



9 Key Questions to Finding the Right Automated Storage and Retrieval Solution

Utilize vertical space to robustly and securely
handle the complexities of moving and storing
payloads

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Introduction

Designed for high volume movement of products in and out of storage, Automated Storage and Retrieval Systems (ASRS) are often employed to support manufacturing and distribution operations. Saving valuable time, with fast throughput capabilities, and optimizing space, through its vertical structure, ASRS can add to your existing or future operations and bring an added level of inventory storage security.

From the first introduction of ASRS in the 1960s, there has been a lot of technological refinement and improvement to achieve consistent performance, reliability and ease of service. To reap the most benefit from these turnkey advanced technologies, however, it's crucial to evaluate appropriate applications, operation complexities and business objectives to find the right automation fit for your storage and material handling operations.



Key Questions

Learn about the ideal conditions for an effective ASRS. The culmination of the key points can be a good indicator of the type of ASRS that might be worth exploring. It will also help shed some clarity on other crucial conversations or automation considerations to ensure that you achieve the solution that you need for a stronger competitive edge in your industry.

1. How Many Shifts Are You Currently Running?

This is one of the most important points when considering an ASRS. If your facility is running multiple shifts or operating the majority of each day, an ASRS is worth consideration. As you evaluate your warehouse operations, you'll want to identify current operational uptime, number of shifts and opportunities to support multiple shifts.

Keep in mind that with today's advanced technologies, ASRS' capabilities extend beyond simply storing products. They can assist with buffering, sequencing and storage. A common use-case for an ASRS crane is to serve as a supply receiving buffer and also support a multi-shift production operation. Their versatility also opens possibility to support multiple jobs like storing finished products, and also storing raw materials or WIP (work-in-progress) inventory (e.g. unfinished goods, individual product components) in the same racking.

Ensuring that your ASRS is well utilized is crucial to a faster return on investment. Whether it's dedicating a set of processes to an ASRS or building in flexibility for multiple jobs, consultants and system integrators can review your overall processes and design a system and process suggestions that maximize your ROI.



2. Do You Require Greater Storage Capacity?

Operations in which the supply chain causes materials to be manufactured, delivered or shipped in large quantities can benefit from the information and control provided by an automated storage solution. An ASRS can easily manage larger amounts of inventory with higher efficiency and greater capacity than a manually run warehouse.



When trucks or shipping containers drop off large loads of product, an ASRS gives you the ability to quickly receive it into an automated system that will inventory the load and immediately make that information visible and trackable. If you have need for large amounts of storage, either because your operations require it or because your demand is difficult to forecast, then an ASRS might be a justifiable solution to consider.

UNIT-LOAD ASRS

PRODUCT

Pallets, Gaylords, Bulk Containers

USE

Typically used in warehouses or distribution centers with high pallet load handling requirements; they are especially popular in freezer applications where it is difficult to maintain manual labor and storage density is critical; areas with high labor and property costs also justify the use of these systems.

Source: bastiansolutions.com/solutions/technology/asrs/unit-load-asrs

3. Does Your Process Include an Inventory Holding Period?

This is not relevant to all operations, but in some industries – such as food processing or pharmaceutical manufacturing--there can be a mandatory holding period for inventory while the safety of that product is confirmed.

An ASRS is often a great solution in this instance because inventory can be more accurately managed. All inventory can be accounted for through the automated system and the system can be engineered to operate in the environmental conditions required, thus increasing safety for all consumers.



4. Do You Require Precise or Secure Handling of Products?

An often-overlooked benefit of an ASRS is the reliable handling of product in a safe and secure manner. ASRS are uniquely engineered to handle a variety of materials including items that are delicate, hazardous or oddly shaped.

Whether you are using a unit or mini load ASRS, a few different load handling device options are available: telescopic forks, traditional forks or platen, for example. Unlike other methods of product movement, like traditional forklifts and fork trucks, ASRS can be fine-tuned for speed, handling adjustments, and storage depths to align with the exact product, throughput and movement required. Reliable product handling protects your investment and reduces potential damage, loss of inventory or safety hazards caused by poor handling.

These highly controlled storage environments are programmed with storage putaway rules, managed by the warehouse control system. Automated replenishment can easily facilitate order picking and consolidation. Integrated with warehouse execution software, this technology gives you reliable real-time data on your inventory for added reassurance and reports on product identification, movement status and location of your inventory.

