



Whitepaper
**Should warehouses
be automated or not?**

**JUNGHEINRICH**

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Should warehouses be automated or not?

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Good reasons and recommendations for warehouse automation

Everyone is talking about automation and robotisation. Several experts have stated in newspapers, magazines and on websites that further digitalisation is required to survive as a business. Even the government has joined in the public discussion. But is that true? Is it necessary to automate your warehouse as well? And how far should you go?

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First some reassurance: if your current warehouse is functioning well, you should ask yourself if it is necessary to make a major investment in automation. Automation ultimately requires high investment and much effort. Frequently, it will completely overturn the work of many members of staff. Is it all worth it? You should also remain critical when searching for answers. Do not let others' success stories mislead you; instead, make sure to stay well-informed.

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Well-functioning warehouses. Should they still be automated?

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Even if your warehouse currently works without any problems, there can still be good reasons for automation.

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You may expect an expansion of your warehouse.

For example, this may be the case when your business grows. You might not have any problems with your warehouse at the moment, but what if the number of orders increases by 10 %, 50 % or 100 %? Is the capacity of your warehouse large enough to be able to process all of these orders in good time? Are your employees able to move around freely without bumping into each other? And do you have enough space for storing extra stock?

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Your competitors are better off

The market situation often requires new capital expenditures in the warehouse. Your business may have higher costs than your most important business rivals. Other companies' deliveries may be quicker and more reliable than yours. Automation could then be interesting for you, even if your customers have not yet started to demand lower prices or shorter delivery times. Automation makes it possible for your company to be able to compete even in the future.





Strategic decisions

In order to answer the question of whether you should automate or not, it is practical to seek out opinions from management and other departments. What is the corporate strategy and how do the turnover forecasts look? What are the challenges and expectations for marketing, sales and marketing, purchasing and production? Can automation answer questions which concern others in the company?

You should seriously consider automating your warehouse in the following circumstances:

- Your management's corporate strategy aims for future expansion and growth in turnover.
- You expect (strong) growth in warehouse operations (orders, stock).
- Your competitors make quicker and cheaper deliveries.

First of all, go back into the warehouse. Does it really work as well as you think? Or do you keep coming across the same weak points every day, but have become accustomed to them? Go for a tour of your warehouse and look at all processes with a critical eye.

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Bottlenecks in your warehouse.

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Reasons for automation.

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Different problem zones in the warehouse may be a sign that automation is needed. Which weak points do you see in daily operation? And have you found structural solutions for them or do you find yourself facing the same challenges day after day? For example:

- Non-compliance with delivery times
- Stress in the warehouse
- Lack of space in the warehouse
- Physical complaints
- Too many errors

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Non-compliance with delivery times

Do customers expect to receive their orders as promised, but it always falls through? Are all orders ready the very moment when the trucks pull up to the ramp? Do you manage these tasks with your permanent staff? Or are you forced to call in additional temporary staff or pay overtime?

Reliability is one of the most important qualities that customers demand from their suppliers. Those who deliver later than agreed will have to deal with a lack of understanding. More and more groups are extending their order times. Customers can order at later and later times of day, while still expecting to receive their goods on time. This leads to an increase in pressure in the warehouse at the end of the day. This is a trend which is spreading from internet retail into other markets as well. Some online stores, for example, work with order times up to midnight, although the last cargo truck leaves half an hour later. Try to process all these orders – without any kind of automation.

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Stress in the warehouse

A manual warehouse has the advantage of being able to bring in unlimited additional staff. Or does it? Not entirely. Even manual warehouses have limited capacity. Think of employees who get in each other's way, order pickers who have to wait for each other at frequently sought-out order-picking sites, or forklift drivers who get into jams on the larger traffic routes in the warehouse. If you employ additional staff at peak times, you cannot say with certainty that the work will be efficient. Productivity falls rapidly, especially at the worst possible times. Also: if staff get in each other's way, it leads to arguments and frustration. Motivation drops as quickly as care and attention to duty. This needs to be avoided in any case.





Lack of space in the warehouse

When the turnover or range grows, so does the inventory. Can you still guarantee the safe delivery of all goods in this instance? A warehouse with a 98% capacity might still not be completely stretched to its limits, but you cannot exactly claim that the work will be efficient. How long will forklift drivers have to search for an empty pallet position? Are the pallets in the right place? Efficiency drops lower and lower in a warehouse with a lack of space. The entrance area fills up, as there is no more space for incoming goods. This means that unloading an incoming cargo truck causes further problems. Thus, pallets are often unloaded in the walkways on the floor, where – obviously – they are also in the way. Many companies make the decision to hire additional external floor space when this occurs. However, this solution is not particularly efficient – especially in regards to the cargo trucks which have to shuttle between both sites.

