Do you have something to move?

We do it automatically.

Our Auto Pallet Movers take care of your transportation needs.

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Machines. Ideas. Solutions.

Auto Pallet Mover.
The key to optimising your intralogistics.

Our Auto Pallet Movers take care of your transportation automatically, accurately and reliably.

Do you recognise flows in your company from these questions?

- Are a few of your staff involved solely in servicing production machines in order to maintain the cycle times of the machines?
- Or are there employees who spend all day transporting goods from A to B?
- Do you have recurring daily internal transport tasks with which your employees are burdened in addition to their role?

If you answer yes to these questions, then our Auto Pallet Mover (APM) is the key to releasing previously untapped potential in your company.
Our automated guided vehicle system, the Auto Pallet Mover, offers you the opportunity to utilise your employees precisely where they are most profitable for your company – at their workstation. The standardised, uniform transport tasks can be taken over by the APM.
Perhaps you are not certain if automation is right for you – after all, you want to maintain flexibility in your company and you believe that materials handling technology or machinery will limit you with respect to flexibility and process change.
Rest assured: Our APMs adapt perfectly to your processes. They fit into your operation – as part of your fleet – next to the manual trucks and parallel to your employees. Thanks to intelligent route control, the APMs are able to search for the best route and execute their tasks reliably and efficiently.

Content


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Automation.
Based on tried and tested standard trucks.

The right concept for your needs

Our truck types are equipped for the transport of a diverse range of loading devices. Whether you use Euro pallets, industrial pallets or Düsseldorf pallets, whether you use special loading devices, lattice boxes or loading devices in special dimensions – we can offer you the appropriate APM for every application.
Each one of our APMs is ideally suited for a specific application area. But they all excel at: Efficiency, reliability and safety. Because the basis of our APMs are well engineered, CE-certified, series production trucks. Always on the cutting edge of technology. With wear-free, 3-phase AC motors, which guarantee maximum energy efficiency. With an optimum combination of battery and battery charging technology, thus reducing downtime to a minimum.
Equipped with ultra-modern automatic components, our APMs are ready for precision lifting and depositing of loads in your company. A wide variety of sensors ensure safety when in mixed operation mode with manual trucks and employees.
The comprehensive safety system as well as the precise lane guidance prevents damage to fixtures and fittings. In addition, warning fields guarantee the gentle braking and protective fields the immediate standstill of the APM when people or obstacles are detected in the truck's path.
Our APM systems adapt to suit your conditions. The existing transfer stations and machines can be integrated into the APM system. The additional purchase of pick-up and receiving stations is not usually necessary.

The following peripherals are among those possible:
- Storage platforms
- Scissor lift platforms
- Racking/racking systems
- Cantilever arms
- Conveyor systems
- Heavy-duty conveyors
- Floor spaces (single and multi-depth)
- Machinery spaces

Especially versatile: EKS 210a

With a capacity of up to 1,500 kg and a lift height of up to 3 m, the EKS 210a is an automated fork lift truck which can be used anywhere. Its cantilever forks can be adapted for the cost-effective transport of special loading devices or load carriers in special dimensions.
Additional strengths of the EKS 210a include:
- Long battery life
- Large standard safety package (e.g. personal protection scanner in drive and load direction)
- Versatile additional functions

Indicators for the use of an EKS 210a:
- Long operating times without boost charging or replacing a battery
- Loading devices
- Stacking and retrieval tasks
- Loading devices and stations which cannot be driven under

EKS 210a

ERC 215a

Especially flexible: ERC 215a

Compact truck dimensions and a small turning circle create the best prerequisites for the use of the ERC 215a in a confined space. In addition, a capacity of up to 1,500 kg and a lift height of up to 4 m guarantee its suitability for a wide range of applications in your company.

Indicators for the use of an ERC 215a:

- Higher lift heights
- Narrow aisles and entries
- Stations which cannot be driven under
- Standardised loading devices (e.g. Euro/ industrial pallets and similar designs)

ERE 225a

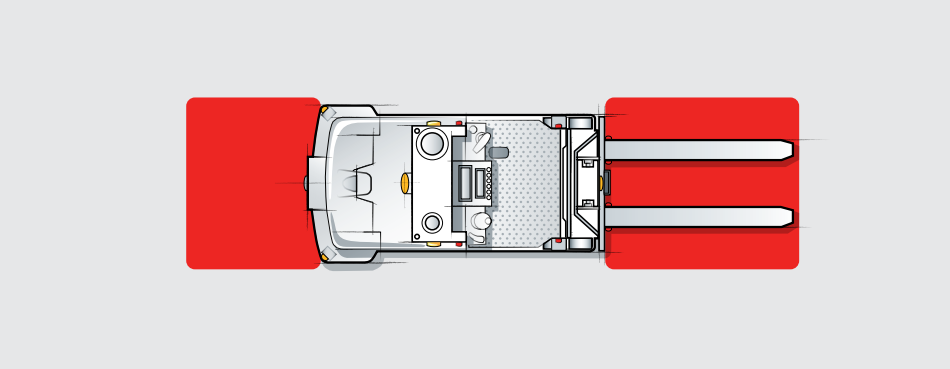
Especially powerful: ERE 225a

Forks up to 2.4 m in length and a maximum capacity of 2,500 kg are two factors in favour of the ERE 225a. It is therefore in a position to transport several pallets simultaneously – for example, two Euro pallets or four half pallets behind each other. The ERE 225a demonstrates its strengths particularly well when transporting heavy loads over longer distances.

