
- Increased goods and data transparency
- Greater productivity
- Reduced error rate

On course for success: DS Produkte GmbH

With a wide range of non-food consumer goods, this company, based outside Hamburg in Stapelfeld, is one of Europe's largest suppliers to mail-order firms, retailers, and discounters in Germany and Europe. It also has a growing B2C share via home shopping channels. DS Produkte is also well known for the VOX founder show "Die Höhle der Löwen" ('The carve of the lions'), in which Managing Director Ralf Dümmel invests in start-ups. In the year 1973

DS Produkte was founded by the Hamburg-based businessman Dieter Schwarz, who also gave the company its name. In 2016, the group of companies generated a turnover of 250 million euros. The logistics centre in Gallin, Mecklenburg, was built in 1997.

The old system was outgrown

Increased customer and order structures as well as growing revenues required investing in a Warehouse Management System (WMS) that would fully map the intralogistics processes of DS Produkte. The previous Warehouse Management System from another provider was no longer up-to-date because it was only able to manage the stocks in the high-bay warehouse.

Extensive expertise and vast experience

DS Produkte was looking for a WMS vendor that would be able to meet its highly complex requirements for specific customers and items. Jungheinrich ticked the box with its years of expertise with its own software, warehouse technology and forklift trucks. It had also worked closely as a partner ever since the planning and implementation of the logistics centre in Gallin.

The requirement

A wide range of tasks

The new WMS needed to cover all areas: the incoming goods department, which collects articles daily in volumes of 500 pallets, the narrow-aisle warehouse with 32 aisles and 17,000 pallet spaces, a packing and loading area, a wide-aisle order-picking warehouse, and the outgoing goods department. Here, around 500 pallets and 5,500 packed packages are handled every day. In addition to the 30,000 pallet storage spaces at the logistics centre, another 5,000 spaces have to be managed in external warehouses.

The solution

An optimal system for all intralogistics areas

Jungheinrich introduced the WMS in a light version, to which further modules were added over the next 12 months. The WMS performs specific services for each area. On the one hand, it acts as a forklift control system for 35 Jungheinrich trucks and provides via radio data for as even as possible utilisation of the forklift trucks supplied. In addition, it controls the two-stage transports during storage and retrieval in the narrow aisles as well as the replenishment supply for the picking area. The packing areas are a particular highlight. Via an individual packing functionality, the WMS has customised packing instructions that it receives from the ERP system. These could pertain to the B2C area, delivery notes attached to goods, invoices, returns labels, or flyers. In general, the WMS is designed for time-optimised processes. The picking staff was therefore equipped with finger scanners. This allows you to hold a package with both hands while scanning the barcode. Another example of time-saving measures relates to the cantilever racks, which are installed on the front side of the high bay and serve as

transfer points. By means of RFID transponders, the WMS ensures error-free operation. Both when handing over the goods delivered by reach trucks and when they are collected by the narrow-aisle trucks controlled by warehouse navigation. The use of the WMS in conjunction with the RFID technology leads to a time saving of about 20% when processing orders. On top of that, the WMS offers simpler and more efficient inventory management, processes that are much easier to map and carry out and a high level of adaptability to new requirements.

Customer statement

Better results at all levels

"As a result, we're seeing faster processes, increased transparency in terms of data and goods in all warehouse areas, a noticeably reduced error rate, and greater productivity. We are able to handle a significantly larger number of orders with the same number of employees and the same amount of time."



Hauke Hagemann, Logistics Operations Manager at DS Produkte GmbH, Gallin, Germany.

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Manufacturing.

Solutions for manufacturing logistics.

Industry 4.0: save time and money with connectivity

Automated Guided Vehicles, intelligent software, comprehensive connectivity – Jungheinrich is well equipped for the challenges posed by the Industry 4.0 megatrend. Benefit from our pioneering logistics solutions as a customer in the field of metal processing, heavy industry or mechanical engineering.

The vision of Industry 4.0 involves a paradigm shift in industrial manufacturing towards flexible structures with autonomous, self-controlling units. Automated and networked intralogistics solutions, such as Automated Guided Vehicles (AGVs), and intelligent software, such as the Jungheinrich Warehouse Management System (WMS), will play a crucial role in this process.

Comprehensive connectivity at all levels is the key to success, regardless of your sector or industry. Connectivity can be equally beneficial to small, medium-sized or large enterprises, which in many cases plan to automate their processes gradually. Are you ready for Industry 4.0? Perhaps you would like some assistance in making the right choices? As a pioneering provider with proven expertise, we are your ideal partner on this journey. We offer customers tailored solutions from a single source – regardless of whether they are from the field of metal processing, heavy industry or mechanical engineering.

Quick and transparent material flow.





Project

Mark Metallwarenfabrik GmbH, Spital am Pyhrn, Austria **Industry:**

Metal forming

Task:

Jungheinrich as a general contractor: Implementation of the Jungheinrich Warehouse Management System (WMS) and extension of the warehouse to include an automated pallet high bay warehouse

Project duration:

11.2016 - 08.2017

Services:

- Jungheinrich WMS
- Automated two-aisle, double-depth pallet high bay warehouse
- Premium software support service
- 2 stacker cranes
- Conveyor technology with 2 transfer carriages
- Hardware service with interval contract for ASRS with maintenance, rack and safety inspection

Most important results:

- Efficient intralogistics processes
- Saves space
- Faster throughput
- More accurate stock management

Precision for almost 100 years

Mark Metallwarenfabrik GmbH was started almost 100 years ago as a producer of metal parts for the shoe industry. Today the family-run company works together with the automotive industry, medicine and electrical engineering, the construction industry and many other sectors. Its core area of expertise is the deep drawing of high-precision metal parts – many of which are for security functions. Annual production amounts to 2.3 billion precision parts.

Confined and cluttered warehouses

Mark, a company steeped in tradition, has grown rapidly. The expansion of production has, however, also resulted in a cramped warehouse. Pallets with parts or finished goods often had to be relocated five or six times. This also caused difficulties when recording and managing stock.

Help through automation

The intralogistics specialists at Jungheinrich proposed extending the warehouse with an automated pallet high bay warehouse. The Jungheinrich Warehouse Management System (WMS) was to be implemented as an overriding control system for all warehouse processes. After only a brief project planning phase, the realisation process began.

The requirement

Excellent performance in a limited space

Due to the tight conditions, pallets were constantly having to be relocated from production and for shipping. That not only wasted time for the Metallwarenfabrik staff, but also made it difficult to track and maintain an overview of stock. A new warehouse system needed to take all of this into account and operate with small space requirements.

The solution

High bays and intelligent software

Jungheinrich created a two-aisle, double-depth pallet high bay warehouse, with 4 pallet lines in each aisle linking to production and the existing manual warehouse. Two stacker cranes automate the storage and retrieval of stock, achieving high throughput speeds in the 78 m-long aisles of the 19 m-high automated warehouse. Pallets in the automated area are handed over and picked using two rail-guided roller transfer carriages. They act as powerful shuttles in the conveyor technology also supplied by Jungheinrich. The Jungheinrich Warehouse Management System (WMS) manages more than 5,000 pallet storage spaces in the manual and automated warehouse area. As the overriding software, it intelligently controls the entire material flow, optimises all of the warehouse processes, and ensures maximum efficiency and transparency. The modular structure and multidimensional configuration model offered by the Jungheinrich WMS ensures it can be easily adapted to any future changes.

The statement

One solution with many benefits

"We talked for a long time about whether an automated high bay warehouse was right for our size of company and whether this investment would be worth it for us. But now I can say that this is definitely the case, as it has made us faster and more efficient, but above all, improved our planning and precision. What's more, we were previously very cramped, but now we have lots of space."



Rudolf Mark, Managing Director of Mark Metallwarenfabrik GmbH, Spital am Pyhrn, Austria.

