



5 simple steps to end-of-line automation in the **pharma industry**

A step-by-step guide to finding the perfect
palletizing solution.





End-of-line automation in the pharma industry

The pharma industry is experiencing growing labor shortages, resulting in decreasing operational efficiency and high operating costs. Automation is key, but where does one start? End-of-line automation can be an ideal first step, as palletizing is one of the easiest processes to automate. This whitepaper describes five simple steps that will lead you to the perfect end-of-line palletizing solution for your production process. Ready to improve efficiency and scale your business?

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INTRODUCTION

Importance of automation in the pharma industry

In the past years, the pharmaceutical industry has undergone monumental changes. New technologies have emerged and there is an ever increasing need to become more efficient and cost-effective. And it doesn't stop there. The global pharmaceutical market was valued at USD 405.52 billion and is expected to grow annually by 11.34% between 2021-2028. However, with this growth problems arise.

Growing labor shortages

One of the most prominent problems that most industries, including the pharma industry, face is the growing labor shortage. According to economists, the main factors influencing labor shortages are:

- A global aging population
- Demands for better pay
- Flexible working arrangements



As economies develop, another contributing factor to labor shortages is that people try to learn skills to get better paying jobs, resulting in a larger labor shortage for jobs with less appealing conditions and benefits. In addition, we have all seen the impact that Covid-19 pandemic has had on the world, particularly labor shortages. The lockdowns, health measures, immigrants returning home, and of course the number of people infected has displaced many people from their jobs, especially those that had more precarious and lower-paid jobs such as production or fulfillment jobs. Several recent studies have even predicted that by 2030, there will be an estimated shortage of over 85 million workers around the globe. It is becoming one of the biggest challenges in human history and will have a serious impact on the pharmaceutical industry

Lack of efficiency and rising costs

The increasing labor shortage in the pharma industry is already causing serious problems. Due to a lack of skilled employees available, the efficiency and output of production decreases resulting in rising costs and not being able to deliver to customers. Add to that the increasing employee demand for better pay and working conditions, and costs rise even further.

2030

85 BILLION

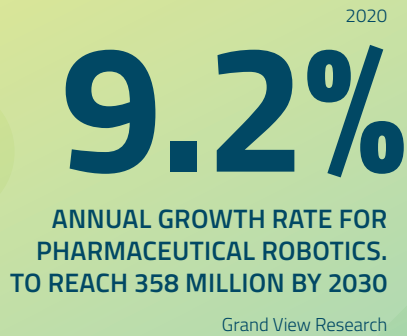
EXPECTED GLOBAL SHORTAGE OF
WORKERS



INTRODUCTION

Why automation in the pharma industry is important

These facts show it is obvious that the pharmaceutical industry needs to change. Productivity needs to increase even though companies are dealing with labor shortages and production costs pressure. Pharma production companies need to remain competitive. That is why automation is of great importance.



Of course, automation has already been adopted in many processes in the pharmaceutical industry during the past decades. Not only have companies implemented production and processing systems; robots and cobots are becoming more popular as well. The pharmaceutical industry has been slow with the adoption of robots and cobots due to its highly regulated nature. However, the current rising labor shortages and covid-19 pandemic have accelerated the adoption, as employees have been increasingly absent and health and safety measures have become more important.

End-of-line automation is the perfect start

There is no questioning that automation in the pharma industry is important. However, where does one start? There are so many areas for which (further) automation is available, and it can be an overwhelming and time-consuming process.

If you are looking for a quick-and-easy improvement, focusing on end-of-line processes such as palletizing can be the perfect first step. Palletizing is a relatively easy task to automate and as it includes monotonous and repetitive actions. Also, it is a very physically straining task for employees. Sounds like the perfect place for automation, right?

**The following 5 simple
steps in this whitepaper
will help you find the
perfect solution for your
end-of-line process in the
pharma industry.**

**Are you ready for
automation?**





STEP 1

Determine your end-of-line improvements

The first step to finding the perfect end-of-line palletizing solution for your pharmaceutical production process is to become aware of the pain points in your palletizing process. To realize why automation is of great importance, it is crucial to analyze your process and see where improvements can be made. Of course, there are many things to consider. To help you determine which end-of-line challenges can be improved by automation, take a look at the following statements:

We struggle with high labor shortage

It has become clear; the pharmaceutical industry is definitely experiencing a high labor shortage. Think about whether this has affected your palletizing process. Do you have enough employees available for your palletizing process? Are you struggling to find new employees?

We deal with high labor costs

Besides struggling to find enough employees, the costs of employees are rising too. As labor shortages are growing and labor becomes harder to find, the costs of labor will automatically rise. After all, people have many jobs to choose from and will go for the jobs offering better pay and benefits.

We encounter high sick leave and employee turnover

Palletizing is a repetitive and monotonous task. It can make employees feel unmotivated or bored as it is not very challenging. In addition, it is a very physically demanding task which may result in work-related injuries. All this can possibly lead to a high sick leave and employee turnover in your palletizing process. Ask yourself: are my employees struggling with the heavy and repetitive work of palletizing? Do we experience a lot of work-related injuries amongst our employees?