Indicators for the use of an ERE 225a:

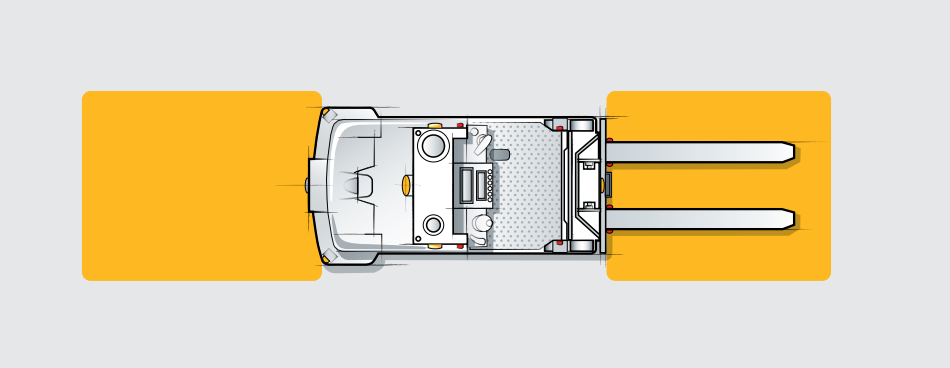
- High capacity
- Multi pallet transport
- Storage locations and conveyor systems at ground level
- Standardised loading devices (e.g. Euro/ industrial pallets and similar designs)

Safety.
Automated yet forward-thinking.



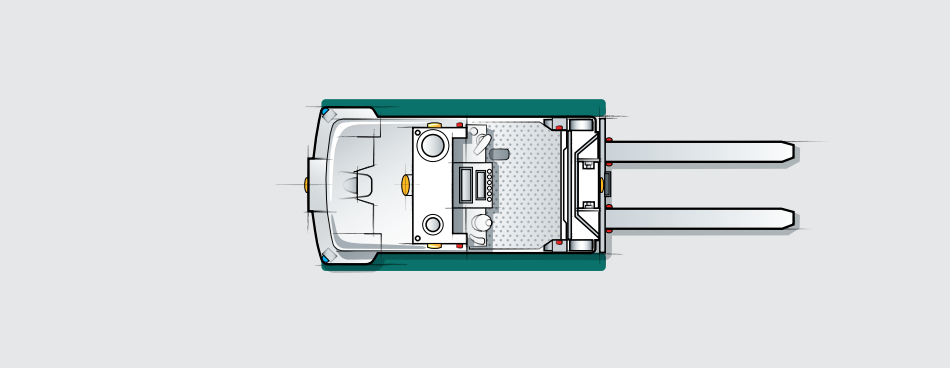
Protective field

Immediate stop
in front of obstacles



Warning field

Immediate braking
in front of obstacles



Side sensors

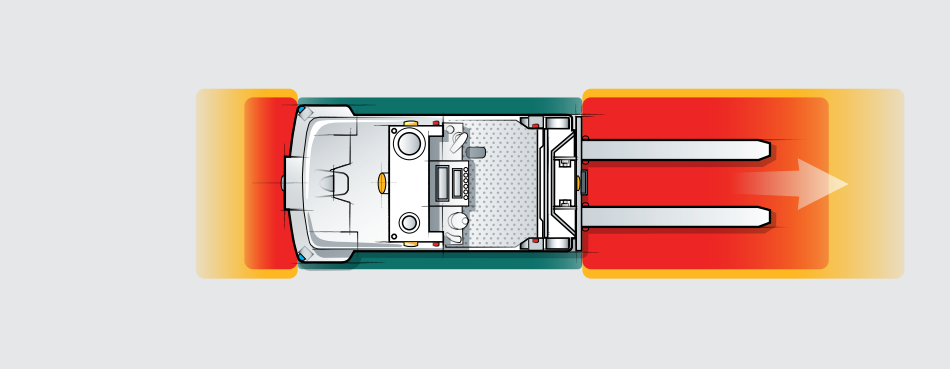
Protects the truck sides

Extensive safety sensors protect man, machine and load

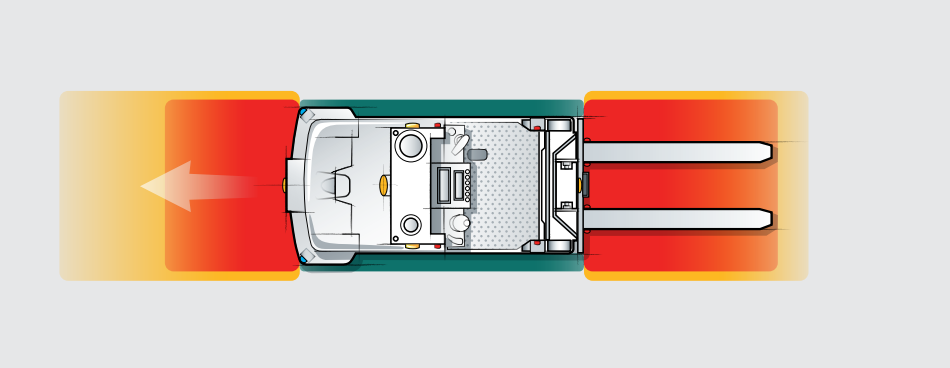
Auto Pallet Movers only travel on routes assigned to them. Nevertheless, there may be situations in which an employee inadvertently crosses the route. In this case, the extensive CE-certified safety system will initiate immediate braking. A key component of the system is the personal protection sensors – equipped with a warning and a protection field – which permanently monitor the direct routes of the APM.

