HOW TO IDENTIFY FLEXIBLE AUTOMATION AND USE IT TO CUT COSTS

3 ways to gauge your system's true flexibility — and **how flexible goods-to-person automation can take on change** in real time.

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Flexibility is a relatively new concept in the world of warehouse automation, and as such, it can be tricky to define and quantify. Some say it's just a buzzword.

The truth is, measuring flexibility is more subjective when you compare it to other performance indicators like speed, throughput, storage density or picking accuracy.

But the benefits of flexible automation are easy to see when you're experiencing fluctuating demand — whether that's peak holiday shopping season or any other time of the year, week, or even day. Flexible automation alleviates the many headaches of managing change.

What does flexible fulfillment really mean?

A good way to gauge your operation's flexibility is to measure the spectrum of effort required to make changes or adaptations. Ask yourself (or your automation provider) how easily you can modify or adjust the system to accommodate **expansion, changes in volume, or other shifts in your operations** throughout the year and over time. Get a detailed understanding of how much **time, manpower and funding is needed** to make those adjustments.

Flexibility is about ease of change — and maneuvering cost-effectively with minimal disruptions. You can change just about any automated system, but how streamlined that process is will show you whether your system is *truly* flexible. In this white paper, we'll illustrate what that looks like, and how flexible goods-to-person systems — also known as Automated Storage and Retrieval Systems (ASRS) — can help you tackle short- or long-term change without the stress.

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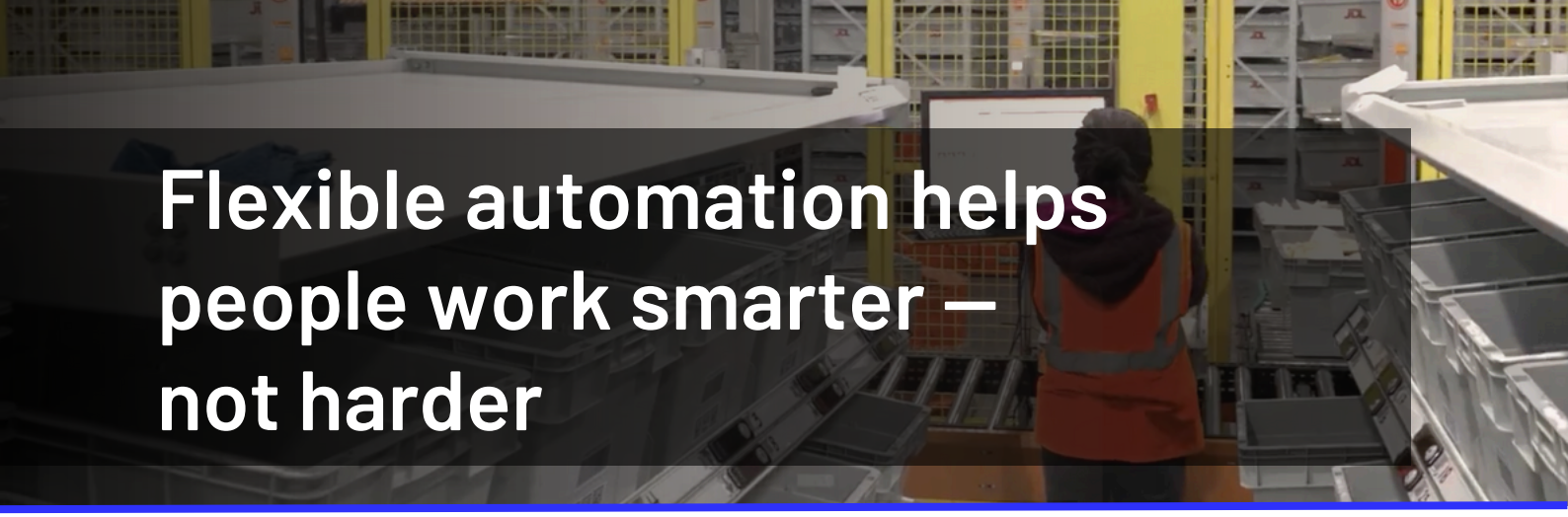


Flexible automation helps people work smarter — not harder

Ten years ago, the approach to handling peak season was simple: throw as many people as possible into the building and push through.