Physical complaints

Do you have expansion areas available when the number of orders grows, the range is extended and the inventory increases? But what are the consequences? When manual warehouses become larger, the walkways and driving routes also become longer. In many warehouses, order pickers walk over 15 km a day. This does not only put a strain on their health, but also leads to much time being lost. A larger warehouse is therefore not always more efficient and definitely not ergonomic. Ergonomics leave much to be desired in a manual warehouse. Your employees have to bend over, stretch, turn and often carry around and lift heavy goods. Sooner or later, this leads to physical complaints, to sick leave and in extreme cases, even leads to staff becoming unable to work. The risks are especially high in warehouses with ageing staff.

Too many errors

If time is too scarce, stress too high or there is too little space, the likelihood of picking errors increases. Your employees will take products from the wrong shelves, miscount things, put cases on the wrong pallets, or load the wrong pallets into the wrong truck. Every mistake which has not been spotted leads to an incorrect delivery. When such a thing happens from time to time, it does not pose a problem. However, if it is a systematic problem, errors will not only lead to customer complaints, but also to loss of time and extra costs. Sooner or later, you will have to remedy the mistake, meaning that you are forced to pick the same order again or pay a courier for an express delivery. Even if such a mistake does not incur any additional costs for your department, your colleagues in the sales department may have to offer an additional discount as compensation. Therefore, it is worth working out together with the sales department what an error costs on average.

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Benefits of warehouse automation.

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Automation helps to deal with all weak points, but it also brings other advantages into effect, besides the optimisation of warehouse operations. Because automation can also help to contribute to strengthening the competitiveness of the entire company. Which benefits are these?

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The main benefits of warehouse automation:

- Costs decrease
- Customer service quality rises
- Fewer errors and complaints
- Throughput time becomes shorter
- Happier staff
- More safety in the warehouse

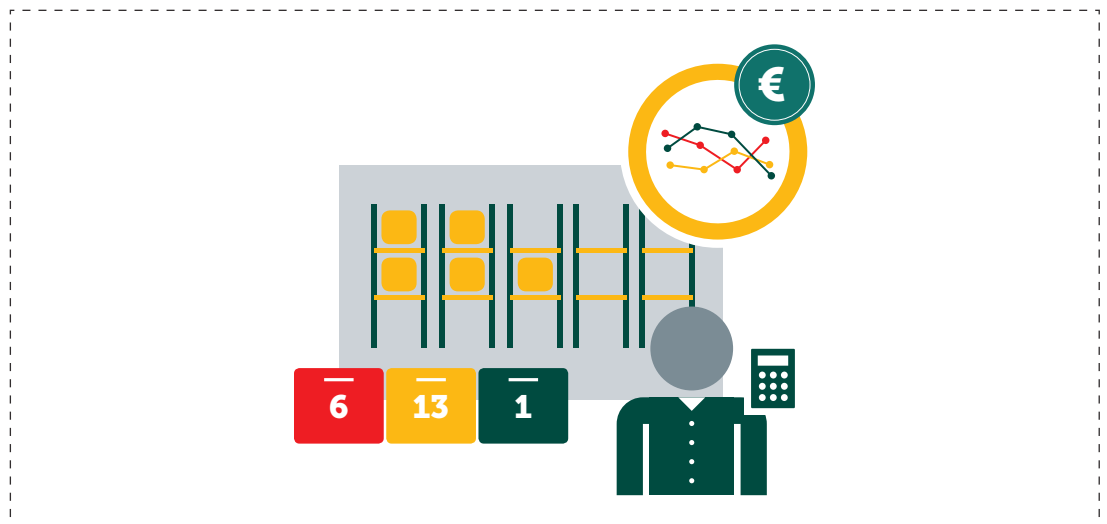
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Costs decrease

Automation helps to structurally lower logistics costs. The most important cost savings come from labour costs. Automation can help to reduce or even eliminate ways of working which barely have any use, or have no use at all. By managing staff with a warehouse management system, you can considerably cut down walkways and driving routes. Creating a 'goods-to-person' system even gives your employees a fixed place in which to work.

Automation also means a more efficient usage of space. An automatic warehouse and order-picking system takes up fewer cubic metres of floor surface than a manual warehouse with pallet or order-picking shelves. They use the height much more efficiently and do not need any wider passages in order to give operators with their equipment enough room to manoeuvre and dodge. In turn, you can delay expanding the warehouse or the construction of a new building for much longer.

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MAIN MENU

- Picking
- Stacking
- Receipt
- Work-Instructions
- Software
- Info

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Machines. Ideas. Solutions.

F1	F2	F3	F4
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Benefits of warehouse automation.