If a person enters the warning field, the truck immediately slows its speed. If the person remains standing, it slows further to a standstill. In parallel, a signal is transmitted to the control panel, displaying the blocking of the truck.

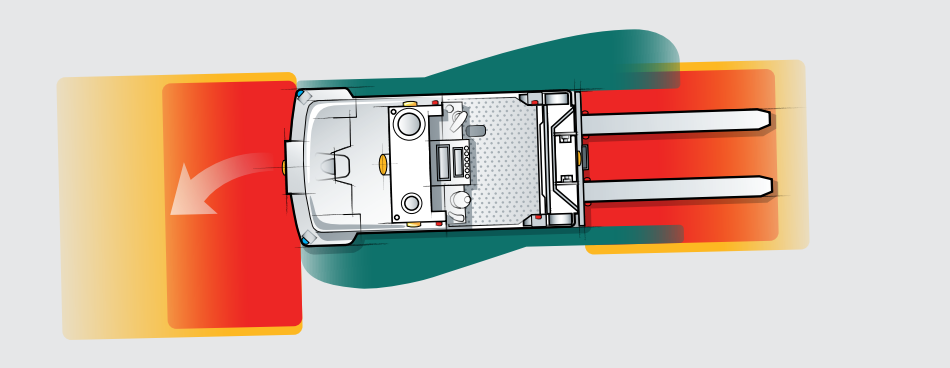
All APMs have a personal protection scanner fitted as standard in the drive direction. Depending on the truck speed, the field lengths of the safety area are adjusted.



Travel in load direction



Travel in drive direction



Cornering

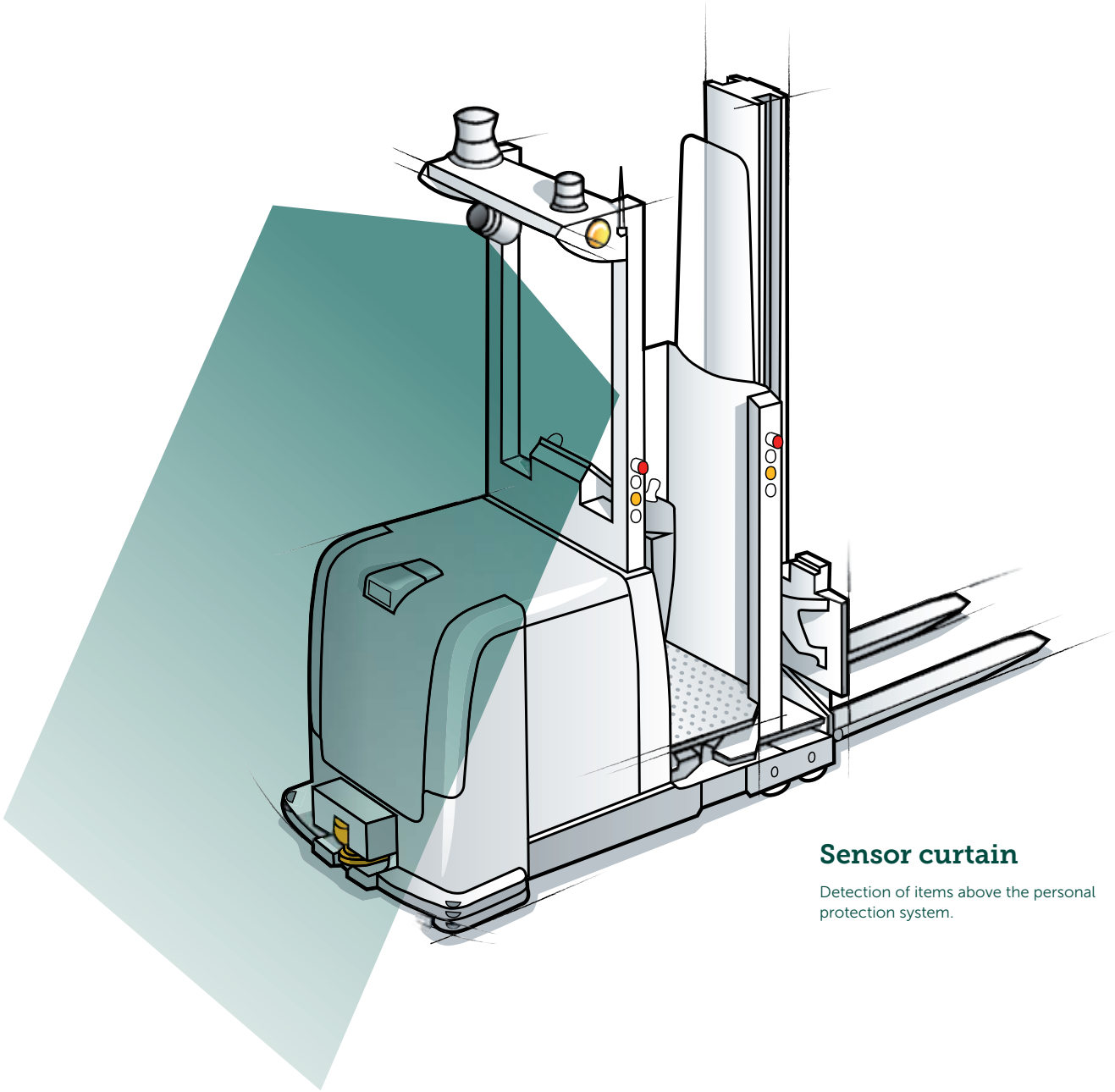
This means the faster the trucks move, the more their warning and units are on the go, the more they increase their warning and protection field and the more proactively they scan their surroundings.