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PSZ electronic GmbH, Upper Palatinate, Bavaria, Germany **Industry**:

Electronics

Task:

Initial implementation of the Warehouse Management System Series 2 (WMS Series 2)

Project duration:

03.2016 - 12.2016

Services:

- Jungheinrich EKX 410 high-rack stacker
- Jungheinrich pallet racking
- Jungheinrich WMS Series 2
- Jungheinrich warehouseNAVIGATION with logistics interface
- · Radio data terminals and scanner
- Mobile workstation from Jungheinrich
- Care software support service

Most important results:

- Higher storage capacity through optimal use of space
- More efficient processing of storage and retrieval operations
- Increased productivity and transparency
- Digital stock overview in real time
- Increased process reliability

One of the market leaders in the industry

PSZ electronic GmbH was founded in 2003 and has its headquarters, including a logistics centre, in Vohenstrauß in the district of Neustadt an der Waldnaab in the Upper Palatinate. As one of the market leaders, the company produces and assembles tailor-made cable and system solutions for heating and ventilation technology, mechanical engineering, plant engineering, toolbuilding and special vehicle construction, as well as for medical technology companies. PSZ employs around 1,000 people worldwide. The production facilities are located in Germany, the Czech Republic, Albania and Tunisia.

Responding to challenges quickly and efficiently

By introducing a new and efficient logistics solution, the company wanted to achieve a significant increase in storage capacity and optimal turnover rates in order to be able to react as flexibly as possible to the challenges of the future. As well as a significant increase in efficiency and transparency, the best possible use of space and a precise real-time stock overview, the decision made by PSZ electronic to opt for the Jungheinrich WMS Series 2 was primarily driven by the simple execution of the storage and retrieval of various products as well as the digitisation of paper-based processes.

Jungheinrich – everything from a single source

After an intensive consultation and project planning process with the Jungheinrich logistics experts, PSZ electronic received a complete solution with a semi-automatic narrow-aisle warehouse with space for more than 5,000 pallets. This includes two EKX 410 high-rack stackers, the Jungheinrich WMS Series 2, a radio data solution and a mobile workstation.

The requirement

Best possible use of space and efficient storage and retrieval processes

PSZ is representative of innovative ideas, technical expertise and individually tailored solutions – this should also be reflected in everyday warehouse life. Therefore, in addition to the future-oriented optimisation of the warehouse processes and the increase in efficiency, the focus was on a significant increase in storage capacity. Another key requirement was the mapping and support of the storage and retrieval process, taking into account the enormous variety of products and the resulting diverse requirements in terms of packaging and packaging dimensions. The primary goals to be achieved through the use of the WMS Series 2 were to increase process reliability, implement precise stock management at storage bin level, increase traceability and reduce inventory discrepancies. PSZ employees should be able to use the solution easily, intuitively and reliably and, above all, the system had to be ready for use by the New Year period 2016/2017 without any complications.

The solution

Jungheinrich WMS Series 2 for optimum mapping of the flow of material and information

Following the requirements analysis, the obvious choice was a semi-automatic narrow-aisle warehouse with space for more than 5,000 pallets. The racks are approached by two EKX 410 high-rack stackers. The stackers are equipped with wire guidance, terminals, scanners and warehouse navigation and can be operated intuitively and extremely reliably by warehouse staff. With regard to software, the Jungheinrich WMS Series 2 was selected. This is where all the information is collated. It synchronises the entire complex flow of material and information. This allows the warehouse to be optimally managed and controlled. Thanks to a large number of different modules, the software can be flexibly adapted to changes in the warehouse and is therefore future-proof.

Customer statement

Smart logistics thanks to digitisation of the warehouse

"The system is easy to understand and you can guickly familiarise yourself with the various functions," explains Andreas Prey, Logistics Manager at PSZ electronic GmbH. "Our employees liked our new narrow-aisle warehouse and the Jungheinrich WMS Series 2 right away. Whereas the employees in the old warehouse spent a huge amount of time searching for a specific product, they now know - thanks to the real-time stock management function – what quantity of the corresponding item can be found in which location at any given time. This is all possible thanks to the radio data solution in combination with the Jungheinrich WMS Series 2 warehouse management system. For the first time ever, order processing is paperless. Thus an enhanced overview, increased transparency and an end-to-end ordering process are encapsulated within the WMS. The work is much more efficient and simpler, and the error rate drops to a minimum," explains Prey. "The semi-automatic warehouse makes us even more in tune with our production plants all over the world but also more in tune with our customers and their needs," emphasises the 33-year-old. Andreas Prey is enthusiastic about the cooperation with the team of experts from Jungheinrich: "Everything was perfect from the outset: from the planning phase and the implementation phase to the 'go live' date and the start-up phase overseen by the Jungheinrich experts." Such intense cooperation is rare in this industry and should not be taken for granted.



Andreas Prey, Logistics Manager at PSZ electronic GmbH, Vohenstrauß, Upper Palatinate.

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Gasser GesmbH, Steyr, Austria

Industry:

Metal production and processing

Task:

Initial deployment of the Jungheinrich Warehouse Management System (WMS)

Project duration:

04.2016 - 06.2016

Services:

- Jungheinrich WMS Series 2
- · Handheld terminals
- Basic software support service
- Storage labelling

Most important results:

- Simple report execution
- Increased productivity and transparency
- Inventory overview in real time
- Efficient processing of storage and retrieval operations
- Minimised inventory differences

Core competence: quality assurance

Gasser GmbH was founded in 1989 as a service provider for foundries in Rosenheim. With their specialisation and high competence in the quality assurance and repair work of castings, the company has grown rapidly, especially in the field of automotive construction. Their locations in Munich and Steyr have been in operation since 2001. Today the company has more than 40 employees.

Digitalisation of manual storage

Gasser was looking for a way to increase efficiency and transparency, whilst obtaining an accurate inventory overview in real time.

The decision for the WMS was made because of the simple report execution on storage periods and product movements as well as the digitalisation of document-based processes.

Jungheinrich - everything from a single source

Within a few weeks following their decision, Gasser received an integrated complete solution for the warehouse in Steyr with approximately 3,000 storage spaces. This solution includes the Jungheinrich WMS Series 2, a wireless data communication solution and storage labelling.

The requirement

Easy solution for reports as well as increased quality and efficiency in the warehouse

Gasser stands for quality and precision, which is supposed to be reflected in their daily warehouse operations. Therefore, their main requirements were the optimisation of processes and increased efficiency. They also put great emphasis on obtaining an accurate inventory overview. Gasser wanted to achieve different main objectives with the use of the WMS. These objectives included an increase in process reliability, accurate inventory management, an increase in traceability and fewer inventory differences. Further, it was particularly important for the customer that the solution was simple and above all quickly installed.

The solution

Jungheinrich WMS Series 2 and mobile radio data equipment for error-free warehouse management in real time

Following a requirements analysis, Gasser opted for the Jungheinrich WMS Series 2 to achieve the optimisation and modernisation of the warehouse. In order to make full use of the optimisation potential of the WMS, the decision was made in favour of mobile data terminals (handheld terminals). In addition, Jungheinrich took over the storage labelling. This intelligent and complete solution from Jungheinrich enables reliable, transparent and efficient warehouse management as well as the evaluation of storage periods and movements.

Customer statement

The best possible equipment leads to the best possible work results

"When it became clear how much easier and better the management of our warehouse could be by means of software support, the decision for a solution from Jungheinrich was made quickly," said Managing Director Konrad Gasser. "With Jungheinrich, we have a partner who – like us – stands for premium quality. The WMS Series 2 was the perfect solution for us right from the start, because it is simple, attractively priced, ready for use within a few weeks and, moreover, it can meet our individual requirements," Gasser states.



Konrad Gasser, Managing Director, Steyr, Austria

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Debrunner Acifer AG, Kölliken, Switzerland

Sector:

Steel and metal distributor

Task:

To plan and implement a new logistics centre with automated small parts warehouse, automated high bay warehouse and conveyor technology

Project duration:

09.2014 - 11.2015

Services:

- Fully automated pallet high bay warehouse in silo construction with 2 rack aisles
- Automated small parts warehouse with 7 aisles
- Multi-order picking spaces for small parts and pallets, supported by Pick-by-Light
- Jungheinrich Warehouse Management System (WMS)
- Premium software support service
- Hardware service with interval contract for maintenance and rack inspection

Key results:

- Logistics process optimisation
- Reduction in error rate through Pick-by-Light
- Shortening of delivery times
- Decrease in operating costs

Traditional company with modern products

Debrunner Acifer, headquartered in St. Gallen, is a Swiss company that is steeped in tradition, having been founded more than 260 years ago. Debrunner Acifer is a competent B2B retail partner for reinforcements and reinforcement technology, steel and metals, water supply and civil engineering, building services, plumbing and roofing, fastening technology, tools, machinery and work protection.