Labor was cheap and available everywhere. Today, that's not the case. Warehouses face some of the highest labor shortages and turnover rates of any industry.

One of the beauties of flexible warehouse automation is its ability to take on the burden of seasonal change. Say you need to double your workforce for Black Friday, but you revert to regular scheduling the following week. That means funding new hires, additional shifts and potential overtime — plus the cost of onboarding and training time. When fluctuations like this are recurring, employees may find it challenging to build a stable life around their jobs.

Automation allows you to space out the workload more evenly, removing uncertainty from both operators' and employees' daily lives. Flexible goods-to-person systems can easily expand during different times of the year and as you grow.

There are several ways you can flex automation to tackle this. You can implement automation that deploys more robots instead of people when demand surges. Look for solutions that do this automatically, or where the provider offers equipment rentals, depending on your facility's needs and budget.

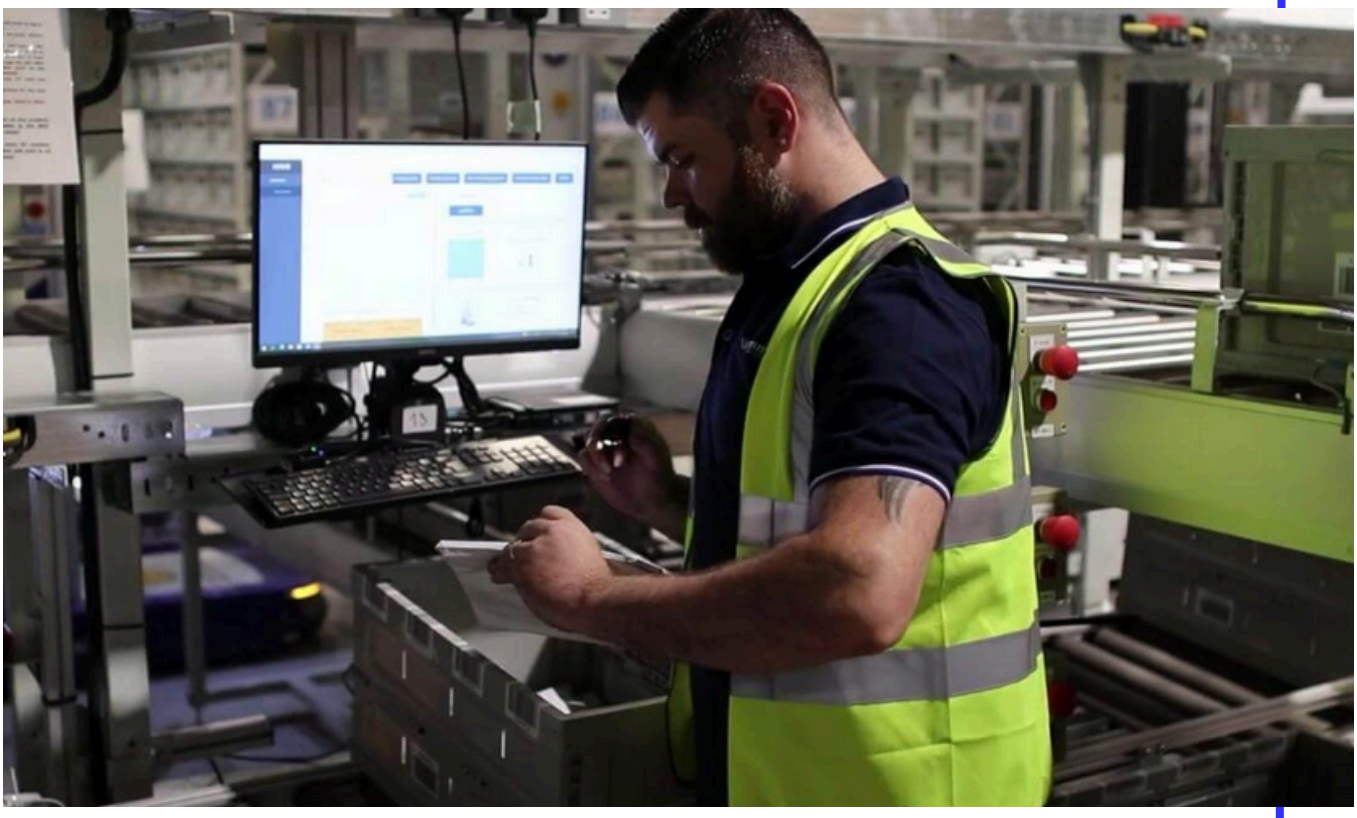
Flexible automation unburdens employees from the challenges of seasonality and uncertainty, while increasing operational efficiency and job satisfaction.