Safety due to sensors on the truck sides

The Auto Pallet Movers also detect objects which may be located to the sides of the truck's path.

The side-mounted laser scanners enable these objects to be detected in advance. In addition, they serve as an additional feature when cornering. The sensors identify objects that could touch the outside of the truck while cornering during the journey. If this is the case, they provide a contactless stop of the truck.

Sensors.
For even more safety.



Sensor curtain

Detection of items above the personal protection system.

Additional safety with sensor curtain*

The purpose of the sensor curtain is to detect objects above and below the detection level of the personal protection sensor and to avoid a collision with these objects as far as possible.

For example, it can detect pallets and loads that are protruding too far out of the racking. The sensor curtain does not only do this when travelling straight ahead, it also ‘looks’ ahead into the curve.

*optional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Power supply.
The appropriate charging concept for every application.

The right energy concept for your system

Our APM system can be perfectly adapted to the work location. We will also define the optimal energy concept for your needs. In addition to its high energy efficiency, the EKS 210a also has energy recovery systems, for example. Depending on the vehicle type, it can easily and efficiently operate for one or two shifts without replacing or boost charging the battery. Alternative energy storage systems (e.g. Li-ion) with intelligent battery management are available as an alternative to proven lead-acid batteries.

Independent implementation of the charging strategy

Our APMs know when it's time to charge or, if necessary, to replace the battery, where they can do this and how to get there. The truck control constantly checks the current battery status. If a defined lower limit is reached, the system control unit is informed. At the end of its current order, the APM automatically travels to its assigned battery charging or changing station. There, in accordance with a defined charging strategy, the battery can either be changed or alternatively manually or automatically charged.

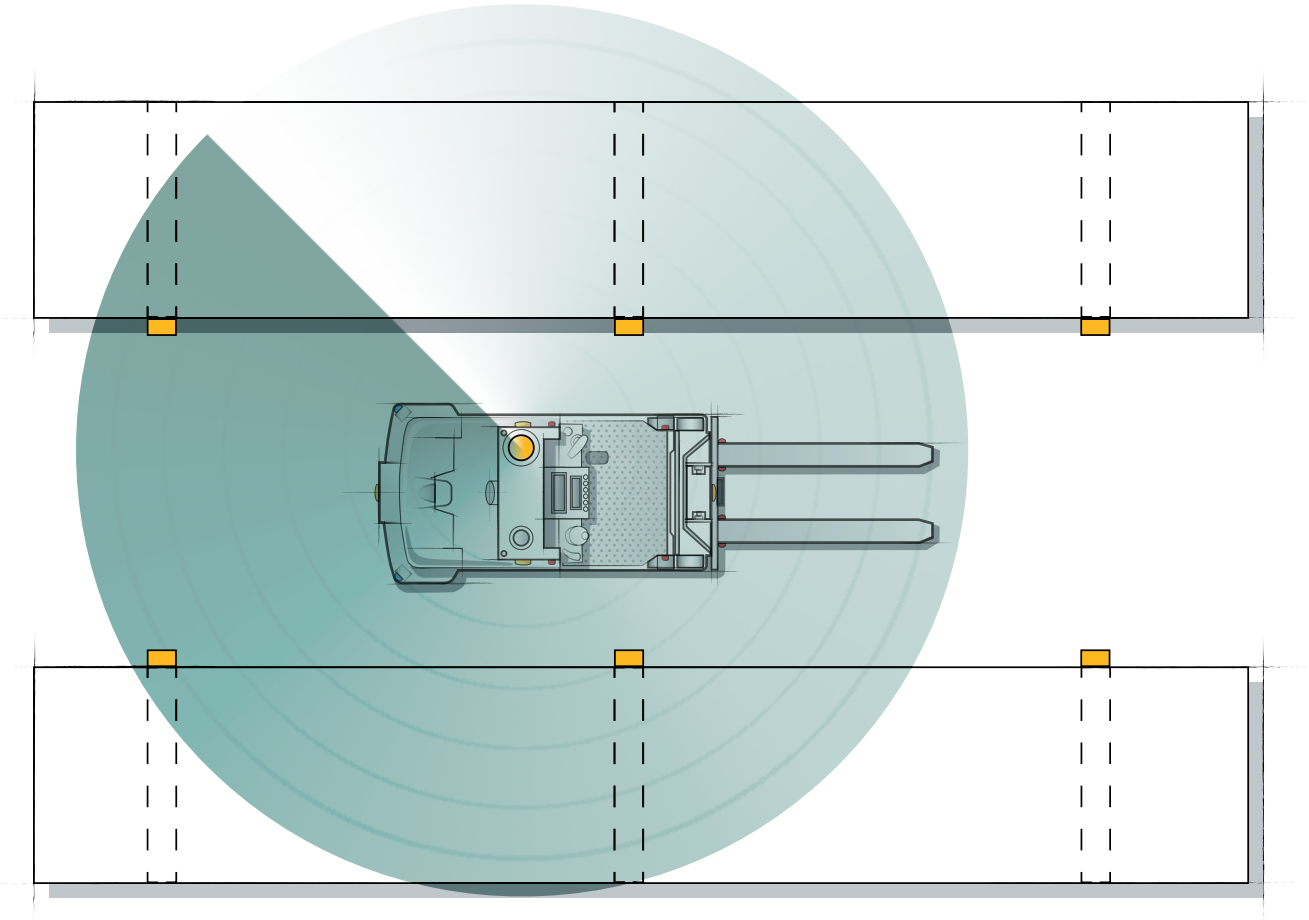
	Manual battery replacement	Battery charge with manual contact	Battery charge with automatic contact	Automatic boost charging
Single shift operation	0	++	++	–
Two-shift operation	++	+	+	+
Three-shift operation	++	–	–	++

