

WHITEPAPER

# Four steps to efficient warehouse processes

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 **JUNGHEINRICH**



A high-angle, wide shot of a modern warehouse. In the foreground, a worker in a black shirt and yellow safety vest is operating a black and blue forklift, moving a blue pallet with two black storage bins. The warehouse floor is dark grey with yellow dashed lines indicating traffic paths. In the background, there are high industrial shelving units filled with boxes. A large, glowing yellow 3D bar chart with a line graph overlay is superimposed on the right side of the image, extending from the bottom left towards the top right. The chart has several bars of increasing height, and a line graph with multiple peaks and valleys is drawn over the bars. The overall lighting is industrial, with some warm tones from the glowing chart.

# Step-by-step guide to the perfect material flow

When it comes to increasing efficiency in material handling the focus is, quite rightly, on automation and artificial intelligence. And yet, state-of-the-art technologies are just one of four steps on your path to a more efficient material flow.

Before ushering in a new era of robots and shuttles, smart Warehouse Management Systems and semi-automated or fully automated solutions, you need the right optimisation strategy. Next, you

need to streamline your warehouse plans for efficiency and ensure safety and sustainable productivity gains with the help of smart assistance systems. Only once your warehouse is optimally prepared, can automation and AI achieve their full potential – significantly boosting the efficiency of your warehouse.

In this whitepaper, we take a detailed look at the steps that will take your material flow to the next level.

# Discover untapped potential

## TRUST THE NUMBERS

In everyday working life, time-wasting often goes unnoticed. But with automated KPI monitoring, you can quickly identify bottlenecks, errors and time losses. Real-time analytics measure order-picking speeds, error rates and throughput times, ensuring that no inefficient process goes unnoticed. Instead of relying on guesswork, a data-driven system provides you with facts to optimise processes in a targeted manner.

## TRUST YOUR EMPLOYEES

Your employees experience weaknesses first-hand, see opportunities for improvement and often have quick solutions at hand. Set up regular feedback sessions. A simple “ideas box” or a monthly “Best Improvement Award” can be real efficiency boosters.

## TRUST OUR TEAM OF EXPERTS

Some opportunities for improvement are easy to spot up close – others are clearer from an external perspective. Benefit from our consultants’ decades of experience and technical expertise by requesting an optimisation roadmap tailored to the needs of your warehouse.

