



# ASRS

AUTOMATED STORAGE & RETRIEVAL SYSTEMS

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*an overview of*  
**AUTOMATED  
STORAGE AND  
RETRIEVAL SYSTEMS**

# ASRS 101



Automated storage and retrieval systems, sometimes known as ASRS or AS/RS, are made of a variation of computer-controlled systems that automatically place and retrieve loads from set storage locations in a facility with precision, accuracy and speed.

## WHAT IS AN ASRS?

An Automated Storage and Retrieval System (AS/RS) is a combination of equipment and controls that handle, store and retrieve materials as needed with precision, accuracy and speed under a defined degree of automation. Systems vary from relatively simple, manually controlled order-picking machines operating in small storage structures to extremely large, computer-controlled storage/retrieval systems totally integrated into a manufacturing and distribution process.

Generically speaking, AS/RS refers to a variety of computer-controlled methods for automatically depositing and retrieving loads to and from defined storage locations. Within an AS/RS environment one would find one or more of the following technologies: Horizontal Carousels, Vertical Carousels, Vertical Lift Modules, and/or Fixed Aisle (F/A) Storage and Retrieval Systems, the latter utilizing special storage and retrieval machines to do the work needed to insert, extract and deliver loads to designated input/output locations within the aisles being served.

The right application of AS/RS provides a long list of user benefits! It has been demonstrated time and time again that Automated Storage and Retrieval Systems are proven technologies capable of effectively and reliably handling and buffering raw materials, work-in-process inventories and finished goods of all kinds, making it possible to totally integrate material handling storage, however temporary, into the total process being served.

## USES

Automated storage and retrieval systems are used in a variety of areas to support processing and picking throughout a facility:

**ORDER PICKING:** Retrieving and presenting required inventory to pickers

**STORAGE:** Providing dense long-term buffering for small or large items that are slow- to medium-movers

**KITTING:** Providing an area to group component parts for assembly

**CONSOLIDATION:** Providing a dynamic area to hold parts and items until all pieces of an order can be merged ready for shipment. Often used for consumer, B2B and store orders.

**ASSEMBLY:** Storing work piece components for later production

**PRODUCTION:** Storing tooling and component parts for manufacturing processes

**REPLENISHMENT:** Storing excess inventory for restocking of ancillary picking systems

**SECURITY:** Providing an enclosed storage environment with software access controls

**RETAIL:** Providing a large quantity of parts and items at a customer service desk. Keeps workers in front of customers instead of walking and searching in back rooms.

## INDUSTRIES

Automated storage and retrieval systems are used in a variety of industries. Here are just a few:

- Automotive
- Beverage
- Electronics
- E-commerce
- Food
- Hazmat
- Hospital
- Jewelry
- Life sciences
- Manufacturing
- Medical devices and equipment
- Maintenance & repair operations (MRO)
- Paper
- Pharmaceutical
- Plastics
- Spare parts handling
- Warehousing and distribution

## BENEFITS

- >> Increases throughput capabilities
- >> Increases accuracy levels to 99.99%+
- >> Increases ergonomics by delivering items to the operator at a convenient height, eliminating time lost to walking, searching, lifting, bending and twisting activities

- >> Provides highest possible storage density
- >> Saves up to 85%+ of otherwise wasted floor space
- >> Increases labor productivity up to 85%
- >> Enhances product security
- >> Provides real-time inventory control

# ACCURACY EFFICIENCY SPEED PRECISION

# ASRS TECHNOLOGIES



## SHUTTLES

Shuttles are used for the automated handling of totes, trays, cartons or all three in the same system – for either warehousing or manufacturing.

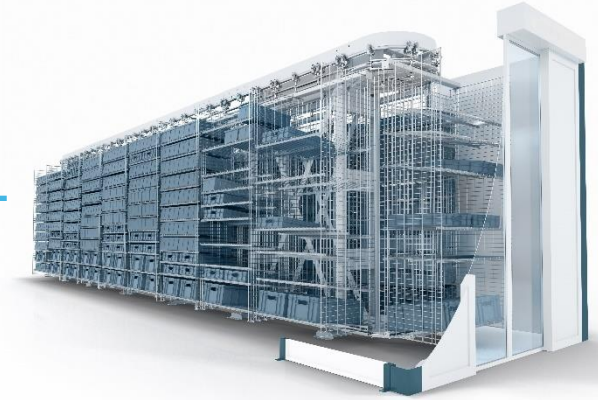


## UNIT LOAD ASRS

Machines that store large loads (usually 1,000+ pounds), typically on pallets with storage rack structure, reaching 100 feet tall or more.

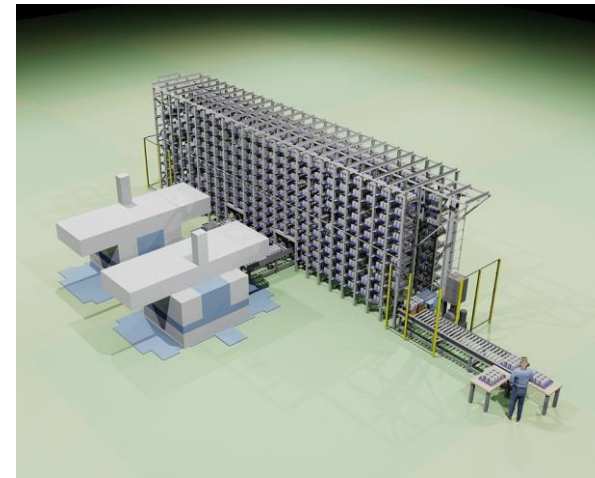
## HORIZONTAL CAROUSELS

Ideal for storing small parts and pieces, horizontal carousels are comprised of a series of bins that rotate horizontally around a track.



## MINI LOAD ASRS

Operating the same as a unit-load AS/RS, a mini-load AS/RS handle lighter loads, usually weighing less than 1,000 pounds.



## VERTICAL CAROUSELS

Rotating vertically, like a Ferris wheel, vertical carousels house a series of shelves or carriers to provide high-density storage.



## VERTICAL LIFT MODULES

VLMs consist of a column of trays in the front and back of the module with an automatic inserter/extractor in the center that stores and retrieves the required trays.



## CUBE-BASED STORAGE

Ultra-high density goods-to-person piece picking system which utilizes robots to store and retrieve inventory bins from a cubical storage grid.



# WHO ARE THE ASRS GROUP MEMBERS?

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