Advantages of automatic charging

With automatic charging, no manual intervention is necessary. An intelligent charging strategy ensures maximum efficiency. When the APM achieves a defined charge status, it independently travels to the assigned charging station and makes contact with the charging unit. If contact is successfully made, the APM system starts the charger. After completion of the charging process, the APM automatically searches for the next job and returns to work.

Precision.

Precision accuracy thanks to laser navigation.



Laser navigation

A rapidly rotating laser beam detects reflectors that have been mounted in the warehouse.

Precise navigation in all areas of application

Our APMs are characterised by precision accuracy, reliability and flexibility. For the laser navigation, a laser beam rotates 360° approximately eight times a second. The laser on the truck detects reflectors that have been attached to racks, walls, columns or other peripherals in the warehouse. Navigation items on or in the floor are not necessary. The system automatically detects the reflector marks and measures the distance to them. Therefore, the trucks always know their position in the warehouse at any time. However, alternative navigation modes are also possible if you have special requirements.

Advantages:

- Easy integration of new routes
- Precision pick-up and depositing
- Maximum flexibility in course changes: Within the reflector layout all changes can be implemented via a software adaptation. This adaptation can be simply and flexibly made via remote access.
- No structural changes to the floor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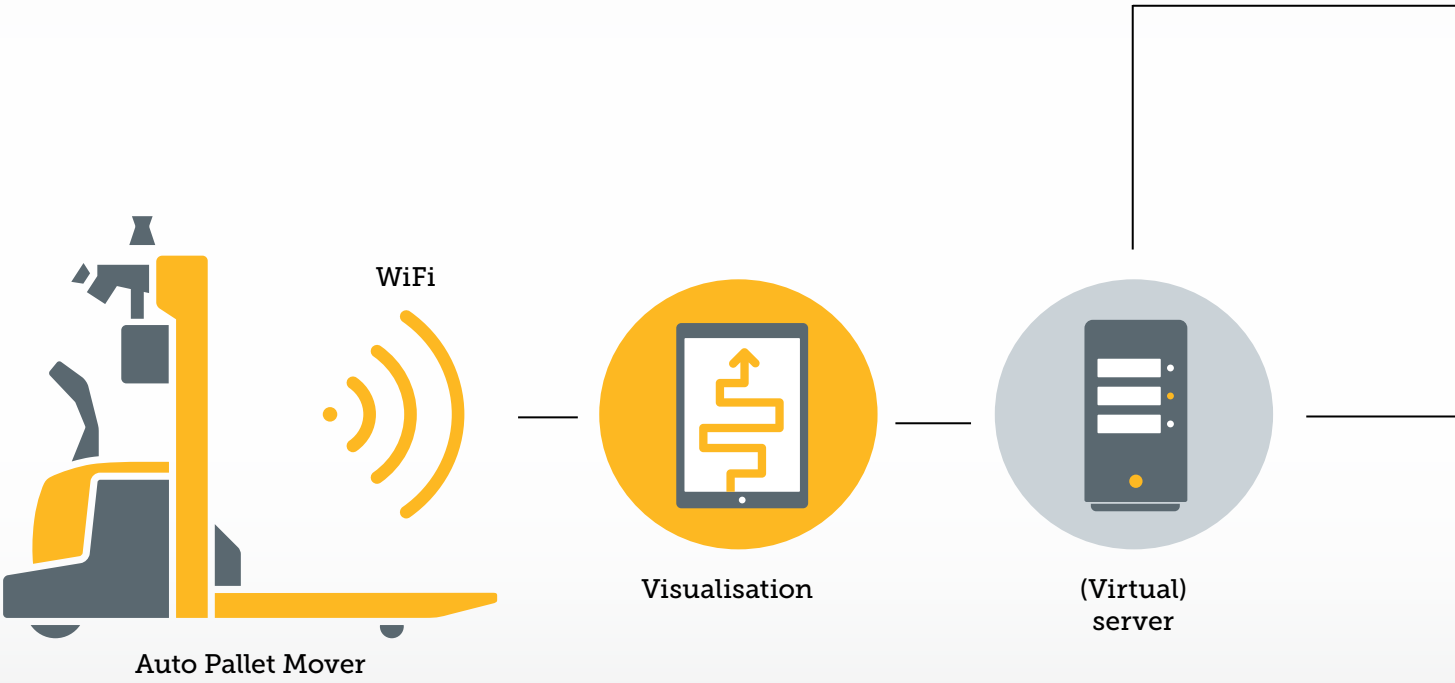


Integration.
Two operating modes with many options.