It’s easier and more effective for your robots to work a double shift — without the cost of overtime.

Employee feedback surveys consistently show higher satisfaction levels in warehouses that have embraced automation, and for good reason. Goods-to-person systems like Automated Storage and Retrieval Systems (ASRS) alleviate physical stress — reducing the amount of walking (that can be up to 10-15 miles a day in 1 shift per person), picking, loading and handling required, while also boosting pick speed and efficiency.

It's a win-win scenario where the company thrives, and the workforce enjoys enhanced job stability and a more pleasant working environment.

When labor is difficult to come by, taking this step to help reduce turnover while reducing operating costs can be critical for long-term growth.

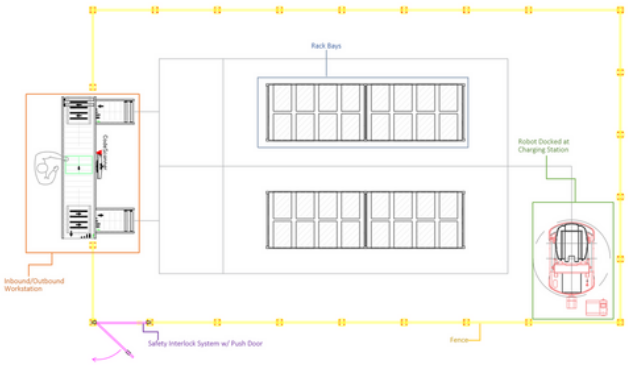


Flexible automation can move and grow with you

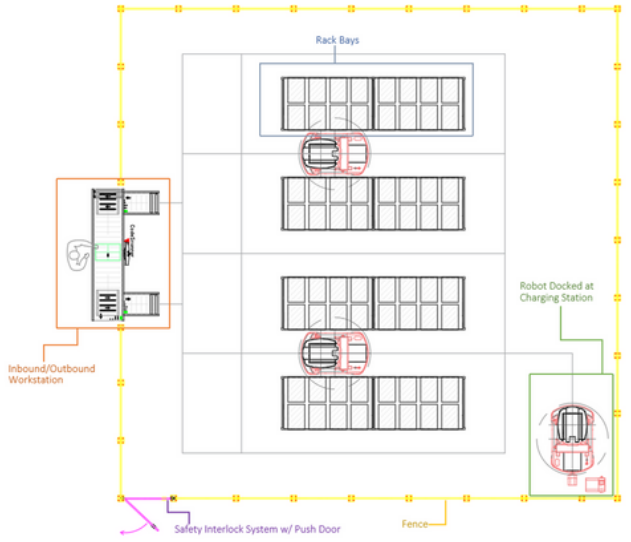
When you're experiencing or preparing for demand fluctuations, you may be exploring consolidation, relocation or expansion of your distribution network.

Imagine you're overseeing 30 distribution centers, and half are short-staffed with peak season around the corner. Flexible automation can help you smoothly adapt. If your facilities are equipped with flexible automation, you can often seamlessly transport equipment from the higher-staffed facilities to the lower-staffed ones to temporarily supplement operations. **Look for solutions that have planned for this malleable application.** The brains of the equipment is more likely to have been set up for this pick-up-and-place ability that allows for quick and seamless integration of relocatable robots.

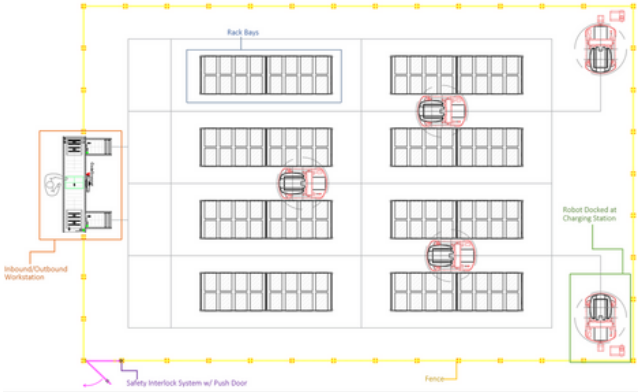
When there is longer-term growth, flexible automation allows you to grow the automated system in stages, helping you to avoid large