A new logistics centre is born

Increased sales due to the rise in web shop orders made it imperative to construct an additional shipping warehouse. It was decided to build a new central logistics centre for fastening technology, tools, machinery and work protection at the site in Kölliken.

Competent partners sought and found

A partner was sought for the complex intralogistics that would be able to handle the entire process for Debrunner Acifer's supply chain and integrate this into its planning. The decision was made to use Jungheinrich. This challenging project was completed in record time.

The requirement

Faster processes, lower costs

The demands on the new logistics centre were high.

Debrunner Acifer wanted to optimise its intralogistics processes and at the same time reduce its delivery times. In addition, it wanted to reduce the error rate in its order-picking area. It was also promised that the new warehouse would reduce the operating and procurement costs.

The solution

State-of-the-art warehouse technology

The new high bay warehouse has a height of 16 m and consists of an automated smallparts warehouse with 58,000 containers, divided into seven aisles. This is in addition to the 5,400 pallet positions in which the products are stored prior to shipping. The fully automated smallparts rack operating systems cover approx. 6m per second to retrieve the orders materials. The shuttle service is provided by extensive container and pallet conveyor technology. Customers of Debrunner Acifer's tradesman centre throughout Switzerland and customers placing orders via the efficient web shop benefit from very short delivery times and high availability. Bar codes and radio data transmission systems for paper-free work ensure a smooth process flow. Thanks to the innovative Jungheinrich Warehouse Management System (WMS), employees require less product and logistics knowledge and can focus on their order picking tasks. The order picking workstations are equipped with a Pick-by-Light. This system helps to avoid errors during the order picking process. Overall, this makes the warehouse process much more efficient and more effective.

The statement

Destination reached

"The fully automated system in Kölliken offers a goodsto-man process, instead of employees having to fetch the products from the rack. This reduces the error rate and shortens the delivery times. Overall this has allowed us to improve our services. A customer placing an order by 6pm is often guaranteed delivery the next morning."



Thomas Widmer, Managing Director of Debrunner Acifer AG, Kölliken, Switzerland.

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The requirement

Transparent processes and ordered structure within the warehouse

Initially, the challenge was to analyse and record all logistical processes and requirements, as the company had not previously worked with any warehouse management system. This had resulted in cluttered stock and a lack of overview of relevant key figures. All logistics processes were therefore analysed in detail and subjected to testing in the project planning phase.

The aim of the new logistics system was to create more profitability, process reliability and transparency and the system had to be integrated into the existing sparse storage area. These goals were to be achieved with a warehouse management system connected to the existing ERP system.

The solution

Jungheinrich WMS and warehouseNAVIGATION

The two-stage transport procedure in the warehouse is entirely managed by the Jungheinrich WMS. Incoming goods are immediately scanned and recorded before being taken to the transfer station by the reach truck. After logging on to the truck guidance system, the terminal displays information regarding collection of goods and the transfer station to which the goods should be delivered. From here, the articles go to the automatic miniload warehouse or the narrow-aisle warehouse. By this point, the target storage location in the narrow-aisle warehouse is already reserved to prevent overlaps. The storage positions in the narrow-aisle warehouse are managed by exact location and are approached semi-automatically using warehouseNAVIGATION. Thanks to transponders in the ground, the high-rack stacker detects its current position. The position to be approached is then transmitted via the radio data terminal. The Jungheinrich Logistics Interface, specially developed middleware installed on the radio data terminal, is responsible for communication

between the Jungheinrich WMS and the truck and ensures that the information exchanged can be implemented. If a production order is triggered, the ERP sends it to the Jungheinrich WMS. The parts from the narrow-aisle warehouse and the automatic miniload warehouse are then picked and gathered together in a buffer zone before being transferred to production.

Customer statement

Process reliability and clear structure

Jungheinrich's total intralogistics solution with the Jungheinrich WMS, Logistics Interface, warehouse-NAVIGATION and complete storage equipment has sustainably boosted profitability and process reliability in the warehouse. By optimising the route to the storage positions, an enormous amount of time is saved and searching for the right location is a thing of the past. "The bundling of all information and goods flows by the Jungheinrich WMS creates transparency at every step from goods receipt to the provision of items for production. Each phase is thoroughly documented and key figures presented in a structured manner," explains André Hofmann, Head of Logistics at Eppendorf Zentrifugen GmbH in Leipzig.



André Hofmann, Head of Logistics, Eppendorf Zentrifugen GmbH in Leipzig.

Jungheinrich WMS with warehouseNAVIGATION for Eppendorf Zentrifugen **GmbH** in Leipzig.

Clear structure in the warehouse and bundling of information and goods flows.

JUNGHEINRICH

Eppendorf Zentrifugen GmbH, Leipzig, Germany Industry:

Life Science

Task:

Implementation of the Jungheinrich Warehouse Management System (WMS) and configuration of the complete storage equipment

Project duration:

06.2013 - 02.2015

Services:

- Jungheinrich WMS and radio data terminals
- Narrow-aisle warehouse
- Automatic miniload warehouse
- Jungheinrich electric order picker EKX 515
- warehouseNAVIGATION in narrow aisles with Jungheinrich Logistics Interface
- · Premium software support service and annual safety check

Most important results:

- Transparent processes
- Clear warehouse structure
- Display of movements and stock in the warehouse
- Time savings thanks to optimised routes

Liquid handling, cell handling and sample handling

Eppendorf is a life sciences company that develops, manufactures and markets systems for use in laboratories worldwide. The product range includes, for example,

pipettes and automatic pipetting machines, dispensers, centrifuges and mixers as well as consumables such as reaction vessels and pipette tips. With the construction of the new plant in Leipzig with a production area of 5,360 m² and a logistics area of 2,200 m², a modern production facility with efficient processes and a focus on the core competencies of CNC technology, final assembly and refrigeration technology was created.

One-stop intralogistics concept

To ensure optimal and efficient operation of the existing logistics area, a new intralogistics concept was needed. As a general contractor, Jungheinrich impressed with its ability to supply the essential solution components from a single source and to analyse all logistical processes and coordinate them in the most efficient manner.

Customised warehouse system

By introducing the Jungheinrich WMS, Eppendorf has implemented a holistic solution. All processes, from goods receipt to provision of items for production, are clearly defined. The system not only manages the products but also controls order-picking operations in the warehouse. The tailor-made storage system includes a narrow-aisle warehouse for pallet storage with 4,200 storage locations and a height of 15.5 metres, as well as an automatic miniload warehouse with 5,848 storage locations. Stacking and retrieval of goods is handled by a reach truck and a tri-lateral high-rack stacker.

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Internorm, Damme, Germany

Industry:

Manufacturing industry

Task

Construction of a new warehouse and increase of storage capacity

Project duration:

10.2014 - 10.2016

Services:

- Consulting and project planning for complete racking system including: Jungheinrich multi-bay pallet racking with eight aisles and 6,216 pallet positions, four-storey modular racking system with 1,120 shelves and a storage area of 155 m² as well as cantilever racking with approx. 870 m² storage area
- Jungheinrich ETV Q

Most important results:

- Expansion of storage capacity by approx. 4,000 pallet positions
- Comprehensive warehouse planning
- Successful partnership from project planning to implementation

Plastics technology with expertise and responsibility

Based in Damme (South Oldenburg), Internorm stands for outstanding technical performance, innovation and

quality. Since 1987, Internorm has been developing and producing high-quality synthetic products with around 200 employees. The product portfolio ranges from rolls and roll coatings to polyurethane plastics, moulded parts and injection-moulded items. With modern and high-performance products, Internorm has now developed into a medium-sized company – with a focus on customised solutions for the international market.