The APMs receive their orders, communicate with each other and receive information on strategies for implementation in the system via an existing WLAN or one we have installed. The APM are coordinated by the control system in such a way as to minimise blocking and waiting periods. There are two different variants for the system design: 'Stand-alone' or 'networked'.

The first step to take when deciding which system will suit your needs is the definition of the order generation: via machine signal, pushbutton, sensors or higher-level warehouse management system (WMS). A combination of different generation options can also be easily implemented.

Logistics Interface

ERP system

Connection

Rapid action doors
Fire-resistant external doors
Signal lights
Lifts
Conveyor systems

Order generation

Pushbutton
Sensors
Visualisation

'Stand-alone' system variant

In a stand-alone system, one or more APMs process one or more jobs independently. For example, machine tracks are emptied and the transport goods are stored at defined locations. The APM system can manage individual tracks and stations itself. The order is created by means of pushbuttons, sensors or also machine signals. In addition, it is possible to set up any orders – via clients at the required locations – which the system itself will execute. Gates, sensors and buttons can be connected via I/O signals.

If several APMs operate together in the stand-alone system, the orders are processed and weighted in the control system. In the process, the orders are assigned to the most appropriate APM. Selection criteria for this include, for example, the distance from the destination, the possible route taking into account the traffic situation, the implementation of the FiFo principle or the processing of orders according to priorities.

Good to know: The Jungheinrich Logistics Interface can be used to create a networked system from a stand-alone one.

'Networked' system variant

In a networked system, the orders are generated and managed by a warehouse management system (WMS). Our 'Jungheinrich WMS' warehouse management system can be used for this, but it is also possible to use an already existing system. The key to doing this is the use of the Jungheinrich Logistics Interface which is able to process orders from any WMS. In doing so, the Logistics Interface serves as an interface for the APM.

Alternatively, the Jungheinrich Logistics Interface can be used without a higher-level WMS. For example, block storage warehouses and buffer positions can be managed, specific multi-stage transport flows stored, alternative destinations defined for allocated destinations and more strategies for order processing can be implemented in the system.

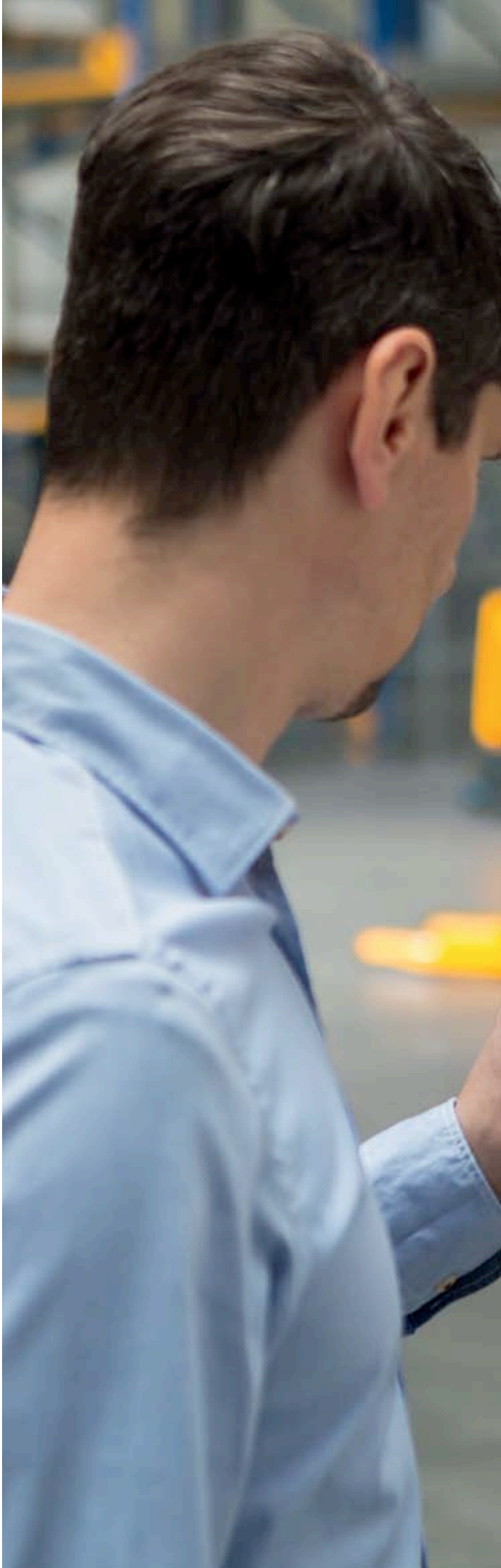
The Logistics Interface can also monitor cooling and storage times. In addition, enhanced reporting options are also available through the Logistics Interface.

Information.
At a glance in real time.