The automation of your system would increase security and offer complete traceability of all products, thus providing safer control of valuable inventory. In this case, the ASRS could be considered a vault of sorts.

5. Is Your Current Facility Getting Too Cramped or Could You Use Some Reorganization?

This point should be considered a couple different ways. First, if you are in need of greater amounts of storage space, but only have the ability to build up and not out, then an ASRS would be a great solution. These systems offer the ability to add storage without forcing you to expand the footprint of your current facility. Any extra vertical space can be fully utilized as storage.

Second, an ASRS can be installed in a central location and used to dispense products to the correct workspace outside of the system. This can increase productivity by reducing the time it takes manual laborers to walk to and find the product they need. Products can also be stored more efficiently in a smaller area since fork trucks and people would not need to fit between aisles.

Overall, an ASRS can be a great way to increase storage capacity without adding any additional square footage to your facility. Keep in mind, however, that very few applications are justifiable if the available height of the area in which the ASRS is to be installed is less than 30 feet.

MINI-LOAD ASRS

PRODUCT

Boxes, Bins, Cartons, Totes

USE

Often used in picking applications when there is a high number of slower moving small- to medium-sized SKUs; containers are retrieved in sequence for picking and then returned to storage; controlled, secure access makes this system especially attractive for storing high value items.

Source: bastiansolutions.com/solutions/technology/asrs/mini-load/

6. Do Your Operations Require Extreme Conditions?

Another plus when using ASRS is the system's ability to function properly even under harsh or unique conditions. Many operations require product to be maintained at environments less than desirable for human interaction. This may include extreme heat, wet conditions, refrigeration or freezer environments. For logistics and general comfort, it is much easier for an automated system to continuously handle products stored in these extreme environments. Technology components are rated for the specific use and unique stressors that they might face in their environment for consistent, reliable operation.

In facilities that require the use of a freezer, for example, to maintain inventory, an ASRS provides a more ergonomic environment for workers. Instead of employees working inside the freezer, they can be at workstations located just outside of it and the ASRS can bring the inventory they need right to them. Overall, this creates a more efficient operation and more comfortable work environment for employees. Additionally, this functionality can create cost savings through maximized, dense storage. There is less air which means lower electricity consumption needed to keep the products cold.

Operations located in high seismic regions would benefit from the added storage security provided by an ASRS. These systems include redundant fail-safe designs for the safety of both employees and stored products.

CUSTOM ASRS

PRODUCT

Variety products, including those that fit outside of turnkey solutions due to weight, geometry or product sensitivity

USE

Standard storage and load handling options aren't always the best fit. Unique challenges require custom automation. Whether it's precise or delicate handling, maneuverability with tight tolerances or extreme environments, custom solutions address your precise handling needs. In addition to thorough testing in an ISO 9001:2015 certified facility, Bastian Solutions engineers factor in sensors, fall arrest and motor amperage management in the custom design and operations of any developed ASRS solutions.

Source: bastiansolutions.com/solutions/service/custom-automation/automated-storage-solutions/

7. Do You Need to Store Offshore Commodities?

If your operations depend on overseas suppliers or can be easily disrupted by delays in delivery of materials or products, then the large storage capacity and inventory visibility of an ASRS could be a great solution for you.

Whether you are working with offshore commodities or local shipments, an ASRS solution can provide on-site reassurance with enough storage supplies to buffer any potential shortages or delivery delays to your operations. As your ASRS solution is designed, we can plan to support your operations with storage of a certain number of days' worth of supplies in the event that a supplier facility has to shut down or shipping ports are closed or backlogged. COVID-19 has brought to light numerous global supply chain challenges, making planning ahead more important than ever.



8. Do You Need a Solution Quickly?

As with all warehouse solutions, understanding company timelines, needs and objectives can help clarify and narrow the right automation selection for your specific situation. Some storage and/or retrieval automation options and combinations of technologies provide faster project time frames than others.

Understanding how soon you need a solution to be operational should also factor in related time constraints and variables like:

- Business seasonal peaks
- Upcoming business targets
- System conceptualing
- Site engineering



The size and scale of the system will also ultimately decide the project timeline. In general, ASRS projects can require at least six months for fabrication and installation, not including preliminary project planning. Tighter timelines may consider scalable automation solutions such as automated guided vehicles (AGVs), industrial carousels or racking systems. Larger, more complex ASRS projects will naturally require more time, planning and testing to get the system live and fully functioning. That said, advancements in ASRS designs allows for built-in diagnostics that help simplify installation and maintenance.