Example of initial ASRS system



First expansion



Second expansion

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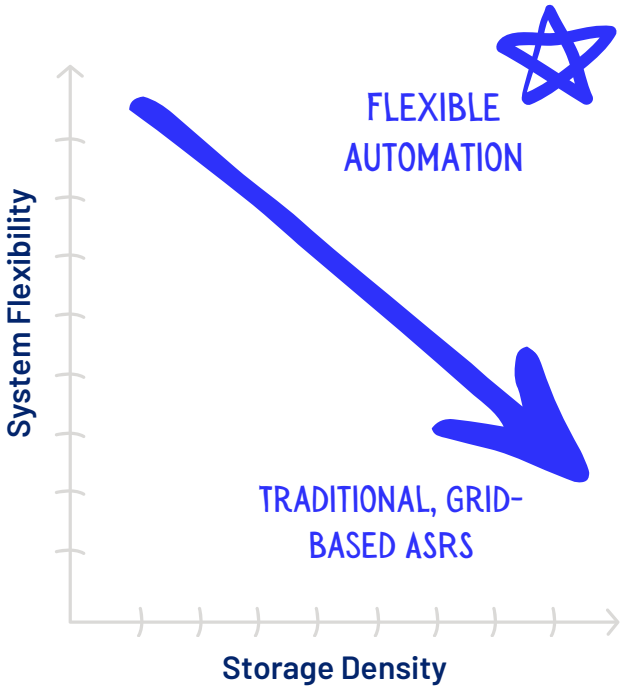
capital expenses. While grid-based or rigid automation likely requires a large buildout for each expansion, **flexible automation allows you to change or add elements to the system over time.** You can often add ports or workstations, containers, robots and racking/storage locations individually in stages allowing for sustained growth over time with minimal disruption to ongoing operations.

The ability to add and move robots to a system or expand a system altogether while continuing to run operations can make adapting operations to surges in demand or longer-term shifts in the market behavior easier and less costly to manage.

On the other hand, if your infrastructure is rigidly built out, perhaps through substantial investments in the facility's fixed assets or automation that requires a high-precision environment to operate, your ability to pivot becomes severely limited.

As more flexible solutions evolve, some automation providers are offering alternatives to the traditional capital expenditure (CapEx) model, too. Solutions-as-a-service equipment rental and lease-to-own options are relatively new concepts in the

Traditional ASRS vs. Flexible Systems



A traditional, grid-based ASRS typically loses flexibility as you increase storage density. **Look for a modern solution that can maximize both — like ACR systems.**

advanced automation and goods-to-person space, but the advent of flexible Autonomous Case-handling Robots (ACRs) and other mobile robotic technology has opened doors to more adaptable pricing models. This flexibility is now extending to even the most sophisticated high-speed, high-density goods-to-person technologies, providing organizations with novel approaches to automation and cost management.

Flexible automation works with what you have

A flexible ASRS and mobile robots can sometimes “plug and play” into your existing infrastructure, and work with the totes, containers, racking and WES/ WMS technology you may already have — often saving substations costs when implementing automation.

Look for automated solutions that are designed to adapt to your facility's unique needs. **Flexible automation typically has the ability to:**

- Use maximum facility verticality for storage, low to 39+ feet high.
- Manage a variety of container sizes and types in 1 system (cardboard boxes, totes, cases, trays, etc.).
- Operate with industry-standard elements, or does not need a high-precision environment to operate.
- Accommodate varying levels of existing facility software and needs.

Automated solutions that are rugged and adaptable enough to meld to many of the varying needs of facilities allow for a less disruptive implementation and provide long-term security that will continue to support the facility’s future needs.

Flexible goods-to-person automation, like ACRs, are designed to adapt to each facility’s operation, **allowing the facility to avoid the problems and costs of adapting their operations to accommodate a technology.**

Visit HaiRobotics.com to learn more, and contact us today!

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BONUS READ!

ASRS or AMR?

Know the differences and strengths between both solutions to help you select the right one for your facility.

Automated Storage and Retrieval Systems (ASRS) and Autonomous Mobile Robotics (AMR) are not the same, but they're often confused. Understanding the benefits of both technologies and how they're best applied will help you select the solution that's right for your application.

