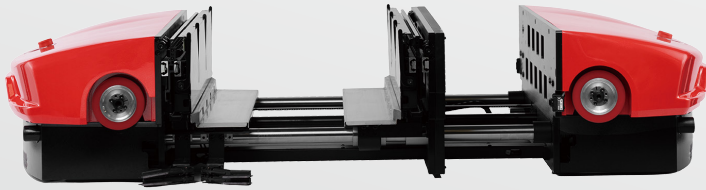




SLS400

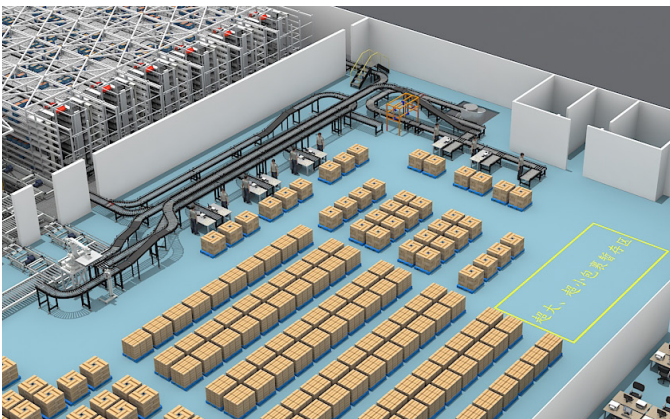
Variable Tote-handling Shuttle
Robot System

System Introduction



Hybrid Storage Variable Sized

This is the fourth generation of tote-handling shuttle robot automated storage and retrieval system developed by HWArobotics PTE. LTD. (hereinafter referred to as "HWArobotics"). This product is the 400 series automated hybrid storage and retrieval system for different forms of hybrid storage, picking, buffering, sorting and other operations of cases and cartons with different sizes and specifications.



- SLS400 tote-handling shuttle robot automated storage and retrieval system is composed of modules including multi-level racks, goods lift, shuttle lift, variable-width shuttles and control system. All goods storage and retrieval operations are under the unified control of WCS/WES and other control software.

- The multi-level racks in this storage and retrieval system offer several advantages. They have a compact layout, a sturdy structure, and are easy to install and scale. The racks can be quickly and flexibly deployed, expanded, or adjusted based on the customer's on-site requirements. This capability significantly reduces the customer's investment costs.



- The variable-width shuttles in this storage and retrieval system use integrated assembled forklifts which uses the proprietary technology of HWArobotics. The shuttles can pull to retrieve and push to store goods effectively and efficiently with longer service life of parts, thus greatly reducing the failure rate and maintenance cost of shuttles.

- The innovative high-speed goods lift serves as an efficient and reliable transportation system for goods in and out the racks. It is seamlessly integrated with the multi-level shuttles, significantly reduces the accumulation of goods on the conveyor and device vacancy rates. As a result, it accelerates the circulation of orders, optimizes operational efficiency.

Advantages And Features

SLS400 Advantages

High storage density

Effective double deep storage position design with dense storage spaces

Optional three power supply modes

Power Bus, Lithium Battery, Capacitor

Dynamic allocation of tote position

The size of tote position can be dynamically adjusted as needed

Saving energy and protecting environment

Adopt energy-efficient parts and energy saving drive solutions to conserve energy and reduce consumption

Compatibility with multiple specifications of case containers

Length & Width 200-850mm*200-650mm
(7.8-33.15in*7.8-25.59in)

Unique high reliability and high efficiency layer changing solution

SLS400 Features

High reliability,
cost-effectiveness
and applicability



This product has
been CE standard
fully certified



Highly flexible
Open and compatible
Standardized and universal system
Maximized storage space



The system is simple to operate, easy to maintain, and ready for customization and expansion.
The shuttles are designed to work continuously for 24 hours with minimum maintenance request yet guarantee the highest reliability.