Market growth as a challenge

Due to steady growth, Internorm decided to disconnect their production from the storage. Thus, a completely new warehouse with a total area of 4,200 m² was built in Damme. Following a requirement and material flow analysis as well as a comprehensive consultation, the decision was made for a combination of wide-aisle multi-bay pallet racking with a modular racking system and cantilever racking.

Comprehensive warehouse planning by Jungheinrich

Internorm's choice for the project's realisation landed on Jungheinrich as one of the leading suppliers of racking systems in intralogistics. From the very beginning, Jungheinrich collaborated with Internorm in analysing, planning and then constructing the warehouse and thus developed and implemented a tailor-made racking system.

The requirement

Decoupling of production and storage

Thus far, Internorm's production and storage had been combined in one building. With the steady growth in recent years, the existing storage capacity was no longer sufficient. Thus, the decision was made in favour of a new warehouse. In order to achieve greater flexibility and storage capacity, the production is now separated from the storage area. In addition, the storage of plastic products required increased fire safety. Further, besides storing small parts, Euro pallets and longitudinal goods, the storage of grid boxes had to be taken into account, since Internorm uses different loading aids for different customers.

The solution

Holistic consulting and tailor-made racking system

In order to increase the overall capacity, a new storage system from Jungheinrich was built on a floor area of 3,000 m². The tailor-made racking system consists of multi-bay pallet racking, modular shelving and cantilever racking, which guarantee both an efficient storage of all goods as well as smooth order-picking operations. In addition, Internorm opted for the Jungheinrich ETV Q, which – thanks to its electric all-wheel drive system – is able to transport loads with a length of up to 8 metres in a space-saving manner.

Customer statement

Jungheinrich - an established rack supplier

"As an established rack supplier, Jungheinrich prevailed ahead of several other competitors during the tender," explains Thorsten Trumme, Head of Logistics at Internorm. "The critical factor for choosing Jungheinrich as a partner was their comprehensive consulting and professional cooperation during the entire selection process," says Trumme.



Thorsten Trumme, Head of Logistics, Internorm, Damme, Germany

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Food and beverages.

Solutions for food logistics.

Focus on food logistics: fitness for your supply chain

The food industry with its foodstuffs, beverages and animal feed sectors is one of the largest market segments in the world of logistics, and it is also one of the most challenging. As one of the most experienced and innovative providers of logistics and intralogistics solutions, we have developed powerful solutions in which the food chain configuration is based on seamless information and supply chains, advanced technologies and the highest service quality.

Future trends in the food industry are dictated by automation, speed and flexibility. To enable timely production and distribution of foodstuffs, beverages and animal feed, we have developed suitable logistics solutions offering maximum levels of efficiency, hygiene and safety.

What are your goals: do you want to exploit the full potential of digitalisation? Or perhaps you are interested in networking, transparency and maximum efficiency for your warehouse processes? Maybe you want to find out how the Internet of Things can boost your business models? Whatever your objective, the answer most likely lies in automation and maximum speed. To assist you in achieving your goals, we can provide customised, efficient and flexible warehouse and picking solutions. These can be individually configured to suit any business size, and can also be fully automated with intelligent control on the part of our Jungheinrich Warehouse Management System (WMS). Whatever you opt for, you will always benefit from perfect hygiene, cleanliness and safety. And you can also choose to have everything from a single source.

Adriaan Goede B.V., Landsmeer, Netherlands **Industry:**

Food industry, production of egg powder

Task:

Project planning and realisation of a new racking system for effective storage

Project duration:

02.2016 - 03.2016

Services:

- Multi-Depth Storage System
- Jungheinrich Under Pallet Carrier
- Channel racking
- Jungheinrich radio data transmission systems
- · System equipment

Most important results:

- Increased use of space
- Semi-automatic pallet storage
- Increase of picking and storage performance
- Improvement of working conditions in regards to the safety
- Long-term cost savings

Processing of more than two million eggs daily

Through decades of experience, the family-owned company Adriaan Goede B.V., which was founded in 1985, has developed into a worldwide reliable and flexible supplier of egg products. The key competences of the company are the production and the supply of spray-dried egg

powders as well as the production of liquid egg products. In total, Adriaan Goede B.V. processes more than two million eggs every day to produce high-quality egg products.

Production in stock

Due to seasonal fluctuations of the market, Adriaan Goede B.V. produces in stock to ensure a high level of delivery reliability for its customers.

New warehouse

The positive development of the demand for egg powder products brought the warehouse capacity of Adriaan Goede B.V., to its limits, which prompted the need for additional storage space. On the company premises of Adriaan Goede B.V. a new warehouse was to be built using the latest technologies to allow maximum utilisation of the existing space.

The requirement

Efficient use of space

The challenge for Jungheinrich was clear: it had to be a solution that would increase the storage capacity within the existing space and ensure the storage principle First-In First-Out (FIFO).

The solution

Multi-Depth Storage System

Jungheinrich supplied Adriaan Goede B.V. with an all-inone solution featuring channel racking, carrier trucks and
shuttles. Simple and efficient technology is the basis for
cost-effective storage. The Multi-Depth Storage System
now offers space for 720 pallets, which can be stored
according to the First-In First-Out principle in each of the
18 channel racks. "It is not necessary to empty a corridor
first to have access to the upper pallets," the owner of
Goede's explained.

The implemented all-in-one solution reveals many advantages for the customer such as time savings and increased work safety for the employees. With a controlling device on the truck, the driver can control the UPC on his terminal while driving, thus avoiding waiting times. The work safety of the employees has also improved because there is no longer the need for complex manoeuvring with the truck. At the same time, the number of trucks in the warehouse could be reduced due to the use of the UPC. "Accidents that usually occurred during hectic moments have been completely eliminated," says Goede. The efficient use of space also enables the company to save on long-

term storage costs. The Multi-Depth Storage System has proved to be the best solution for the customer Adriaan Goede B.V., as for other considered alternatives the use of space would have been 10 to 20% less.

Customer statement

Jungheinrich as a committed and reliable partner

When Dirk Goede of Adriaan Goede B.V. realised that the available space in his warehouse was running short, he did not hesitate for a moment and immediately contacted Jungheinrich: "We already had Jungheinrich rackings and trucks. Jungheinrich has proved in the past to be a committed and reliable partner," said Dirk Goede, owner of the family business.



Dirk Goede, owner of Adriaan Goede B.V. in Landsmeer.

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ECS Paneermeel Industrie B.V., Barneveld, Netherlands **Industry**:

Food industry, producer of breadcrumbs

Task

Project planning and realisation of a new racking system for effective storage

Project duration:

January 2016

Services:

- Multi-Depth Storage System
- Jungheinrich Under Pallet Carrier
- Channel racking with a total of 3,500 pallet bays
- Jungheinrich radio data transmission systems
- Reach trucks

Most important results:

- More flexibility for storage
- Improved safety
- Cost-effective storage
- Semi-automatic pallet storage

High-quality products for customers in the food industry

ECS Paneermeel Industrie B.V. is a daughter company of De Korrel Beheer B.V. The production of breadcrumbs has been one of the key competences of De Korrel Beheer since its foundation in 1994. The company supplies high-quality products to customers in various sectors of the food industry. In essence, these are standard goods, but the portfolio also includes tailor-made, customer-specific

solutions such as special grain size, colour, special mixtures or different packaging units. With today's production volume, ECS is one of the largest European producers in this sector.

25 million kilograms of breadcrumbs annually

As a result of the positive development of the order situation towards an annual production of 25 million kilograms of breadcrumbs, the company quickly outgrew its premises and had to lease external warehouses. In order to reduce the storage costs, it was necessary to increase the in-house storage capacity. At the same time, the environmental friendliness could be increased.

The choice: a Multi-Depth Storage System

For De Korrel Beheer, it was important that the First-In First-Out (FIFO) storage principle was ensured. The solution from Jungheinrich: semi-automation of the new production and warehouse building in Barneveld using a Jungheinrich UPC.