	ASRS	AMR
A confined solution with access points.	☑	☐
Provides significantly increased storage density.	☑	☐
Provides vertical storage above average human reach.	☑	☐
Independently stores and retrieves goods delivering to a person or port.	☑	☐
Eliminates human travel for order/goods picking.	☑	☐
Adds inventory security.	☑	☐
Remove touchpoints from picking operations and reduces the opportunity for human error.	☑	☐
Reduces storage footprints.	☑	☐
Augments tasks with human lead operations.	☐	☑
Can operate amongst humans or in a dynamic working space.	☐	☑
Often needs less physical infrastructure.	☐	☑
Quicker to implement, typically.	☐	☑
Can execute a variety of material movement tasks throughout a facility. Such as sortation, or the transportation of goods across a facility or between areas.	☐	☑
Can assist in order/goods picking.	☑	☑
Can typically integrate with other kinds of technologies.	☑	☑
Can help digitize inventory.	☑	☑
Both technologies typically need similar flooring conditions and environments.	☑	☑

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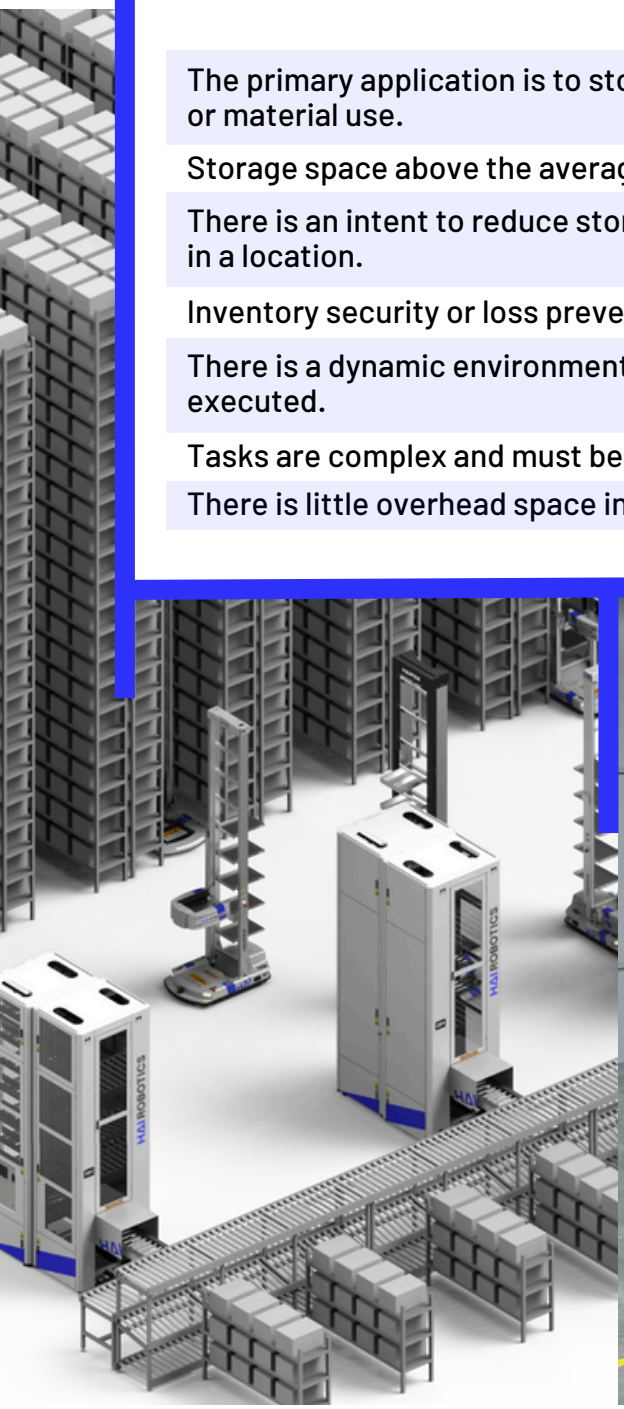
In short, an Automated Storage and Retrieval System is a confined solution that independently stores and retrieves goods, pallets, loads or isolated containers of goods. Systems typically have the ability to store material higher than the average human reach and provide storage density greater than what is available in average human working environments.