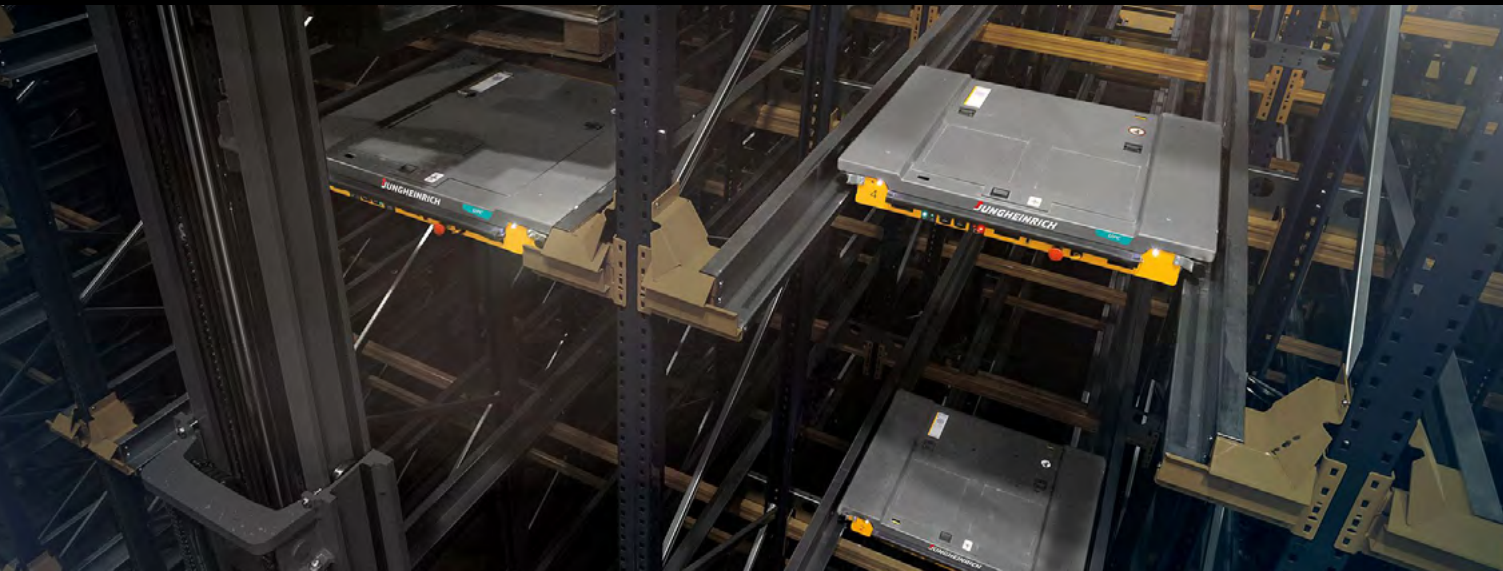
## TRUST OUR ANALYSIS

A key element of our consultancy service is a comprehensive material flow analysis. We take a thorough, holistic look at your internal material flow – from goods receipt to goods issue. Based on an analysis of the current material flows and process requirements, as well as the definition of target performance and capacity requirements, we identify your optimisation potential.





# Optimise your warehouse design



## INTELLIGENT STORAGE LOCATION STRATEGIES

The basis for optimal use of space is a well-thought-out allocation of storage locations. Dynamic storage location strategies, based on access frequency or item turnover, ensure that storage locations are optimally occupied and travel routes are shortened. The support of Warehouse Management Systems like the Jungheinrich WMS enables automation and continuous improvement of these processes.

## VERTICAL STORAGE

In many warehouses, valuable vertical space remains unused. The logical utilisation of height creates significantly more warehouse capacity within the same floor space. High-bay warehouses offer the possibility of accommodating significantly more pallet storage locations without having to completely reorganise the warehouse structure. The result is an increase in storage locations, a reduction in the use of space, and a future-proof foundation to facilitate growing demand. This is ideal for companies that want flexible scalability in a limited space.

## FLEXIBLE RACKING SYSTEMS

The choice of racking system also has a major impact on space utilisation. Mobile racking, live storage racking and multi-tier systems enable flexible and dense storage, particularly when goods throughput fluctuates significantly. In combination with the right trucks, scalable, future-proof storage solutions that grow with the company can be implemented.

**STEP 3:**

# Benefit from systematic assistance

Jungheinrich's assistance systems relieve your daily workload and increase safety in the warehouse. They protect humans, machines and materials, as well as your warehouse equipment, and ensure precise and efficient work processes.

**TRUCKS WITH A VIEW:  
JUNGHEINRICH addedVIEW**

Whether you are storing or removing goods at significant heights, working in complex areas or handling delicate goods, addedVIEW has the right digital HD camera solution for a wide range of requirements in everyday warehouse operations. Modular components can be easily combined as needed. Find the optimal solution for your warehouse requirements.

- A rear-view camera shows the area behind the industrial truck in high resolution and warns of collisions.
- Fork cameras ensure maximum precision in goods handling. The optional virtual horizontal laser with positioning aid supports storing and removal even at high lift heights.

In conjunction with our logistics interface, the fork camera can also be used to accurately scan goods and storage compartment codes.

**YOUR MOST ATTENTIVE EMPLOYEE:  
JUNGHEINRICH zoneCONTROL**

Critical situations in the warehouse often arise at intersections, in zones with heavy truck and pedestrian traffic, and in areas with reduced height. Jungheinrich zoneCONTROL automatically monitors predefined critical areas

and detects potential hazards. Depending on the situation, the system responds with warning signals or intervenes in the truck control system if necessary. This reduces the risk of accidents and increases safety for humans and goods.

**MIX & MATCH:  
THE ASSISTANCE DISPLAY**

Whichever zoneCONTROL or addedVIEW functions you choose, they all run in parallel on one central screen – the Jungheinrich assistance display. The advantages include less distraction and a better overview for operators, as well as more efficient processes. And thanks to flexible and cost-effective expansion capability, your warehouse will be well equipped for future growth.



# Assistance systems make workflows more efficient

## TARGETED PRECISION WITH WAREHOUSE NAVIGATION

For each goods movement, truck operators have to reorientate themselves within the racking system – not so with **warehouseNAVIGATION**. This system transmits the correct rack location to the truck, which then approaches it automatically with high-precision diagonal travel. This greatly reduces the strain on the operator, who only has to operate the lift function. The result: order-picking accuracy is improved and throughput increases by up to 25 per cent.