The requirement

Increase of goods volume, efficiency and flexibility

The task was, on the one hand, to ensure sufficient rack space for all goods, while at the same time increasing efficiency and flexibility in the warehouse. On the other hand, the First-In First-Out (FIFO) storage principle was to be maintained.

The solution

Multi-Depth Storage System for ECS Paneermeel

Previously, the warehouse structure of De Korrel Beheer primarily consisted of drive-in racks. However, the new allin-one solution, consisting of a channel rack, carrier trucks and shuttles, offers the company a number of advantages compared to drive-in racks. Simple and efficient technology is the basis for cost-effective storage. The new solution enables De Korrel Beheer to achieve a high space density, whilst using semi-automatic pallet storage. The heart of the Multi-Depth Storage System is the Under Pallet Carrier (UPC). The lowering of the pallets by standard fork arms ensures that they can still be stored and retrieved according to FIFO. By using the UPC, the customer ECS Paneermeel Industrie B.V. profits from optimum performance thanks to batch-by-batch channel filling. With the controlling device mounted on the truck, the driver can control the UPC on his terminal while driving to avoid unnecessary waiting. In addition, an interval contract providing for annual maintenance and inspection for trucks and UPCs has been completed.

Customer statement

Compact and flexible

"The Jungheinrich Multi-Depth Storage System and the Under Pallet Carrier (UPC) enable efficient and flexible storage of palletised goods in compact channel racking systems. Now we can store a complete batch in a channel without affecting the storage density of the upper or underlying channels. We are much more flexible," company owner John Dokter says, explaining his decision.



John Dokter, Managing Director of ECS Paneermeel Industrie B.V. in Barneveld

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Ricola AG, Laufen, Switzerland

Industry:

Food industry

Task:

Construction of a narrow-aisle warehouse with coordinated forklift trucks

Project duration:

03.2013 - 06.2014

Services:

- Narrow-aisle rack system with 6 aisles
- Three-lateral narrow aisle truck EKX 513
- Three-wheel electric forklift truck EFG 216 k
- Electric low-lift truck EJE C20
- Interval contract for maintenance and rack inspection

$Most\ important\ results:$

- Optimum space utilisation
- Flexible load lifting
- High energy efficiency
- Low CO₂ emissions

Who invented it?

Ricola AG, headquartered in the Swiss town of Laufen, is one of the most modern and innovative sweet manufacturers in the world and exports herbal specialities to more than 50 countries across Europe, Asia and America. Exports account for approx. 90% of its total turnover. The company, now in its third generation since its founding in 1930, generated turnover of 315.9 million Swiss francs in 2014 and employs around 400 staff.

Herb centre with high demands

For Ricola, the focus is always on sustainable and ecological principles when cultivating the herbs used and during the production process. This is particularly true in the new herb centre, which was opened directly adjacent to the production area in Laufen. Europe's largest loam construction plant, which satisfies the latest green building regulations as well as aesthetic demands, cleans, dries, cuts, stores and mixes 1,400,000 kg of fresh herbs every year. The forklift trucks used here also aim to meet similarly high environmental requirements.

Impressive quality and life cycle assessment

Ricola chose Jungheinrich as it had already gained excellent experience in quality and reliability. Jungheinrich forklift trucks and pallet trucks integrate seamlessly into the herb specialist's sustainability concept. These electric vehicles have a good life cycle assessment – thanks to low CO₂ emissions, high energy efficiency and energy recovery when braking.

The requirement

Excellent performance in a limited space

In addition to the ecological aspects of using forklift trucks, Ricola was also concerned about economic performance. The storage space needs to be used to optimum effect and the corresponding rack system requires the maximum possible number of pallet positions.

The solution

Narrow-aisle warehouse with perfect-fit forklift trucks

Jungheinrich installed B-type pallet racks for narrow-aisle warehouses offering low space requirements for aisles and an extremely high storage height. As a result, Ricola achieves very high space utilisation ratios in the herb warehouse. The narrow-aisle rack system is 30 m wide, 42 m long and around 11 m high and offers space for a total of 1,704 pallets distributed across six aisles. Thirty different herb types are stored here in big bags or sacks on pallets. A three-lateral narrow-aisle truck of type EKX 513 moves the big bags or sacks from the loading area and stores these in or retrieves them from the narrowaisle warehouse. Since Ricola uses different pallet types, the narrow-aisle truck was designed flexibly to be compatible with all pallet types, such as Euro, industrial and plastic pallets. The EKX 513 has a load capacity of 1.25 t and a lift height of 8,370 mm. Thanks to Jungheinrich's three-phase AC technology, the forklift truck achieves high performance with improved energy utilisation. As a result, the forklift trucks can be used in normal operations without changing a battery across two shifts. The EKX can be operated manually or by warehouse navigation, and then travels independently to the storage location by means of induction guidance at a speed of up to 10.5 km/h. The operator is informed of the pallet position from which to retrieve or in which to store the item in question by the Warehouse Management System. If required, stepped upgrades are available as far as fully automatic. For preproduction supply - quarantine warehouse, cutting plant

and mixing plant – Ricola acquired a Jungheinrich EFG 216k three-lateral electric forklift truck with a 1.6 t capacity. This transports the finished herbs from preproduction to the loading area, from where the narrow-aisle truck stores these in the high bay rack. Thanks to this compact vehicle, Ricola can operate with maximum efficiency. Energy is recovered by the flow of energy back into the system when lowering the load and regenerative braking. This vehicle also allows Ricola to work with two full shifts without having to change batteries. An electric low-lift truck from the EJE C20 series with a capacity of two tonnes is used for fitting conveyor technology, which connects the herb centre to sweet production in the adjacent building.

The statement

Sustainable and efficient

"With Jungheinrich's solution we can efficiently and sustainably map our internal logistics processes in the warehouse. This once again shows that productivity and aesthetics are not mutually exclusive."



Thomas Aeschlimann, Division Manager Herb Cultivation, Ricola AG, Laufen, Switzerland.

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Mineralquelle Eptingen AG, Eptingen, Switzerland **Industry**:

Beverage industry

Task:

Construction of a multi-depth storage system with Under Pallet Carrier (UPC)

Services:

- Extensive advice
- Compact storage system with 44 channels, each 10 pallets deep
- 2 UPC shuttles
- EFG 425 electric four wheel counterbalanced forklift truck as basic truck
- Interval contract for maintenance and rack inspection **Most important results:**
- Concentration of storage bay
- Greater space utilisation
- Faster throughput
- Common storage of similar articles

A successful family business

Founded in 1899, the family-owned company Mineralquelle Eptingen AG, based in Eptingen, Switzerland, comprises the two filling and production sites at Eptingen and Lostorf. The fourth generation company employs a total of 65 people. Every year the company produces around 50 million bottles, of which around 35 million are at the Eptingen site.

The storage bay was becoming narrow

The success of the business and the associated higher output of the Eptinger filling systems led to a steadily increasing demand for storage. In addition, the pallets destined for dispatch were in different locations, which took up considerable space. So a logistics solution was needed that would make better use of the existing storage space.

Changing the storage system

The solution was found in a compact storage system with Under Pallet Carrier (UPC). A UPC rack provides sufficient height and width for numerous pallet channels. The low height consumption per channel level allows effective use of the storage height in Eptingen. In particular, UPC racks are suitable for storing and retrieving a large number of pallets with the same stored goods – an important argument for the company. High turnover rates result from the having more pallets per article and longer channels.

The requirement

More space over the same area

The company had switched from pure glass bottles to predominantly PET bottles, which could not be stacked as high. Additional space was needed for the increased output and the different ways in which the storage areas for shipping were used. Overall, this led to space problems in Eptingen, which needed to be resolved by a more effective storage system.

