

## Retrieval Process

Readers submit requests for retrieving the required books from the racks.

The stacker crane moves to the racks to take out the book bins.



The book bins are transported to the pickup/return station via conveyor equipment.

Librarians take out the books from the book bins at the station.

## Storage Process

When readers return books, librarians put in a request for book bins that fit the books' sizes and have the required capacity.



The stacker crane moves to the racks to take out the book bins.

The book bins are transported to the pickup/return station via conveyor equipment.



Librarians put the books into the book bins to be transported back to the racks.

## ASRS Specifications

### Racks

B5 Type	4 columns x 20 rows x 30 levels x 4 sets
A5 Type	4 columns x 9 rows x 36 levels x 4 sets
A4/Free Type	4 columns x 40 rows x 27 levels x 4 sets
Number of Containers	32,016 bins (2 book bins in each rack slot)
Book Capacity	1,280,640 volumes (40 volumes for each bin)

### Bins

B5 Type	W 470 x D 660 x H 280 mm
A5 Type	W 400 x D 660 x H 230 mm
A4 Type	W 525 x D 660 x H 320 mm
Free Type	W 525 x D 660 x H 275 mm

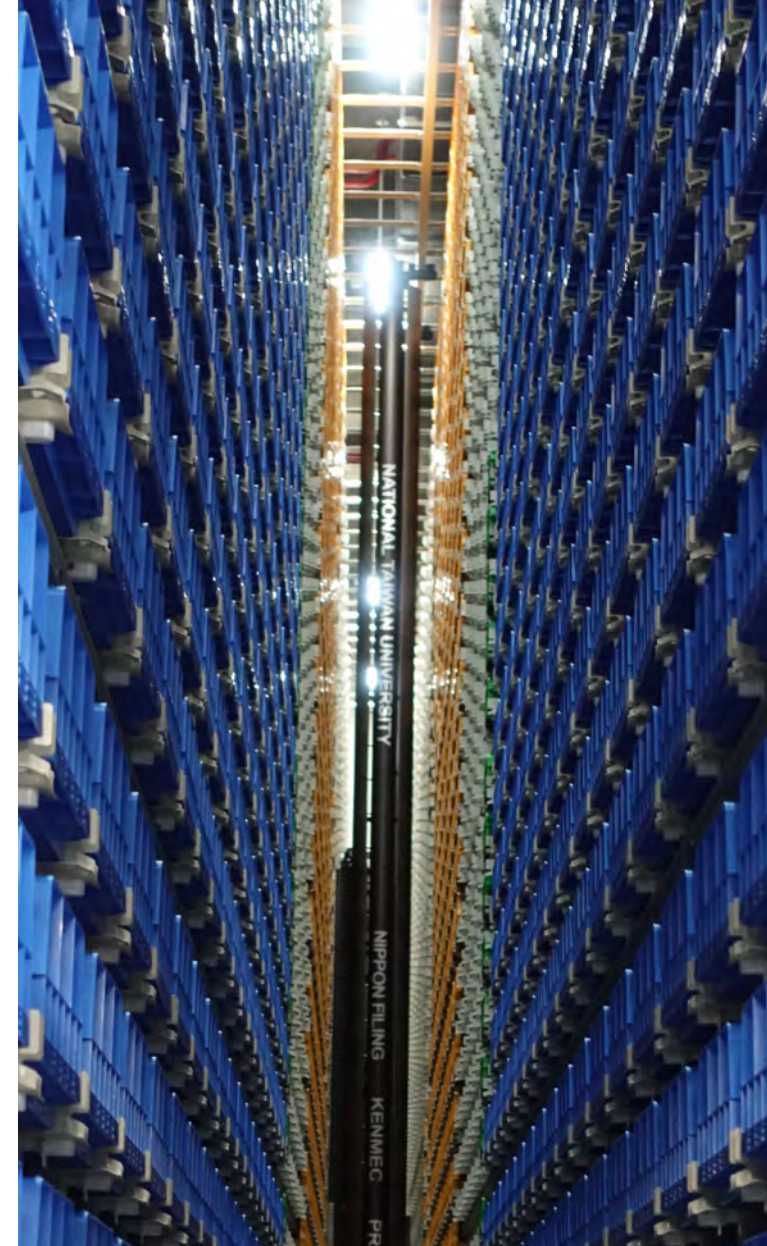
### Main Peripheral Equipment

Stacker crane	4 in total
Horizontal carrier	1 each for retrieval and storage operations
Vertical carrier	1 each for retrieval and storage operations
Pickup/Return Station	2 in total (1 each on 1F and B1)

Completed in 2018

National Taiwan University Library

<http://www.lib.ntu.edu.tw/>



# ASRS

(Automated Storage and Retrieval System)

National Taiwan University Library

## ASRS

NTU ASRS, located in Basements 2-4 of the Zonghe Lecture Building, is the first of its kind among libraries in Taiwan. The capacity is at least 1.2 million volumes, 5 times larger compared to conventional shelving methods. The system enhances storage efficiency, retrieval speed and accuracy. Moreover, it provides readers with a more convenient user experience.

## ASRS Service Center

The ASRS Service Center is located on 1F of the Zonghe Lecture Building, providing a comfortable reading environment and library services.



