AS / RS

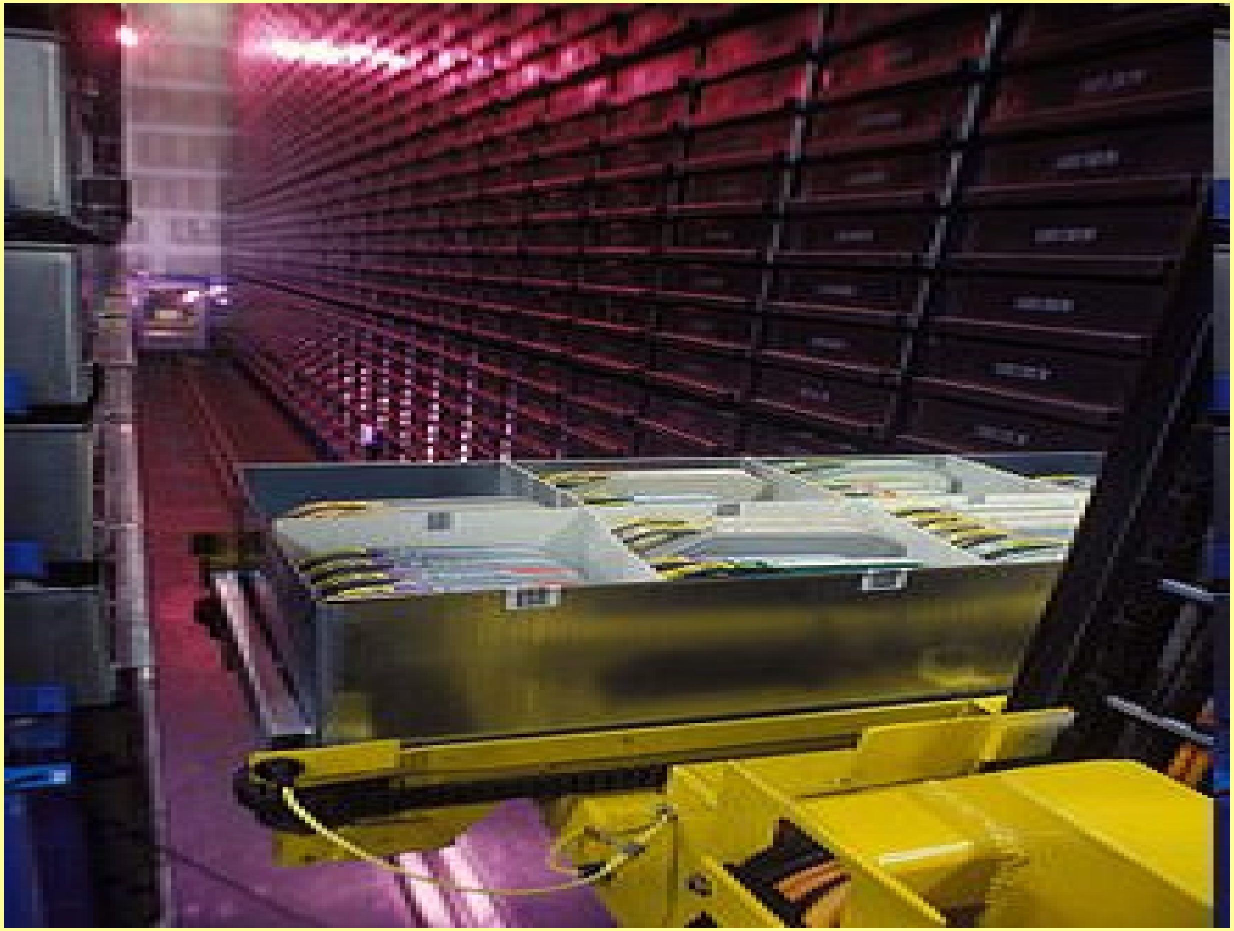
AUTOMATED
STORAGE &
RETRIEVAL SYSTEM

An **automated storage and retrieval system** (**ASRS** or **AS/RS**)

consists of a variety of computer-controlled methods for automatically placing and retrieving loads from specific storage locations. Automated Storage and Retrieval Systems (AS/RS) are typically used in applications where: there is a very high volume of loads being moved into and out of storage; storage density is important because of space constraints; no value adding content is present in this process; accuracy is critical because of potential expensive damages to the load. AS/RS can be used with standard loads as well as nonstandard loads.

AS/RS systems are devices designed for automated storage and retrieval of parts and items in manufacturing, distribution, retail, wholesale and institutions. They focus on bringing "goods to the man" rather than manual walking and searching. Space savings, increased productivity/reduced labor, increased accuracy and reduced inventory levels are some of the primary benefits

The inside of an ASRS at the Defense Visual Information Center, used for the storage of media items such as film canisters.



- The equipment required for an AS/RS include a Storage & Retrieval Machine, or SRM, that is used for rapid storage and retrieval of material. SRM are used to move loads vertically or horizontally. SRM can also move laterally to place objects in correct storage location.

- The traditional vending machine is the most common and familiar AS/RS system but because the application is to do with retail sales, the logistic concept of a vending machine is missed.

Material Handling Institute of America (MHIA), the non-profit trade association for the material handling world, have broken AS/RS into two primary segments:

- Fixed Aisle Segments
- Carousels/Vertical Lift Modules (VLMs).

Fixed Aisle Segments

Fixed-aisle AS/RS is categorized into three main types: **single-masted, double masted, and man-aboard.** Most are supported on a track and ceiling guided at the top by guide rails or channels to ensure accurate vertical alignment, although some are suspended from the ceiling. The **'shuttles'** that make up the system travel between fixed storage shelves to deposit or retrieve a requested load. The shuttles are able to telescope up to the necessary height to reach the load, and can store or retrieve loads that are several positions deep in the shelving.

Automated 4 aisle miniload warehouse with single mast stacker cranes.

Vertical Lift Module

The VLM is a computer controlled automated vertical lift module. The stock within the VLM remains stationary on front and rear tray locations. On request a movable extractor unit travels vertically between the two columns of trays and pulls the requested tray from its location and brings it to an access point. The operator then picks or replenishes stock and the tray is returned to its home.

Main advantages:

Most VLMs offer dynamic space storage which measures the tray every time it's returned to the unit to optimize space, tilt tray delivery for increased ergonomic accessibility, and laser pointers which indicate the exact item to be picked on each tray.

Horizontal Carousels

- A horizontal carousel is a series of bins which rotate on an oval track. Every bin has shelves which are adjustable to .75" and can be configured for a myriad of standard and special applications. An operator simply inputs a bin number, part number or cell location and the carousel will rotate via the shortest path.
- Multiple horizontal carousels are used for order fulfillment.

Wire-shelving horisontal carousel

Prezentacja stworzona przy pomocy strony:

http://en.wikipedia.org/wiki/Automated_storage_and_retrieval_system