The solution

Space utilisation significantly increased

In its role as the system supplier, Jungheinrich planned and implemented a multi-depth storage system for Mineralguelle Eptingen AG. The new racking system in Eptingen comprises 44 channels, each 10 pallets deep, and two UPC shuttles. The way a UPC rack operates is extremely simple: The UPC is picked up with by a carrier truck - in Eptingen this task is assumed by a Jungheinrich EFG 425 electric four-wheel counterbalanced forklift truck - and used in the pallet channel. There, the carrier automatically drives under the pallet without being connected to the carrier truck. After depositing the first pallet on the UPC rail in the rack channel and pressing the start button, the control system automatically performs all necessary travel and lift movements. Sensors recognise the position of stored pallets. The storage and retrieval of new pallets is collision-free and can be performed either using the LIFO method (Last In – First Out) or using the FIFO method (First In - First Out). As the

lateral loading of trucks tends to dominate in the beverage industry, this requires the side lifting of pallets. Jungheinrich has specially developed the UPC P1 for these requirements. The carrier's battery charger allows overnight charging at any 230V AC outlet, sufficient for 8 to 10 hours of use.

Customer statement

All-round satisfaction

"For us, the UPC rack is the ideal solution, and the contact and advice as well as the structure of the racking system and its commissioning by Jungheinrich worked perfectly," says Franz Kölliker, Operations Manager at Eptingen and member of the Executive Board of the Mineralquelle Eptingen AG, describing the result and the cooperation.



Multi-depth storage system, Mineralquelle Eptingen AG, Eptingen, Switzerland

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Logistics.

Storage and transport solutions.

Everything you need for future-proof, error-free processes

In these times of globalised logistics, cost-efficient outsourcing of services has become standard procedure. We will support you with tailored solutions for your goods and supply chains, with your storage, transport, automation and everything else required to future-proof your logistics processes.

The world of logistics is facing significant challenges in the form of ever-shorter delivery times, growing price pressure and increasingly complex distribution requirements. Year after year, new savings potential has to be identified in this sector in order to survive in a fiercely contested global market. With us at your side, you can look to the future with confidence.

We will help you to implement cost-efficient, time-saving and flexible workflows. In doing so, we will attribute the utmost importance to a seamless and error-free logistics process as well as to the safety of your employees. Our powerful IT infrastructure guarantees efficiency and transparency, for example, in the form of end-to-end shipment tracking.

Do you handle different load carriers, or are you faced with an ever-increasing range of products? We offer tailored logistics solutions for all our partners and are always ready to help thanks to our comprehensive service network.



Transportes J. Amaral, S.A., Estarreja, Portugal

Industry:

Logistics

Task:

Planning, development and realisation of outfitting a new logistics platform

Project duration:

05.2014 - 07.2017

Services:

- Jungheinrich pallet racking with 8,550 storage locations
- warehouseNAVIGATION for narrow aisles
- 2 Jungheinrich high-rack stackers EKX 516
- 2 electric three-wheel counterbalance trucks EFG 216k
- 3 electric-powered pallet trucks ERE 120

Most important results:

- Optimised travel routes
- Space-saving
- Increased efficiency
- Fault reduction
- Easing of employees' workload

Freight transport throughout Europe

Founded in 1947, the Portuguese company TJA Transportes J. Amaral, S.A., has been specialising in freight transport for more than 70 years. With more than 800 employees and a fleet of more than 650 vehicles, they are now the reference in their field throughout Europe.

New challenges and individual customer needs

To respond to the continued business growth, a series of new challenges and, in particular, the individual needs of their customers, the freight transport and logistics company invested in a new logistics platform in Estarreja in the north of Portugal.

The right partner - Jungheinrich

The very good experiences TJA had made with Jungheinrich put the German intralogistics provider on the shortlist of potential partner right from the start. Jungheinrich's very positive references from projects with other customers attracted additional attention. Ultimately, the quality of the Jungheinrich products and the value of the advice during the entire consulting and planning phase were the decisive factors in choosing Jungheinrich.

The requirement

Complete support of customer supply chain processes

In order to fully integrate all the processes that make up their customers' supply chain, TJA needed a new logistics platform in a strategic location. To be able to remain at the forefront of the market and to respond to customer needs, they required an optimally coordinated warehouse equipment.

TJA gains significantly in throughput and thus in productivity. Equipped with inductive guidance and Jungheinrich warehouseNAVIGATION, the semi-automatic operation enables precise location management. With the RFID technology, vehicles moving in the narrow aisles are precisely tracked by the transponders located in the storage floors, thus the location of the truck is known at all times. This increases the storage and retrieval quality, while reducing error rates.

The solution

Customised logistics concept

The solution includes Jungheinrich pallet racks and various Jungheinrich trucks. The new logistics platform offers space for more than 30,000 pallet storage locations on a total storage area of 11,500 m². The pallet racks in combination with the EKX 516 high-rack stackers for narrow aisles are the highlight of the solution.

Customer statement

Increased productivity and eased workload of employees

The advantages of the solution with warehouseNAVIGATION lie in its considerable space optimisation, the easing of the employees' workload as well as the precise approach to the picking locations. By using two Jungheinrich EKX 516,



Jungheinrich high-rack stacker EKX 516.

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GLX Global Logistic Services GmbH, Freienbrink, Germany **Industry**:

Logistics services

Task:

Development of a complete intralogistics solution for the construction of a new distribution centre

Project duration:

04.2017 - 06.2017

Services:

- Jungheinrich pallet rack type MPR B with 15,047 storage locations
- Jungheinrich modular racking system with approx.
 3,500 shelves and a total of approx.
 10,500 storage locations
- 20 Jungheinrich trucks
- Special adaptations for enhanced fire protection

Most important results:

- Increase of the volume of goods as well as of the overall capacity
- Maximised order-picking performance
- More efficient processes and shorter picking times

Medium-sized logistics service provider

The GLX Group was founded in 1999 and has since become a successfully growing company in the field of Supply Chain Management.

The company provides logistics packages from complete warehousing via in-house and outsourcing solutions to worldwide transport services. With more than six locations and around 250 employees, GLX generates a yearly turnover of approx. 20 million euros.

Response to changed market conditions

The strong market growth of the customer Knorr Bremse caused the GLX warehouses in Berlin-Marzahn and Augsburg to reach their capacity limits. The additionally required storage capacity made it necessary to expand the storage space with the construction of a new distribution centre. Merging the two locations into one new site was not only in line with the specific requirements of the GLX Group but also offered the opportunity to exploit synergies and increase efficiency.

Jungheinrich – everything from a single source

For the construction of the new distribution centre, GLX was looking for a full-service provider as well as a single contact person with project responsibility. After a thorough selection phase with strong competition, the customer opted for Jungheinrich, as GLX has already been relying on Jungheinrich trucks for a long time. Together, the two companies developed an entire intralogistics solution for which Jungheinrich supplied all essential components from a single source.

The requirement

Increase in storage capacity and efficiency

GLX's investment into a new distribution centre resulted from the two locations in Berlin-Marzahn and Augsburg reaching their capacity limits. By building the new distribution centre, the goal was to significantly increase the storage capacity. During the planning phase, Jungheinrich together with GLX analysed all logistics processes in detail. The greatest challenge turned out to be the enormous range of products that had to be stored.

Besides an efficient storage process, GLX also expected fast and flexible retrieval processes for every individual order-picking operation.

The solution

Complete intralogistics package

The new and 15,000 m² large distribution centre is located southeast of Berlin, from where GLX is now operating the European HUB for its clients' spare parts logistics and after sales services. A special feature of the Jungheinrich solution is the modular racking system. Here, small casks and containers are stored and retrieved in four aisles with about 10,500 storage spaces, being operated by two inductively guided Jungheinrich vertical order pickers of the type EKS 210. Additionally, the modular racking system offers a special solution for fire protection to prevent the use of a rack sprinkler system. The Jungheinrich solution also includes a wide-aisle heavy-load pallet racking system with approximately 15,000 storage spaces, which is operated by reach trucks. In total, 20 Jungheinrich trucks are used for transporting within the warehouse, which is 140 metres long and 110 metres wide.

Customer statement

Jointly developed solution - from beginning to end

"From beginning to end, the entire solution was developed together with Jungheinrich," explains Roland Becker, Managing Director of GLX Global Logistic Services. "The Warehouse layout and material flow are perfectly adapted to our requirements. Jungheinrich provided a complete intralogistics package and we are now benefiting from a tailor-made storage system including an innovative order-picking system," says Becker. And GLX is already planning for the future. "We are planning to equip our vertical order pickers with the Jungheinrich warehouse-NAVIGATION, which is directly connected to the SAP system. Jungheinrich has already delivered the necessary components for the installation of the warehouse navigation system."