An Autonomous Mobile Robotic system can operate in a dynamic environment or among human workers while executing a variety of tasks to assist in the movement and sortation of goods.

What to look for in your intended application to know what kind of automated solution may be best:

	ASRS	AMR
The primary application is to store goods awaiting order picking or material use.	☑	☐
Storage space above the average human reach is available for use.	☑	☐
There is an intent to reduce storage footprint or store more goods in a location.	☑	☐
Inventory security or loss prevention is a goal.	☑	☐
There is a dynamic environment where a series of tasks are being executed.	☐	☑
Tasks are complex and must be human lead.	☐	☑
There is little overhead space in the facility.	☐	☑



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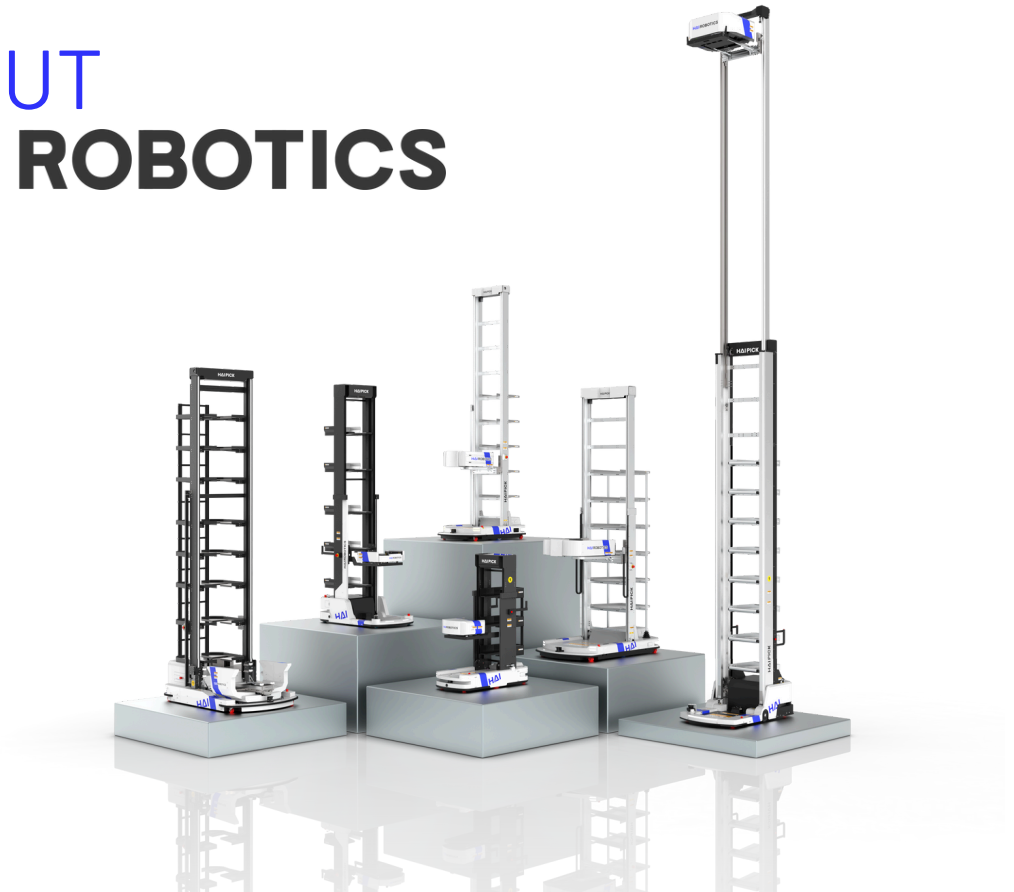
ABOUT HAI ROBOTICS



Hai Robotics is the pioneer in Autonomous Case-Handling Robotic (ACR) systems. We are committed to reducing our customers' storage footprints, boosting throughput with increased speed and order accuracy, maximizing workflow efficiencies with reduced operating costs, and improving worker productivity.

99%+

Achieve picking accuracy of 99%+.

3-4 TIMES

Boost your operational efficiency 3-4 times.

400%

Increase storage density by 80-400%.

WHY ACRS?

Our high-capacity ACRs provide a remarkably small footprint with a vertical reach 39+ feet high, allowing for our solutions to reduce a facility's storage footprint up to 75%. Combined with highly effective AI-driven software, our robotic equipment manages the efficient storage, movement of material, and workflows while improving worker efficiency by 200-300%.