Other considerations include carefully selecting your system integrator. The following criteria can help achieve a faster installation and implementation:

- Dedicated facilities and resources for manufacturing & testing.
- Support for training to educate suitable personnel with ASRS operation, management and components.
- 24/7 remote support after installation, including emergency services for mission critical equipment.

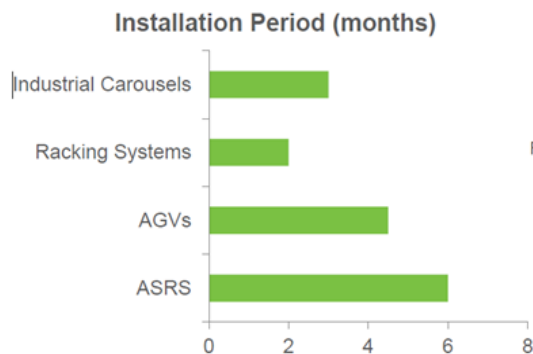


Figure 1.1

Source: Bastian Solutions

9. What is Your Investment Threshold?

Regardless of whether you are considering a mini load, unit load or custom ASRS crane, an automated storage and retrieval system is an investment. The basic components of an ASRS include:

- Storage and retrieval machines
- Rack structures
- Conveyor or AGV interface
- Warehouse Control System

It's imperative to identify and plan around budget constraints to ensure that you are achieving the best return on investment. Although initial costs can seem high, don't forget to factor the benefits and savings that can be accumulated over the lifetime of the system and, in light of the vertical design, the ability to maximize existing facility space. Financially, an ASRS can produce other cost savings through:

- Reduced labor costs
- Increased inventory accuracy and visibility
- Reduced inventory damages
- Greater process capacity and improved productivity
- Increased product security
- Increased facility storage capacity
- Improved labor safety and ergonomics
- Mitigate supply chain impacts
- Utility savings

LIGHTWEIGHT GOODS ASRS

PRODUCT

Small goods or parts, ecommerce or retail products stored in bins or totes

USE

Used to bring storage and picking processes together in a system where both can run simultaneously; when smaller products can be stored individually in small totes or bins. These goods to person, shuttle or robotic ASRS options are often leveraged for order fulfillment picking and packing, supplying parts to assembly areas, storing components, or managing small quantities of a large variety of goods.

Source: bastiansolutions.com/solutions/technology/lightweight-goods-asrs



Conclusion

As markets, consumer behavior and supply chains change, the importance of control and visibility of inventory, as well as operation safety couldn't be greater. ASRS offer a great solution for a variety of industries and applications where high-volume products repeatedly move in-and-out of facilities. Although labor savings are typically the most common reason ASRS is considered, there are many more benefits to choosing this type of solution, including the speed of your supply chain, the unique handling of your inventory, operating environments, storage capacity of your facility, longevity of the solution, labor and space savings, and safety and security.

ASRS are well-versed in the challenges of moving and storing payloads but even more than that, advancements in ASRS technologies has introduced more flexibility to handle various functions, support multiple shifts and the ability to more easily integrate into larger systems. A turnkey or custom solution, utilizing ASRS increases throughput and efficiency, saves space and allows you to use your vertical space for reduced facility expansion costs.



About Bastian Solutions

Bastian Solutions, a Toyota Advanced Logistics company, is a trusted supply chain integration partner committed to providing their clients a competitive advantage by designing and delivering world-class distribution and production solutions. The expertise Bastian Solutions delivers includes exceptional results through a proven process of analytical consulting, engineering and design, simulation, project management, installation services and post-installation support, while sourcing the best material handling equipment and automation technologies available.

With innovation at the forefront, the company also develops Exacta supply chain software, conveyor and sortation systems, custom automated material-handling equipment, robotics, autonomous vehicles and robotic shuttles, and state-of-the art industrial controls.

Bastian Solutions focuses on having a strong, unified relationship with all clients, serving domestic and global markets covering the United States, Canada, India, Mexico and South America.

For more information or to talk to an engineer, visit www.BastianSolutions.com



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