Monitoring and active intervention

Your screen displays the most important information – for example, status (laden/unladen) and location of the vehicle – at a glance, enabling you to actively intervene in the work processes.

- Starting orders: Individual orders between defined stations can be started via the visualisation with just a few clicks.
- Prioritising orders: As transport orders change, you can adapt your APM at any time.
- Defining positioning times: After expiry of a predetermined time, the APM prioritises the appropriate station, thus ensuring that certain positioning times are not exceeded.
- Locking stations: Individual stations or entire pick-up/delivery tracks can easily be locked for automatic operation via the system. As operational needs change within your company, these can also be quickly released again.
- Redirecting routes: Individual sections of routes or passages can be locked for maintenance work or for automatic operation when there is temporarily a particularly high utilisation of individual routes by manually controlled trucks. The system then searches for replacement routes in order to continue working efficiently.
- Defining functions for start/end of shift: For example, that all APMs travel to specific charging stations or a specified point.
- Changing system strategy: Various defined strategies such as FIFO may be selected.
- and much more

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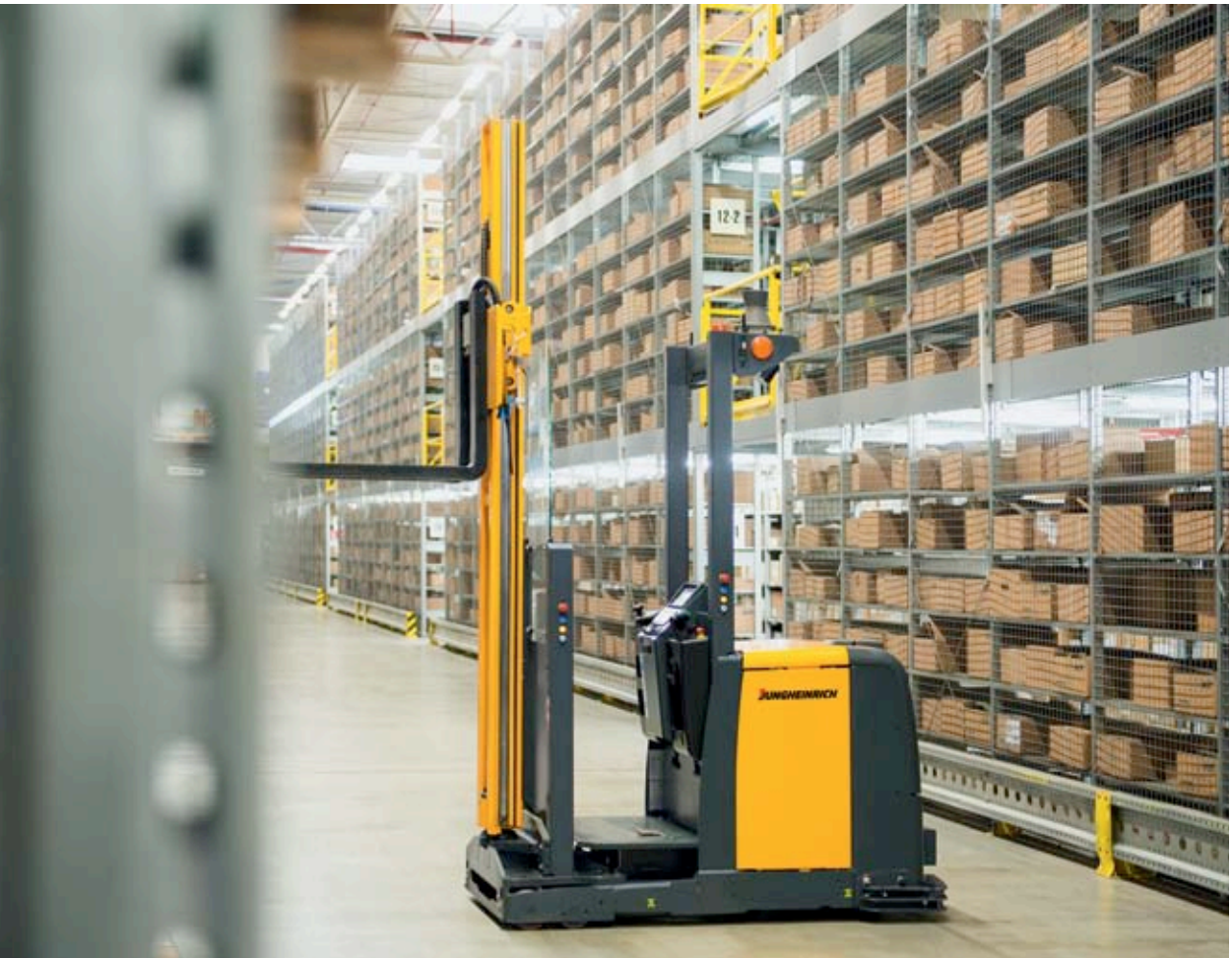
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Options.
For a variety of applications.

Distance sensors detect free storage locations
Your APM can detect free stations when driving past and can search itself within a defined region. This is ideal if you have a large floor warehouse and the APM is to deposit the goods at the next available floor station.

Stacking pallets
Sensors in the forks or the fork carriages enable suitable loading devices to be easily stacked above each other. When lifting, the APM detects the height of the lower loading device and automatically stacks its load above it.