STEP 1

We experience a lack of efficiency and quality

Also consider the efficiency and quality of your palletizing process. As palletizing is such a straining and monotonous task, people could make mistakes, especially at the end of a shift when they are tired. Consider the following: are your employees able to keep up with the speed of the production line? Can they palletize in a neat and consistent way? Are they handling products carefully?

Our employees are not fully utilizing their skills

As mentioned before, palletizing is not a very challenging task and can make your employees feel unmotivated. They are not fully utilizing the skills people are good at, such as creativity and oversight. As labor shortages are such a problem within the pharma production industry, would you not rather have your employees focus on tasks that require human skills?

Of course, there is a lot more to consider to further analyze your palletizing process. However, the statements above can be a good start to create a list of possible improvements that can help you realize and, if necessary, communicate the need for automating your palletizing process.





STEP 2

Set your requirements

Once you have established the pain points in your palletizing process and are convinced there is a need for automation, it is time to build your requirements. If you want to automate the palletizing process in your pharma production, you have to know what a palletizer should be able to handle.

General requirements

First, take a look at the general information needed to establish requirements for the perfect palletizing solution in the table below:

General specifications	
End-of-line speed	Products per minute
Types of products (boxes)	• Closed boxes • Open boxes • Boxes with a loose lid • Shrinkwrapped products • Crates
Product weight	• Minimum • Maximum
Box dimensions	Width x length x height
Box orientation	• Long side leading • Short side leading
Pallet dimension	• Europallet • Block pallet
Number of layers on pallet	• Amount of layers • Maximum stocking height
Number of boxes per layer	How many boxes?
Slip sheet	• Yes • No
Stacking pattern(s)	• How many? • Complex? • Need for layer rotations?

Besides the general requirements, there are other questions you should consider when looking for a palletizing solution, such as:

**STEP 2****How much space do I have available for end-of-line automation?**

The space you have available is an important factor to consider as it can limit your choices for a palletizing solution. Ask yourself; will the palletizer be fitted to an existing production line? If so, can the factory layout be adjusted to fit large installations? Or are you designing and building a completely new production line?

**How user-friendly do I need the palletizer to be?**

Besides the basic requirements a palletizing solution has to meet, do not forget to consider the operators who have to work with the palletizer. Some palletizers are more complex to operate than others. Hence, it is important to think of what your operators can handle and how user-friendly you want the system to be. What is my operators' level of expertise? Are they able to easily determine and solve errors independently?

**Do I need the system to cooperate safely with my employees?**

Besides considering the ease of use of a palletizing solution, also think of whether you want your employees to work with and alongside the robot safely. As we will explain further on in this whitepaper, there are robot and cobot palletizers. Cobot palletizers allow for safe cooperation with people whereas robot palletizers require extensive safety measures. Hence, it is important to ask yourself; do you want operators to be able to work alongside the robot without the need for additional safety measures?





STEP 3

Select the best suitable type of palletizer

After determining your basic requirements and having thought about space, ease of use and safe cooperation with your employees, it is time to research what type of palletizer fits your requirements. Of course, there are various palletizer systems available and they all have advantages and disadvantages. Examples of palletizing systems are:

General requirements

Developed in the 1950's.
Products are arranged in a row forming area and are moved to a different area where layers are formed. This process is then repeated until a full layer of products is configured to be placed onto a pallet..

In-line palletizers

Developed in the 1970's and operate at higher speed.
They use a continuous motion flow divider that guides the products into a desired area on the layer forming platform.

Robotic palletizers

Developed in the 1980's and are the type of palletizers that are most widely used.
They use a robot arm in combination with an end of arm tool that picks a product from a conveyor and places it onto a pallet.

Cobot vs. Robot Palletizer

When looking at palletizing automation in the pharmaceutical industry nowadays, robotic palletizers are most common. However, there is an important question to consider; do you need a robot or a cobot palletizer?

At first glance, they seem very similar. They both use a robotic arm with a gripper to stack boxes in a particular stacking pattern on a pallet, they can both operate 24/7 and increase productivity and efficiency. There are many differences between the two, nevertheless.





STEP 3



Cobot palletizer

A cobot is a type of robot arm designed to cooperate with and work alongside people. They are built to assist and create a safer and healthier workplace. Cobot's have many builtin safety sensors that guarantee the safety of employees. Hence, there is no need for extra safety measures such as fencing. If you look at cobot palletizers, employees can easily work around the cobot, take away full pallets and place empty pallets, all while the cobot continues its operation. In addition, cobot palletizers are highly flexible and suitable for end-of-line processes with a high variety in products. They have a small footprint, can be installed quickly and can easily be reconfigured to adjust to different products and stacking patterns.

Robot palletizer

Robot palletizers, however, are designed to handle high speeds and heavy products. They use an industrial robot arm and are often used in heavy manufacturing. They require a lot of safety measures and are often placed within large cages as employees need to stay out of their workspace. If employees need to come near, the robot palletizer has to stop its entire operation to guarantee the safety of an employee. Furthermore, robot palletizers are usually very large installations with a large footprint, and it is very difficult to reconfigure them to different tasks. They are suitable for high volume and high-speed production, but not for end-of-line processes with a lot of variety in products.