Roland Becker, Managing Director, GLX Global Logistic Service GmbH, Freienbrink

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Jungheinrich genuine spare parts reach any location in the shortest time possible due to optimised warehouse logistics.



Project:

Jungheinrich Service & Parts AG & Co. KG, Kaltenkirchen, Germany

Industry:

Spare parts logistics

Task

Construction of a new spare parts warehouse including racking, vehicles and Warehouse Management System

Project duration:

12.2010 - 12.2013

Services:

- Seven-aisle high-bay warehouse with 21,168 pallet locations
- Eight-aisle automatic small-part warehouse with 80,000 container spaces
- Separate storage areas for fast-moving goods, bulky goods and hazardous materials
- Pallet and container conveyor systems
- Various forklift trucks from the Jungheinrich product portfolio
- Jungheinrich WMS and control technology

Most important results:

- Faster and more efficient spare parts logistics worldwide
- >50% increased productivity in warehouse logistics
- >98% availability
- 24/7 delivery requirements established
- Daily shipping of up to 8,000 spare parts positions

Jungheinrich - Machines. Ideas. Solutions.

Jungheinrich ranks among the world's leading enterprises in the sectors of material handling equipment, warehousing and material flow engineering. As a manufacturing service and solutions provider of intralogistics, the company provides its customers with a comprehensive product range of forklift trucks, racking systems and excellent services.

Tailor-made logistics system solutions

In order to meet the requirements regarding reliability, efficiency and warehouse safety, a comprehensive logistics system solution was required, composed of various racking systems, a warehouse control system and connected vehicles via Jungheinrich WMS. This solution created a solid base for the improved fulfilment of future market requirements, such as 24/7 availability and faster and more efficient global spare parts logistics.

Jungheinrich as a general contractor

As a general contractor for all-in-one solutions, Jungheinrich developed and implemented the central warehouse with in-house resources on the basis of a new logistics concept with optimised spare parts management. This major project was implemented by the Jungheinrich division Logistics Systems. Further, the departments Spare Parts Logistics and Automated Systems as well as the Jungheinrich Sales Unit North were involved in the project and responsible for planning, design and realisation of the automated plant components. In addition, the WMS and the control technology were developed in-house.

The requirement

Provision of a global and comprehensive logistics network

Global, fast and efficient spare parts logistics can only be guaranteed by highly automated warehouses and logistics networks all around the world. The spare parts management at Jungheinrich makes ongoing investments to process all orders within 24 hours, covering all time zones. As a result, Jungheinrich has the opportunity to set new standards in spare parts logistics, strengthen its competitive advantage in the spare parts business and expand availability of spare parts for its global customers.

The solution

Smooth interaction of Jungheinrich WMS, high-bay warehouse, automated small parts storage and vehicles

In order to optimise the spare parts management, a 31-metre high-bay warehouse as well as an automated small parts storage were installed in Kaltenkirchen near Hamburg. The entire solution totals 22,000 m² of storage space, replacing the existing spare parts warehouse and management in Norderstedt. The centrepiece of the automated storage system in the Jungheinrich Kaltenkirchen Spare Parts Centre is a seven-aisle pallet high-bay warehouse with a storage capacity of 21,168 pallets as well as an eight-aisle automated small parts storage with 80,000 container spaces. In addition, the new logistics centre includes separate storage areas for fast-moving goods, bulky goods and hazardous materials as well as a structurally separated export area. These manual storage areas are equipped with Jungheinrich racks. The order picking area consists of ten container workstations and eight combined picking workstations for pallets and container goods, where order-related collection of articles in cardboard boxes, special logistic boxes or on pallets takes place. The individual areas are connected by pallet and container conveyor technology with a total length of more than two kilometres. Furthermore, various forklift trucks from the Jungheinrich product portfolio are in operation. Two technicians each are on site in an early

and late shift in a two-shift system. The service package includes maintenance work in the night and weekend shift. In addition, a premium software support service and an interval contract for the hardware were concluded.

Customer statement

Jungheinrich sets a new standard in the field of spare parts logistics

In the future, up to 1,000 spare parts can be delivered per hour in three time zones (America, Central Europe and Asia) thanks to the customised logistics system solutions. "This way, Jungheinrich is setting a new standard in spare parts logistics, strengthening its competitive advantage in the spare parts business and improving its spare parts availability to more than 98% for its globally operating customers," said Dirk Schulz, Head of the Customer Service Group at Jungheinrich AG. The 3,800 m² office space of the Spare Parts Centre was set up as an openspace office. "The transparent and direct communication paths between employees are clearly advantageous in this open-space concept. Received orders are processed more efficiently so that our customers can get their ordered spare parts faster," says Stefan Brehm, Managing Director, Jungheinrich Service & Parts AG & Co. KG.



Service & Parts AG & Co. KG in Kaltenkirchen.

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Winkler Logistik GmbH, Ulm, Germany

Industry:

Commercial vehicle spare parts wholesale

Task:

Integration of the narrow-aisle warehouse into the customer processes

Project duration:

02.2012 - 03.2013

Services:

- Narrow-aisle truck with warehouseNAVIGATION
- Jungheinrich Logistics Interface for truck connection
- Reach trucks
- Racking systems

Most important results:

- 18 to 20% improvement in order-picking efficiency
- Integration into existing IT and logistics processes

Versatile high-quality services

The Winkler Group is one of Europe's leading whole-salers in the field of commercial vehicle spare parts. With more than 1,400 employees, the company can offer all brand manufacturers an extensive range of spare parts. In order to guarantee the best possible delivery capability, Winkler Logistik GmbH operates a central warehouse in Ulm, among others. The company's core expertise does

not just include fast delivery capability but also the permanently high quality of its full range.

Process optimisation in the narrow-aisle warehouse

Due to its continuous growth, Winkler Logistik GmbH decided to expand its central warehouse in Ulm. To use the available space to its best possible advantage while retaining rapid access to products, the company decided on a narrow-aisle warehouse with more than 15,300 pallet locations. Jungheinrich was able to meet the requirements of the customer and optimally integrate the narrow-aisle warehouse into the company's already excellent processes. Thanks to high-rack stackers, the Logistics Interface as interface software and the Jungheinrich warehouseNAVIGATION, not only was it possible to further optimise the existing processes but also to guarantee the smooth flow of operations.

Longevity and automatic tracking

Winkler Logistik GmbH was looking for a supplier which, in addition to delivering reliable trucks, would also be able to supply navigation in narrow aisles without the need for costly barcode scanning. The Logistics Interface and innovative RFID technology offered by Jungheinrich made it the perfect choice.

The requirement

Integration into existing processes

Fast delivery capability and high quality are the characteristics of Winkler Logistik GmbH. They are also reflected in the company's impressive overall logistics system. In order to meet the customer's requirements, the narrow-aisle warehouse had to be integrated into the existing processes. The link to the conveyor system was therefore just as important as the precise approach to storage bays in the narrow-aisle warehouse. In order to save valuable time when order picking, it was important to the customer that there is no barcode scanning at the storage bay.

The solution

Forklifts, Logistics Interface and warehouseNAVIGATION in synergy

After analysing the existing requirements, Winkler decided on six EKS 312 medium/high-level order pickers and three EKX 515 electric high-level combination picker/stackers from Jungheinrich; the latter truck could also be operated fully automatically. At Winkler, the trucks are operated semi-automatically in the ten-metre-high narrow aisle and have Jungheinrich warehouseNAVIGATION. This innovative assistance system is connected via the Logistics Interface software to the customer's own warehouse management system, so that orders can be forwarded directly on to the trucks. All the operator needs to do is press the accelerator and the high-rack stacker will travel semi-automatically and via the most efficient route to the desired location. The truck is able to orient itself within the aisles using RFID transponders and knows its precise location at all times. As soon as the order is executed and the fork returns to its home position, this information will be combined. The Logistics Interface then reports the conclusion of the order back to the Warehouse Management System. This therefore dispenses entirely with time-consuming barcode scans of the target location.