## STORE GOODS IN RECORD TIME THANKS TO positionCONTROL AUTOMATIC LIFT HEIGHT CONTROL

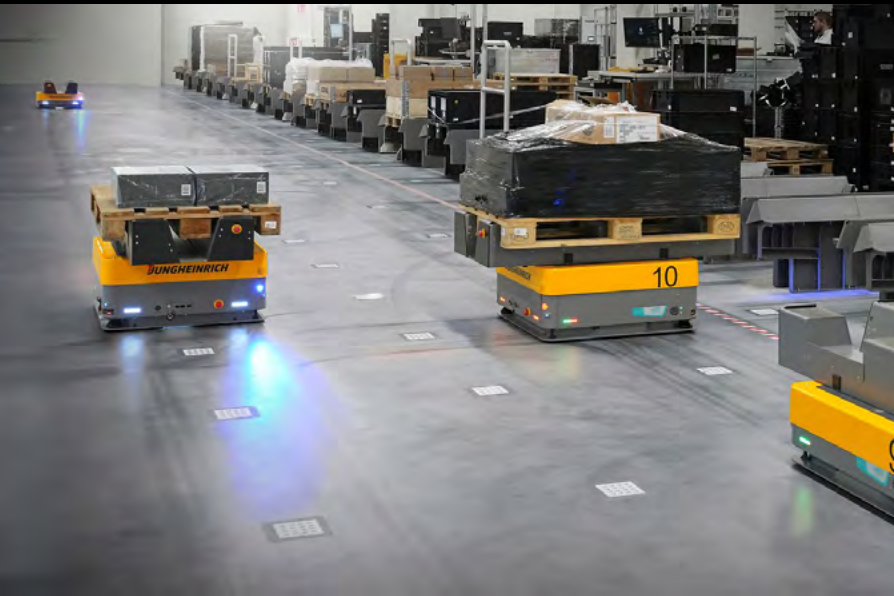
Automatic lift height control reduces time wasted with manual readjustments. Pre-defined lift heights bring the load into the perfect position quickly, while the intelligent stop function holds it exactly where needed. The result: no additional corrections, shorter travel times, and truck operations that run like clockwork. Discover **positionCONTROL**.

## FURTHER ASSISTANCE SYSTEMS FOR SAFE AND EFFICIENT WORKFLOWS

- **liftCONTROL** controls the lift speed for safe stacking and retrieval.
- **curveCONTROL** is a smart speed control system for cornering, reducing the risk of tipping and slipping.
- **HGV detection** supports loading and unloading on HGV ramps by automatically braking the truck when entering the trailer and activating a working light.
- **operationCONTROL** records the current load weight and lift height and gives a warning signal as soon as the residual capacity of the truck is exceeded.
- **tiltCONTROL** automatically maintains the vertical position of the mast for faster and safer stacking and retrieval
- **liftNAVIGATION** is a semi-automated lift height selection system for reach trucks that receives the correct storage position directly from the WMS.
- **reachCONTROL** automatically adjusts the reach speed and tilt speed of reach trucks based on the load weight and lift height.





**STEP 4:**

# Transform your warehouse logistics with automation and AI

**INCREASED FLEXIBILITY WITH MOBILE ROBOTS**

Deploy AMRs that operate without fixed infrastructure and dynamically adjust their routes. These robots navigate safely through the warehouse, detect obstacles in real time, and autonomously optimise transport routes. The deployment of AMRs significantly enhances the flexibility and efficiency of your internal logistics processes. Click here to explore our [Autonomous Mobile Robots](#).

**IMPROVED DYNAMICS WITH AI-SUPPORTED SOFTWARE**

Endlessly improve the efficiency of your warehouse with software that continuously learns and generates insights. Autonomous systems for layout optimisation continuously analyse movement data, identify bottlenecks, and then proactively recommend optimisations – for instance, new zoning or improved routing for trucks. This enables dynamic adjustment of traffic routes and storage zones, further optimising the material flow. And Jungheinrich is the perfect partner to help with this.

**SYSTEMATIC SUPPORT**

If efficiency, safety and sustainability are top priorities in your warehouse logistics, we will assist you every step of the way. Our technical expertise and tried-and-tested solutions provide you with targeted support in optimising your warehouse processes.

We are always happy to help.  
Arrange an appointment today.

**Contact:**

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0800 357 457



Certified information security ISO/IEC 27001:  
The highest security standards apply to  
the development and operation of our digital  
solutions to protect your information.

**ISO 9001**  
**ISO 14001**

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



Jungheinrich trucks  
conform to the European  
Safety Requirements.

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 **JUNGHEINRICH**

The logo features a red upward-pointing arrow to the left of the company name 'JUNGHEINRICH', which is written in a bold, black, sans-serif font.