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Customer service quality rises

You can improve the logistics service considerably for your customers. Automation allows you to expand your warehouse and order-picking capacity so that you can deliver all your orders on time. As your order pickers will use less time for walking, driving, searching and navigation, they can concentrate on their actual work: compiling, packing and sending orders. This in turn can create room for valuable activities such as labelling products, putting sets of products together etc.

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Fewer errors and complaints

At the same time, the number of errors will also drop. Process automation always means that IT systems will take over certain decisions. As staff tasks will be controlled, monitored and surveyed more specifically, the quality of work in the business will become less dependent on their knowledge, experience, preferences and moods. In short: a computer makes fewer mistakes than a member of staff. Therefore, the number of orders delivered completely and on time will rise, while customer complaints will fall.

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Throughput time becomes shorter

The time in which you only had to assess costs saved as a logistics manager is now, for the most part, a thing of the past. Today, speed and adherence to delivery dates are nearly as important as monitoring costs. Speed is a decisive criterion in internet retail or in the sale of replacement parts. Those who deliver an online order or supply a workshop with vehicle parts on the same day manage to stay ahead of the competition.

You can cut down your throughput times through automation. As a result, the time needed for order picking with a semi-automatic or automatic order-picking system will be clearly reduced. You will no longer need to wait until an order picker has finished walking through the entire warehouse. It will also be easier for you to plan a rush order. This means no additional effort for a crane or a shuttle in an automatic warehouse, given that in other circumstances, an order picker may have to walk to the other end of the warehouse.



Happier staff

Automation means that the physical strain on your employees is lessened. In other words: ergonomics are improved, which in turn lowers the number of physical complaints and the consequences thereof. At the same time, the warehouse also becomes a safer place, as your employees have less physical work to carry out and will not participate in warehouse traffic as often. The subsequent increase in employee satisfaction leads to less fluctuation within your workforce. This in turn means that you will benefit from more knowledge and experience from your team. Moreover, your staff will become more productive, as fewer useless tasks – such as covering longer distances – will need to be carried out. They will also make fewer errors. This also leads to happier employees, as no-one likes to carry out extra work and make more mistakes than necessary.

More safety in the warehouse

An automatic warehouse and order-picking system means that you can store your goods safely and make them inaccessible to unauthorised persons. There is a clear drop in the risk of theft, as the goods can no longer be accessed by unauthorised persons. This can be a key justification for the decision to switch to automation for businesses with many valuable products in their ranges.

Automation also strengthens the safety of the warehouse environment. Hazardous substances, for example, cannot be stored near each other. An automated system takes this into consideration and does not make any mistakes. If an unexpected fire breaks out, an automatic warehouse offers the opportunity to use CO₂-based extinguishing methods, as staff in these areas of the warehouse are not allowed to stay there anyway.

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Practical tips and observations on warehouse automation.

Automation therefore helps to remedy weak points and/or improve competitiveness. However, more practical observations can play a part in the question of whether to automate or not:

- Working with the right warehouse inventory
- Automating the right processes
- Considering the range
- Making sure the building is suitable
- Which software is the right one
- A viable schedule and step-by-step plan

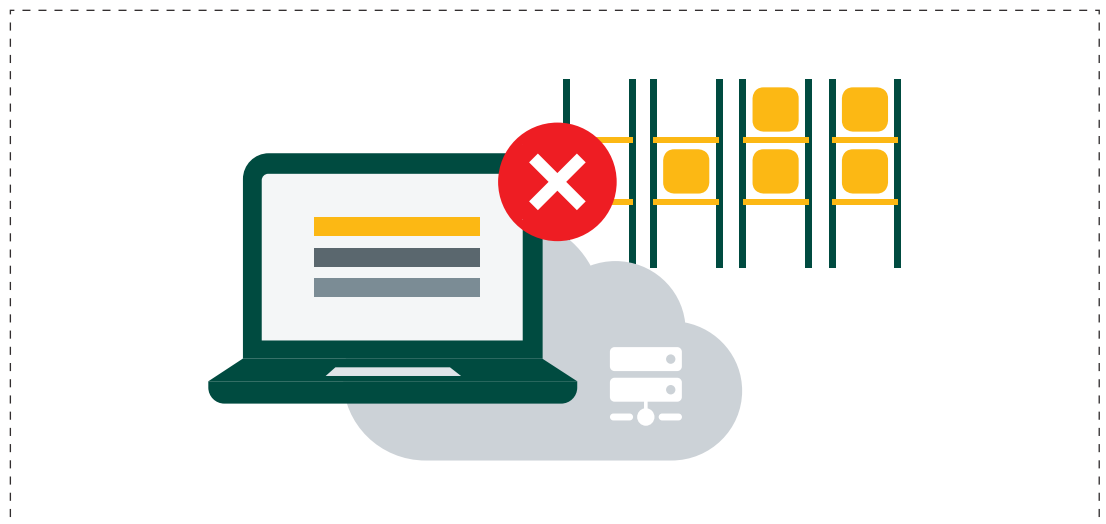
Working with the right warehouse inventory