▲ ASRS Service Center



▲ Zonghe Lecture Building

### Pickup/Return Station

The station serves as a portal of the ASRS. Librarians scan the barcodes of books here to carry out storage and retrieval operations.



### Racks

The storage racks are aseismic and fall-proof, the structure of which is designed to accommodate book bins of different sizes.

### Vertical Carrier

This is used to vertically carry bins across the floors between the racks and the pickup/return station.

### Stacker Crane

The stacker crane can transport book bins from the racks to the horizontal carrier with high speed and low noise.

### Turntable

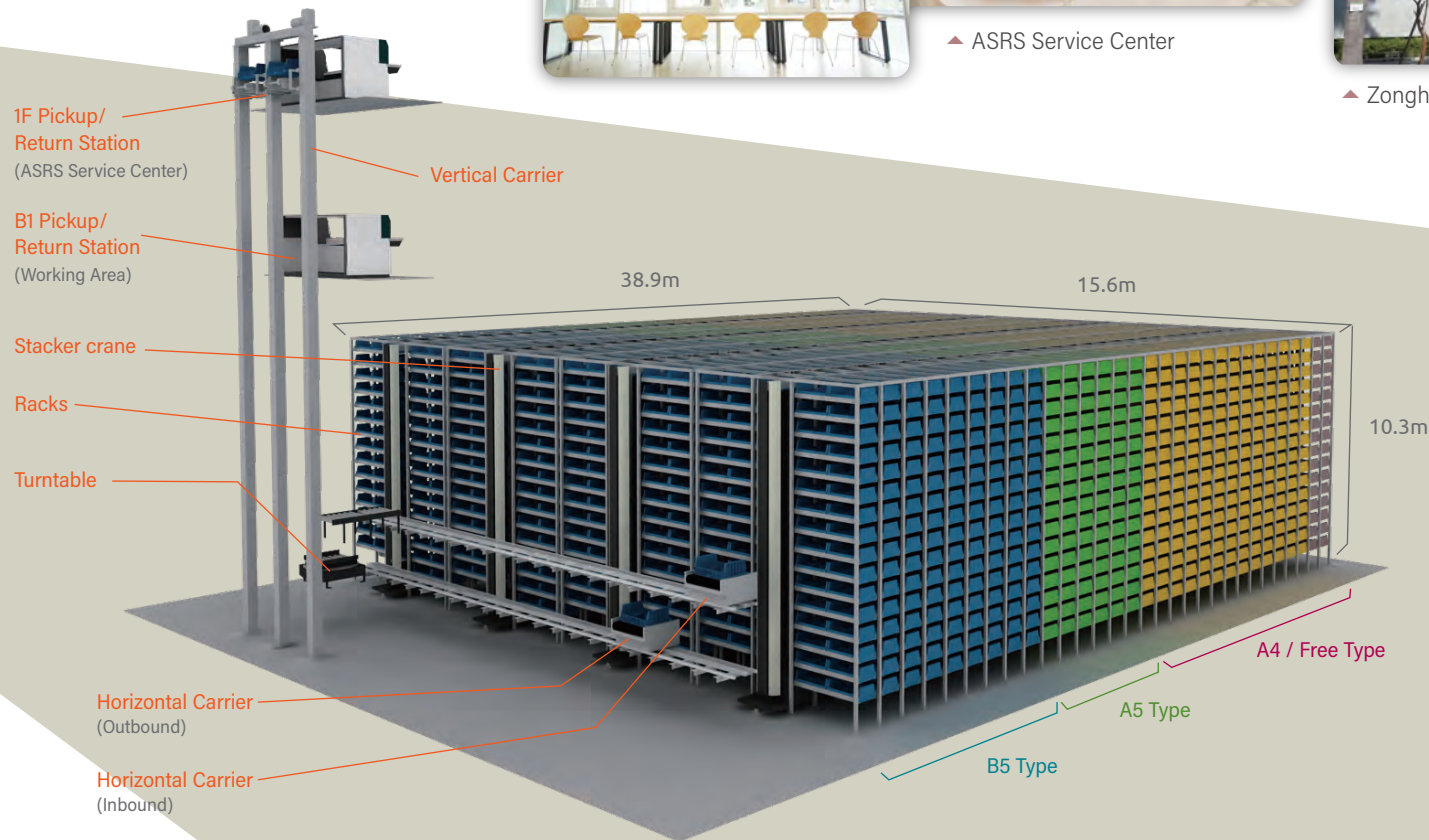
The turntable rotates book bins to face the librarians with the designated side before arriving at the pickup/return station.

### Horizontal Carrier

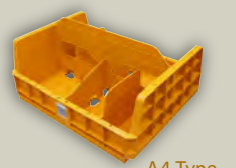
This is a bin carrier that connects the storage racks to the vertical carrier.

### Bins

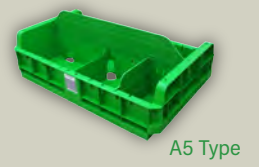
The book bins, which come in 4 sizes (A5, B5, A4 and free size), are made of polypropylene (PP) resin to achieve lightness and prevent deformation.



Free Type



A4 Type



A5 Type



B5 Type