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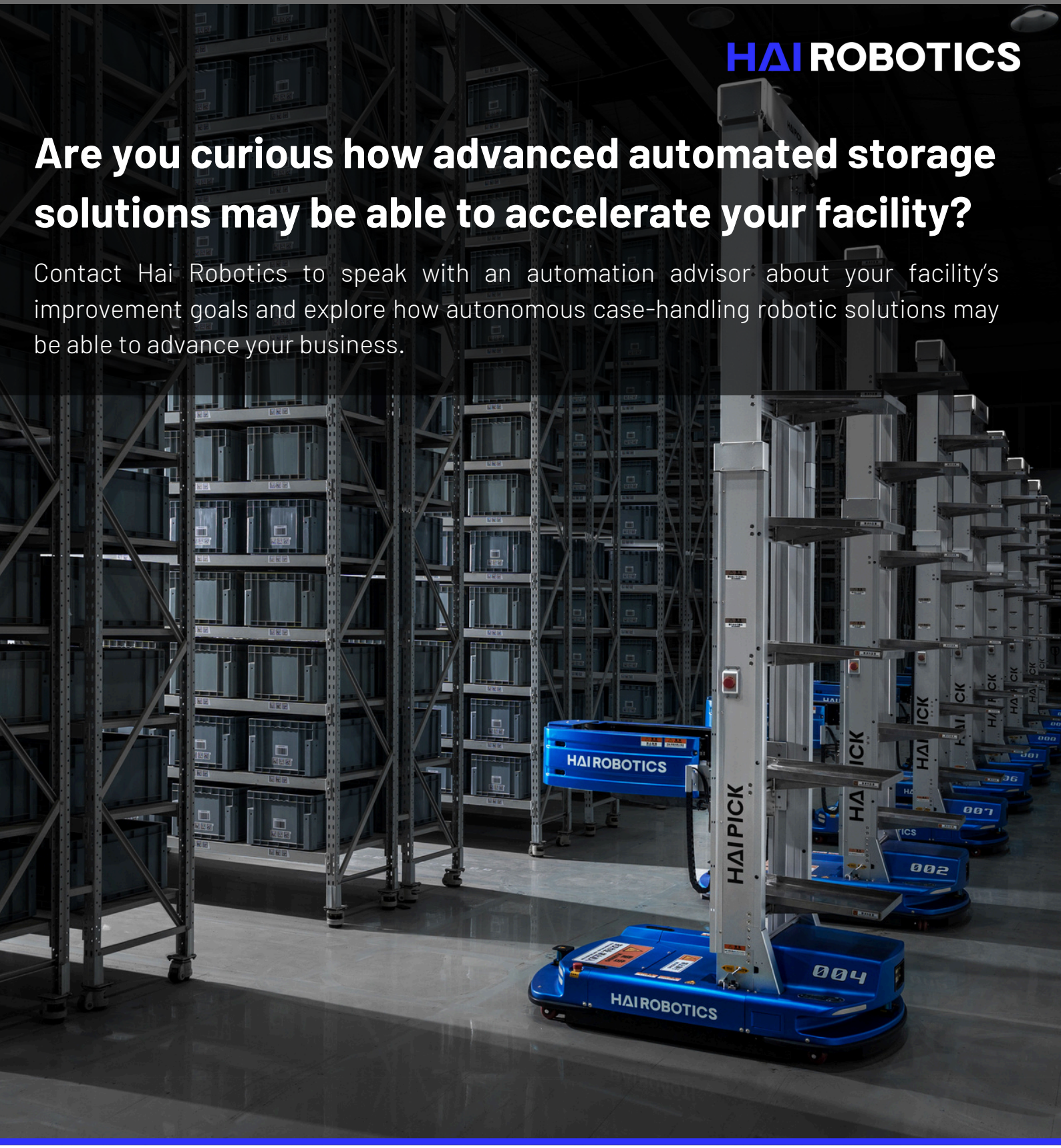
Are you curious how advanced automated storage solutions may be able to accelerate your facility?

Contact Hai Robotics to speak with an automation advisor about your facility's improvement goals and explore how autonomous case-handling robotic solutions may be able to advance your business.



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