Bar code scanner
The APM automatically reports the bar code information via the Logistics Interface to the warehouse management system. A manual interaction is not required. Individual shipments are therefore easy to retrace, guaranteeing rapid access to required items. In addition, a ‘counter check’ takes place. The order number transmitted from the WMS is compared with the number on the loading device to ensure that they match. This guarantees an error-free process.

Services.
A one-stop shop.

Planning
Are you considering modernising your company, converting or expanding existing production facilities or planning a complete new building? We will support you in all projects. Whether a complete system with racking, manual and automatic fork lift trucks or just our intralogistical expertise is required, you can rely on us. Particularly with respect to automated guided vehicle systems, our system sales managers will be happy to make site visits to advise you on the diverse automation options. Take advantage of our many years of experience and our quality that as a manufacturer of premium products we can also offer you in terms of planning.

Simulation
Have you already decided on automation and you want to know what is the most effective method for your processes? Have you already determined the areas in which automation is to take place, and do you know which goods in what quantities must be transported between the individual stations? But perhaps you are not sure whether this will work in reality?
We can simulate your application on the basis of a CAD layout provided by you and your transport matrix. With the aid of the control system which will subsequently be used, we find the best routes, the most efficient strategies and the optimal number of AGVs. As a special feature, thanks to 3D simulation in real time, you can already experience our Auto Pallet Mover being used in your system.

Implementation
Irrespective of whether it is for the planning phase or implementation of the joint project, with Jungheinrich you always have a contact partner to help you with any questions. Specialists will be present on site for the implementation of the APM system. Their tasks include the installation of reflectors, the final determination of the routes as well as inspection of the interfaces for warehouse peripherals (e.g. fire doors, conveyor systems etc.) and the operational training of your employees. This gives you the assurance that your APM system will be installed in a very short time parallel to your daily operations and with as few interruptions as possible.

Service and support
When required, you can turn to specialists from our Central Support team who are very familiar with your system. A majority of service issues can already be resolved via remote access. If necessary, our Support employees will dispatch a service engineer to your premises – any day, around the clock. You can concentrate on your business and we will look after your logistics system.
The rapid response times of our local After Sales Service minimises your unproductive times and guarantees highly efficient troubleshooting. Thanks to immediately available spare parts, we can supply your system within a few hours. Regular maintenance and safety checks enable us to detect early wear and tear, thus ensuring the smooth operation of your system.


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References.
Our APMs in use everywhere.

Three example uses

Our APMs are being used around the clock in a wide range of industries and sectors such as the automotive and heavy industry, metal processing, in the logistics and distribution sector, in the food and packaging industries.

One such example is the spice producer AVO in Belm, Germany. The company has used three APMs since 2011 in the filling process for its spice mixtures. They score well in terms of efficiency, accuracy and reliability. And they operate around the clock, five days a week.

The logistics service provider Rudolph Logistik also relies on the EKS 210a at its Lorsch, Germany site. The vehicle system delivers goods in Goods Outward and transports them to a racking system. Our APMs are a convincing solution here thanks to the safety in they offer in the mixed operation mode and their reliable execution of the transport tasks.

Food manufacturer Orkla in Denmark uses our ERC 215a. The vehicle system supplies robot packing stations and ensures the removal of the packed goods to the stretcher. The use of innovative technologies and the resulting efficiency and productivity increase in production and packaging has secured the future of the Danish site, saving the jobs there.

Investment.
Facts that facilitate the decision.

Amortise your costs in the shortest possible time*
Your employees are your most valuable asset. Utilise your asset as profitably as possible. Our Auto Pallet Movers will help you. As automated guided vehicle systems, they are responsible for all recurring, standardised tasks that can be completed equally as well without human intervention.

Responsible system integration
Jungheinrich not only ensures that its hardware such as racking, rack operating equipment and trucks are in the right place at the right time. As a general contractor and system integrator, we also ensure that all the systems work inter-dependently and optimally with each other. We place tailor-made software programs in operation which bring your warehouse solution to fruition. The goal is to hand over a high-performance turnkey system.

In-house financial services
We offer you a wide range of tailored solutions to suit your commercial, fiscal and financial requirements – even if these may change over time. This will allow you to keep on the move and respond flexibly. Your area sales manager will be happy to work out which solution is best suited to your needs.

Lower CO_2 emissions and energy costs
Our technological innovations and advanced development in the last ten years have led to a drastic drop in the CO_2 emissions of our products, in the two-digit range. Our entire product cycle now features these innovations, from manufacturing through usage to refurbishing. And our high-tech solutions are really setting standards in the usage phase, which is where more than 80 per cent of all emissions occur. You can easily use this advantage to your benefit, immediately reducing your energy costs considerably while simultaneously achieving maximum throughput rates.

TÜV-certified product life-cycle assessment
TÜV-Nord has systematically analysed the life-cycle assessment and certified it in accordance with DIN EN ISO 14040, giving us the environmental rating 'Geprüfte Produkt-Ökobilanz' [Certified Product Life-cycle Assessment].
www.jungheinrich.com/oekobilanz

* The ROI (Return on Investment) is dependent on the number of shifts and the type of use.

ISO 9001
ISO 14001

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

CE

Jungheinrich trucks conform to the European Safety Requirements.

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