The RFID technology and the Jungheinrich Logistics Interface also enable the conveyor system at the beginning of the narrow-aisle warehouse to be approached with the Jungheinrich warehouseNAVIGATION system.

Customer statement

Increased efficiency due to Jungheinrich warehouseNAVIGATION

Herbert Skala, Logistics Manager at Winkler Logistik GmbH, is convinced of the benefits of Jungheinrich's warehouseNAVIGATION: "Jungheinrich was able to smoothly connect the new narrow-aisle warehouse to our materials handling technology. This has significantly optimised processes in the new warehouse." The fact that the warehouseNAVIGATION works with RFID technology was a key reason for choosing the Jungheinrich solution: "In addition to the longevity of the trucks, the fact that RFID transponders in the floor removed the need for our operators to carry out barcode scans was decisive to the awarding of the contract. This contributes significantly to the improved efficiency of the order picking."



Herbert Skala, Logistics Manager, Winkler Logistik GmbH in Ulm.

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Rhenus Retail Service GmbH, Minden, Germany **Industry**:

Logistics services

Task:

Integration of an Automated Guided Vehicle as a standalone solution

Services:

- Automated Guided Vehicle (AGV) EKS 210a
- Transport control software Traffic Manager
- Programming of 18 pick-up tracks

Most important results:

- Increased efficiency and productivity without altering warehouse topology
- 34 transports per hour with a daily volume of 165 to 230 pallets
- Enhanced safety through sensor technology
- Significant reduction in transport damage

Improved in-house processes without changes to the warehouse topology

Rhenus Retail Service is a subsidiary of the Rhenus Group and has been specialising in contract logistics since 2005. The company is located in Minden with a storage area of 35,500 m². In order to improve internal processes while maintaining the same warehouse topology, automation is gaining more relevance, especially since Rhenus Retail Service is known as a service and solutions provider for logistics.

Automated stand-alone solution

An Automated Guided Vehicle without system connection was chosen to avoid links with the existing high-bay warehouse and the other systems.

Since the AGV allows standardised processes, waiting and processing times as well as manual transports are eliminated

Jungheinrich – a competent technology partner

By performing a test, the company wanted to ascertain whether an Automated Guided Vehicle without system connection would successfully be able to operate. The Jungheinrich AGV provided sufficient evidence that it could. The vehicle was programmed by Jungheinrich and optimised to the local conditions.

The requirement

Independent transport solution without connection to the system

The main task entailed the integration of a reliable vehicle into existing infrastructures, without requiring additional areas or traffic routes. Since the AGV does not need any new interfaces, it was able to meet the requirements. Even the challenge of busy traffic areas did not pose any problems for the AGV.

The solution

EKS 210a - driverless and safe

The EKS 210a is an automated serial vehicle with a comprehensive safety package. The precise reflector navigation as well as additional sensors allow accurate positioning in the aisles. This required only minor changes to the existing periphery, since the conveyor technology, among other things, could also be used. Standardised procedures eliminate waiting and processing times as well as non-valuable tasks.

Customer statement

Precise transport and increased safety

"We are already operating with automated systems, a high-bay warehouse and an unloading facility for shuttle trailers. However, the AGV was our first contact with a driverless vehicle," says Alexander Schüller, Managing Director of Rhenus Retail Service GmbH. According to Schüller, the involvement of the employees was a key factor for the successful investment in the AGV. "Our employees have accepted the solution with the AGV, because they were included in the project processes right from the start. In the past, they used to transport pallets with counterbalance trucks from the warehouse to the conveyor system of the high-bay warehouse. Today, they contribute their know-how for demanding tasks for which the company needs their experience. The task is to structure the daily incoming goods and efficiently schedule the AGV into daily operations, regarding incoming goods priorities. Additionally, the Jungheinrich AGV is ideal for standardised processes and its application is future-oriented. There is also potential for integrating even more AGVs into the Rhenus world," says Schüller.



Alexander Schüller, Managing Director, Rhenus Retail Service GmbH, Minden.

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UVEX SAFETY Logistics GmbH, Schwabach, Germany **Industry**:

Logistics for safety products

Task:

Replacement of existing, roller conveyor-based Automated Guided Vehicles from another supplier **Services:**

- Two Automated Guided Vehicles ERC 215a
- Jungheinrich Logistics Interface
- Barcode scanners
- Full system integration
- Premium software support service
- Hardware service with interval service contract incl. repair maintenance and safety check

Most important results:

- More flexibility
- · Greater throughput
- Higher degree of automation
- Virtual 100 % availability

Logistics service provider for safety products

UVEX SAFETY Logistics GmbH in Schwabach has been a logistics service provider exclusively for the UVEX GROUP since 2008. The UVEX SAFETY GROUP, which also operates an online shop for business customers, primarily supplies industrial customers with personal

protective equipment. The products of the UVEX SPORTS GROUP, which are appreciated by athletes of all disciplines worldwide, are well known.

The old system was reaching its limits

The Schwabach logistics service provider already had two Automated Guided Vehicles from another supplier in the dispatch department. Both were equipped with two roller conveyors. The disadvantage of the wireguided trucks was their defined routes, which could only have been changed at high cost. Apart from that, there were only two drop-off stations. Given these restrictions, the company would soon have reached its limits due to its growing transport volume.

More flexible at all levels

The Automated Guided Vehicles (AGV) supplied by Jungheinrich use laser navigation instead of wire guidance. This allows the vehicles to be integrated into an existing infrastructure without requiring ground work. An advantage that above all helps to set up more sources, drop-off stations and routes quickly and easily. In addition, the vehicles have forks. It is therefore possible for the vehicles to pick up pallets both from the conveyor systems and from the ground level and dispense the pallets at different heights.

The requirement

Vastly different shipping quantities

A particular challenge are the large variances in shipment volumes at UVEX SAFETY Logistics. The goods that are shipped range from small spare parts to export orders of 200 cubic meters. Every day, 2,500 to 3,000 packages are produced with sizes ranging from small quantities to whole pallets. The new automatic transport system for dispatch would therefore have to be very flexible.

The solution

A system that matches

The two AGV ERC 215a supply dispatch via a total of approx. 150 m long transport routes. Depending on the destination, the route leads directly to the dispatch department or to a narrow-aisle warehouse where UVEX SAFETY Logistics temporarily stores goods. The replenishments for the two-stage picking are taken from groundlevel fishbone-type transfer points. These can be partial or total withdrawals. The AGVs place the pallets with this destination in one of the ten spaces. Six single-tiered floor spaces are reserved for full pallets to be delivered. Another alternative is that the ERC 215a trucks transfer the load carriers to 18 floor spaces, which are arranged at the front of the narrow-aisle warehouse. The forklift trucks can also park the pallets on a conveyor system, which serves as a buffer zone for storage in the warehouse. Ultimately, the destination does not matter. With the aid of laser navigation and reflectors mounted on walls and racks, the ERC 215a can complete its transport orders and set the load carriers down with precision accuracy. The pallets are identified by a stationary barcode scanner at the pick-up point of the conveyor system. The barcode scanner scans the barcode attached to the respective load carrier and transmits the data to the Jungheinrich Logistics

Interface of the AGV appointed for transport. This middleware translates the information to be exchanged and thus facilitates the integration of the forklift trucks in existing or new system environments.

Customer statement

Smooth operation

"Jungheinrich met all of our expectations. The system works smoothly and there is no downtime because the ERC 215a achieve almost 100 % availability. This is also thanks to the fact that faults can often be rectified without having to contact the after sales service. Last but not least, the performance level of the forklift trucks is still sufficient when working at full load. If the throughput were increased further, this would create congestion in the downstream areas. Nevertheless, we plan to invest in another AGV for further transport tasks".



Dieter Kalb, Managing Director of UVEX SAFETY Logistics GmbH, Schwabach, Germany.

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ISO 9001 The German production facilities in Norderstedt, Moosburg and Landsberg are certified.



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