If your warehouse runs out of space, automation is a possible solution. But do you really have too little space? Or do you actually have more reserve than you need? Inventory management is neglected in many companies. With good request forecasts and intelligent algorithms that take seasonal patterns into consideration, amongst other things, businesses can determine much more specifically how much reserve they really need. It is often much less than assumed. With intelligent help, companies can aim to reduce inventories by 10%, 20% or 30%. It often transpires that a large part of storage space is occupied by shelf warmers. Smaller warehouse inventories then mean that the warehouse is less full, meaning that automation may not be required in this case. However, if you want to automate anyway, this means that you clearly need to invest in less storage and order-picking capacity.

Automating the right processes

You need to standardise processes to be able to automate. This poses a problem for many companies. Over the years, special processes have emerged for different customers in order to fulfil certain customer desires. This is often not a major problem in a manual warehouse. However, in an automated warehouse, it is unrealistic and too expensive to write extra software for each individual process.

Automation also means selection. Frequently, this is not communicated, as special processes cost much more than they are worth in practice. And if you come to an agreement with customers, standardisation often does not turn out to be a problem after all. Or you may find that customer demands can also be fulfilled in a different way.





Considering the range

If you opt for extensive automation, the range may be a problem. There are two types of warehouse and order-picking systems on the market, one for standard pallets and one for plastic containers or cases with similar dimensions. Your products must fit either on the pallets or in the containers. If that is not the case, you can then develop a customised system into which all your products can fit. Anything is possible, but it can also accrue extra costs. Practice frequently shows that a combination of different warehouse systems is needed. Of course, these do not exclusively have to be automatic systems. For example, you can choose an automatic pallet warehouse and a small manual warehouse for products which are too large for a pallet.

Making sure the building is suitable

Is your building suitable for an automated warehouse and order-picking system? Such a compact system means that the weight per square metre increases. Can your floor bear the weight sufficiently? Many systems are also at their most efficient when they can be built upward. Is the ceiling of your warehouse high enough? Many systems can easily be integrated into an existing building, others cannot. When making the decision to automate, you should also consider expansion opportunities. An automated warehouse and order-picking system can easily last for five to ten years. If, hypothetically, the number of orders or the range were to grow during this period, could you expand the system at your current site? If you have to move again after five years because of growth and subsequently abandon the system, all this is a loss of capital.

Which software is the right one

You may already have a warehouse management system or an ERP system which supports processes in your warehouse. Are the systems suitable for controlling an automated warehouse and order-picking system? Or will you need a different system for this purpose, such as a warehouse control system?

If you decide to opt for a combination of different warehouse systems, an overall software system is certainly not a pointless luxury. This system ensures that different processes can be co-ordinated with each other. The supplier of the automated warehouse and order-picking system often has the appropriate software available. However, this is not always the case.

A viable schedule and step-by-step plan

Automation can – regardless of the individual decisions you make – be associated with high capital expenditures. Many companies have trouble finding financing for it. At the same time, automation requires major effort on the part of the company. Not only introducing a new system, but also learning to work with it. It is worth answering the question of whether the investments and expenses required are not too high. Do not forget that a warehouse does not have to be automated all at once. Automation also happens in stages, step by step. If it involves a combination of different warehouse systems, putting the systems into place one after the other is not a problem – maybe with a break of a year or more. Moreover, many of today's systems can be expanded. You can start small and expand when growth in turnover allows this. Step-by-step implementation also prevents the entire warehouse from having to be shut down for long periods of time. Because ultimately, no business can afford this.

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Do you see the advantages? Talk to your stakeholders.

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The next logical step in the warehouse automation process is to enter into discussions with the other participants in the project. For this purpose, gather information to give your ideas more structure and hone a business scenario. This study of feasibility will reinforce your investment plans with information: what should be automated, costs and uses, payback period and so on.

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Would you like to know more about warehouse automation? Then get in touch with us.

As a general contractor, we will take you step by step to a flexible and efficient automation solution. We can offer you over 60 years' intralogistics experience, characterised by consultancy and manufacturing skills compiled into one package. Our experts always plan intralogistics from goods in to goods out, including all process steps and interfaces. From the beginning of the project onwards, you will have a personal contact partner on board, who co-ordinates all parties involved and always has an overview of the project at any time. With Jungheinrich, you'll always have a 100 % reliable partner at your side.

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Jungheinrich Aktiengesellschaft

Friedrich-Ebert-Damm 129
22047 Hamburg
Germany
Telephone +49 40 6948-0
Telefax +49 40 6948-1777

info@jungheinrich.com
www.jungheinrich.com