STEP 3



	Robot Palletizer	Cobot Palletizer
Can operate at high speeds	✓	
Can lift 15kg+ boxes	✓	
24/7 consistent operation	✓	✓
Flexible deployment: easy reconfiguration to different tasks		✓
Safe cooperation with people		✓
Easy to program		✓
Compact: small footprint		✓
High upfront costs & long ROI	✓	

In conclusion, there are quite some differences between a robot palletizer and a cobot palletizer. It is up to you to decide which one best fits your end-of-line processes. The requirements you have set in the previous step should be able to help you with that.



STEP 4

Find the perfect supplier

Once you have established whether you need a robot or a cobot palletizer it is time to look for a supplier. As mentioned before, there are many suppliers of palletizers who offer systems with varying specifications. Based on your requirements you can select which solutions and suppliers are suitable for your request. However, selecting a suitable supplier is more than just looking at product requirements and technical specifications. What businesses often forget is that a trusted and knowledgeable partner is just as important, maybe even more important, than the technology. So, what should you consider when choosing a supplier, besides the product specifications?



User friendliness

One of the main things to consider is how user friendly the palletizing system of a supplier is. After all, your employees will need to work and cooperate with the palletizer. Of course, a cobot palletizer is the most user-friendly option as it can safely cooperate with your employees, as described above. However, there are definitely differences between the cobot palletizers in the market. The best way to test the user-friendliness of the system is by getting a demo or a trial from the supplier.



Deployment flexibility

We all know that flexibility is important in pharma production processes. After all, consumer demand continues to increase and consumers ask for more and more variety. Hence, besides technical specifications, also consider whether a supplier offers a palletizer that can be deployed in changing situations. How quickly can the palletizer be installed? Can the robot or cobot easily be reconfigured to palletizing a different product? Can it adjust to changing stacking patterns? And more importantly; is that something the supplier has to do or can your operators do it themselves?



STEP 4



Performance optimization

Besides looking into deployment flexibility, also check what a supplier offers in terms of performance optimization. Will they actively monitor the palletizing solution? Can they visualize its performance for you? Will they keep your system up to date with relevant software updates?



Service & customer care

As a palletizer robot or cobot can be quite an investment, you want your operation to run smoothly and solve performance issues swiftly. Hence, it is crucial to consider the service and support a palletizer supplier can offer. What type of service agreements do they have? Are they able to deliver remote support? And what about predictive maintenance and hardware replacement?



Scaling up

If you have ambitions to implement multiple palletizers in different locations and perhaps even countries, you need to discover whether the supplier you choose is able to do that for you. Is a supplier able and willing to deliver, install and support the palletizers throughout Europe or perhaps even the world? Can they scale up with you or can they only deliver and support you locally? Make sure that you are aware of what a potential supplier has to offer in terms of delivery, installation, service and maintenance worldwide.



STEP 5

Implement your new palletizer

Now that you have the perfect palletizing solution and a supplier in mind based on your requirements, it is time to start the implementation. Of course, the implementation process differs per supplier, but could entail the following steps:

01**Share your requirements**

With this information, the supplier will check if the palletizing solution you have chosen can meet your criteria and if adjustments need to be made or not. These findings will be shared with you.

02**Send product samples for a demo**

If the palletizer matches your requirements and both you and the supplier want to go ahead, the next step is to send your product samples to the supplier. With that, the supplier can test the feasibility in real life and give you, the customer, a demo of the palletizer handling your products.

03**Discuss trial possibilities**

Once you have established the demo was successful, it is time to discuss trial possibilities. After all, you want to be able to test the palletizer in your actual end-of-line process. Otherwise, how will you ever know if you have found the perfect match? Note that not all suppliers offer this option, but it can be a great advantage for you as a customer.

04**Place your order**

If the trial was a success and both you and the supplier are ready for a collaboration, it is time to place your order. Remember you need to also take into account additional parts such as service subscriptions etc.

05**Install your new palletizer**

The final step in the implementation process is the installation of your new palletizing solution. The amount of time it takes depends on the type of palletizer you have chosen. Installing a robot palletizer can take up to several weeks. A cobot palletizer, however, is easier to implement and can sometimes be installed in less than a day!

06**Time to get to work!**

Now that your new palletizer has been installed, there is only one thing left to do; time to get to work!



CONCLUSION

Are you looking for the perfect **palletizer** for your end-of-line process?

At Smart Robotics, we offer palletizing as a service with our Smart Palletizer; an intelligent, flexible, human-friendly and compact end-of-line cobot. Hardware, software and service are included. The Smart Palletizer can handle a large variety of products, including open boxes, and can be tailored to your needs. It easily adjusts to changing products and stacking patterns. Are you ready to improve efficiency, reduce costs and scale your business?

Click here to book a call with one of our experts and learn more about the **Smart Palletizer**

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