

Making Sense of the Cost of ASRS



The cost of an automated storage and retrieval system can vary widely. The cost of one standalone vertical carousel to manage your MRO parts (think \$80K) is vastly different from the cost of a fully integrated ASRS mini-load system managing over 80,000 SKUs (think \$5M+).

So while I can't give you an exact cost of an ASRS system here; I can walk you through the different elements that impact the total cost of a complete dynamic storage system solution. The good news is dynamic automated storage solutions often provide an ROI of under 18 months due to labor, space, picking efficiencies they offer.



What Contributes to the Cost of ASRS?

ASRS Technology

The most obvious cost contributing to an ASRS solution is the cost of the equipment/technology you ultimately choose. In a large or highly specialized ASRS system there might be some upfront costs for system analysis and design to reconfigure your facility to maximize the benefits of automation, but here are the main factors impacting the cost of the equipment itself:

System Size

ASRS systems are typically made up of a movable component (an inserter/extractor, moveable crane, robotic delivery system) and a static storage area (shelves, racks, bins). Rule of thumb is the larger you go the less expensive the cost per cubic foot is. This is because the moving parts are the most expensive part of the system. The storage area is static and less expensive to expand. Thus the cost per cubic foot comes down as the unit size increases.

Environment

The environment the technology operates in will also impact the cost of the unit – clean room and climate controlled (cold, hot, dry) environments will increase the cost of the unit. In addition to the environment within the unit, the location of your facility might require the unit to meet seismic requirements in earthquake zones.

Stored Products

The physical size of your inventory – specifically items that are extra-long or large – can increase the cost of the machine. The weight of the stored products might require a heavy duty machine with stronger trays or bins. Products requiring special handling – such as hazardous chemicals and liquids, bio-medical products, electronics (ESD), food products and pharmaceuticals – might increase the price of the ASRS solution.

Machine Controls

The cost of the machine controls can vary depending on the type of technology. Generally speaking, the more moving parts and the larger the system – the higher the controls cost.

Required Throughput

The speed in which you need to retrieve stored products from the system will impact the cost; of course the faster the throughput (time to retrieve/pick a stored item from the system) the higher the cost.

Software

Most ASRS can provide basic inventory management from the onboard controls. Different levels of inventory management software can be added for increased inventory control and order picking capabilities.

Most inventory management software is available in tiered packages where the cost increases as you add more features. This allows a semi-customizable solution in most cases and keeps you from paying for features you don't need.

For more advanced operations, the inventory management software can be integrated directly with an existing WMS or ERP system.



Some ASRS technologies can also interface directly with an existing WMS. Software integrations can be complicated - but are well worth the time, effort and cost depending on your objectives.

Delivery & Installation

Another piece of the cost is shipping and delivery of the unit from the manufacturing site to your facility and the installation onsite. These costs should also include the dismantle, takeaway and disposal of the existing system currently in place and any work that needs to

be done to prepare the area for the new technology (rein-forced floor, relocation of overhead duct work or sprinkler heads, outside installations with new enclosures, installations between floors, etc.).

When Planning ASRS Installation Costs, Consider the Location of the Unit within Your Facility:

- Are your doors large enough to get the machine parts to the installation area or does the machine have to be uncrated in another area (or outside)?
- Is the installation area free and clear and easy to move around or tight and hard to maneuver?
- Do you have easy access to fork and scissor lifts or will these need to be rented and brought to site?

Implementation



Once the machine is installed, there are costs associated with implementing the new technology into your existing processes. These costs are highly dependent on the size of your operations and the depth of the integration you are striving for, but I want to be thorough.

Moving beyond a stand-alone ASRS product into more of a total solution has major benefits, but can come with added costs. The first is what I like to call the machine interaction cost – how items will go into the ASRS and how they will come out of the ASRS. Will a person be responsible for getting items in and out of the ASRS? If so, do they require an ergonomic hoist, a manual transport cart? Also consider supporting technologies – such as light or voice directed picking technology, barcode or QR scanning, etc. Or will the ASRS machine interaction be highly automated with an automatic conveyor transport or robotic picking.

Also consider how the parts within the ASRS will be organized. Most often ASRS solutions require totes, bins, and dividers to most effi-

ciently use the space within the system and get optimal productivity rates. These can be included in the machine costs, but sometimes are not – so be sure to account for these. Then it's time to load parts into the ASRS. Do not underestimate the time and cost of the parts move. This is often overlooked and brushed aside with a "we can do it ourselves" attitude. While I applaud the enthusiasm; it takes many painstaking hours, days (sometimes weeks) to configure the locations with the ASRS and then physically move parts from one system to another.

It might be in your best interest to have an expert advisor from the ASRS manufacturer project manage the entire ASRS implementation for you – including the machine interaction process, installation planning and execution.

In addition, when replacing an existing solution, parts often have to be moved to temporary storage and then into the ASRS. With a clear and well thought-out plan; a parts move can happen in a weekend with minimal impact to your operations. There is definitely a cost associated with a parts move, but it's often one worth paying someone else to do it for you.

ASRS implementation can be pretty simplistic or extremely complex depending on your level of integration. It might be in your best interest to have an expert advisor from the ASRS manufacturer project manage the entire ASRS implementation for you – including the machine interaction process, planning and executing the parts move and configuring initial KPIs and reporting.



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Ongoing Costs

Initial basic user training is often included with the machine or software costs; but it's important to plan (and budget) for regular updated training. As the users get comfortable with the new ASRS technology they will benefit from a short refresher training a few months after initial installation – now with a working understanding of the new technology and processes. This is also true for organizations with high turnover. A “train the trainer” user philosophy can work well, but don't overlook the benefit of some occasional updated training.



For the future success of the ASRS, it's critical you budget and plan for the recommended scheduled preventative maintenance as suggested by the manufacturer. Most often, preventative maintenance is included (and required) by the manufacturer within the warranty phase. After the warranty expires, it's up to you to keep the technology maintained. Regularly scheduled

preventative maintenance will help to reduce or eliminate unplanned downtime.

For optimal efficiency, inventory within the ASRS should be regularly analyzed and re-slotted within the system. Over time you will find that inventory that was once a fast moving “hot” SKU is now a slow mover (think beanie babies). As the pick frequency of the SKU changes, so should its location within the ASRS. Slotting philosophies can vary slightly between automated storage technology – but you always want fast moving inventory in the most accessible locations.

“If you don't plan for maintenance, your machine will plan it for you”

While there isn't a hard cost associated here (however your time is a soft-cost!); be sure to plan a regular slotting review (monthly, quarterly, semiannually) to keep your ASRS investment running at peak performance.

There's a lot to consider when it comes to ASRS – the choices are endless. The good news is with the right combination of ASRS technology, software and implementation you can find a solution that's just what you need. Still nervous about the cost – use our quick [project justification calculator](#) to see if ASRS is worth a harder look.