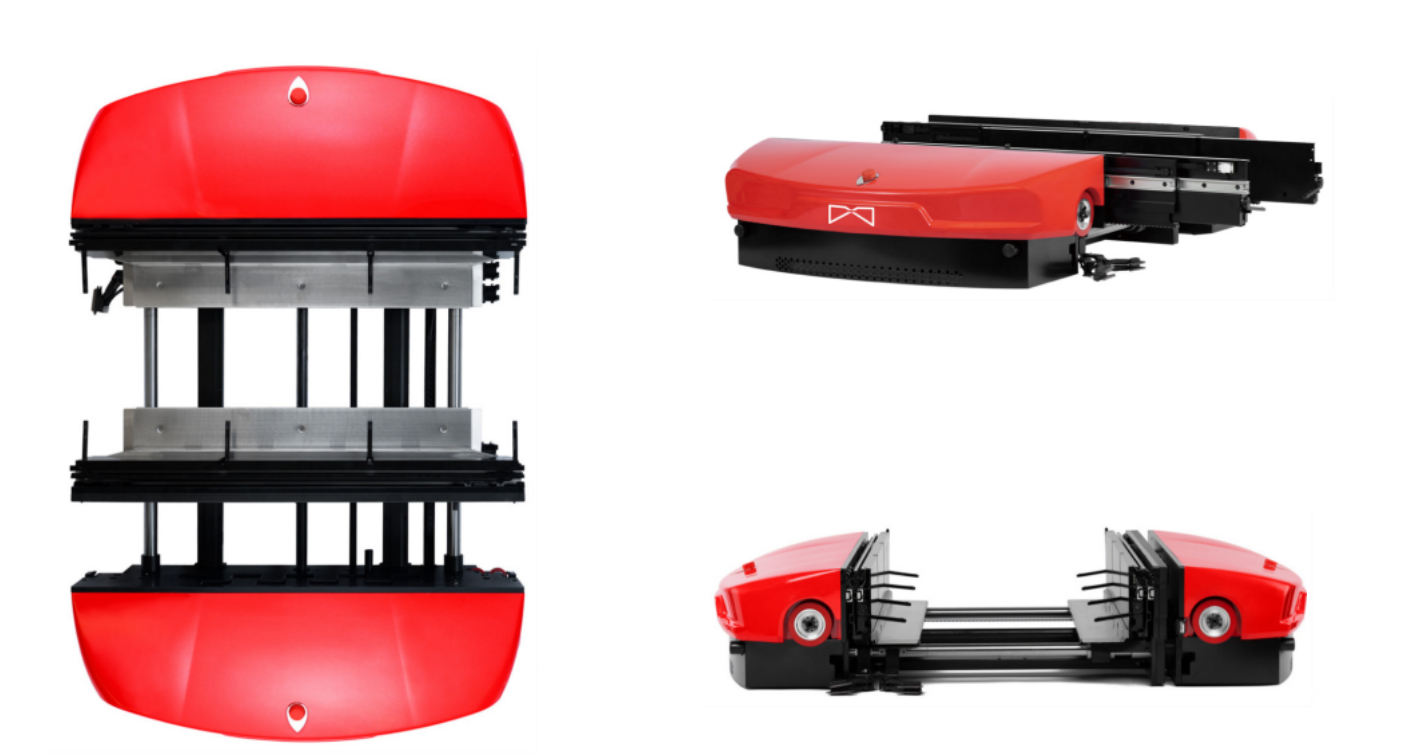


Shuttles are equipped with super-capacitor energy recycling systems that can recycle energy when they slow down or brake, so to avoid the impact of long distance rail's voltage degradation or part of the isolated conductor rail.



The multi-level shuttle robot system has the function of intelligent deployment and control.
The inbound access conveyor can identify the overall size of the containers.

Performance Parameters



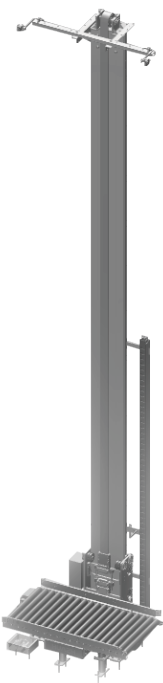
Item	Parameter
Single aisle compound efficiency	≥1000 boxes/hour ^①
Rated Unit Load	35kg (77lb)
Maximum Unit Load	50kg (110lb)
Cargo Unit Size (L*W*H)	200~850*200~650*60~500 (mm) 7.8~33.15*7.8~25.35*2.4~19.5 (in)
Speed (MAX)	4m/s (13ft/s)
Acceleration (MAX)	2m/s ² (6.56ft/s ²)
MTTR ^②	<15mins

Notes^①: The parameter is based on the standard configuration height of 10 meters and a shelf length of 50 meters.

Notes^②: MTTR (Mean Time to Repair) refers to the average time required to repair a failure. Please note that this parameter applies to an aisle but not the entire project.

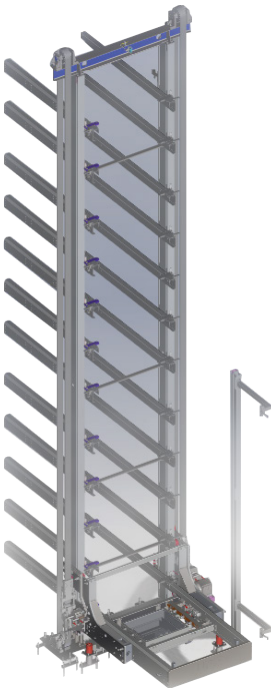
Goods Lift

Project Name		Parameter
Lifting device	Rated Load Capacity	70kg (154lb) (Double tote position)
	Positioning accuracy (mm)	±2mm (0.08in)
Speed of rise and fall	No-load speed	≥5m/s (16ft/s)
	No-load acceleration	≥7m/s ² (23ft/s ²)
	Full load speed	≥5m/s (16ft/s)
	Full load acceleration	≥7m/s ² (23ft/s ²)
Single lift efficieny (Max)		Compound throughput efficiency: 700 (boxes/hr)



Shuttle Lift

Project Name		Parameter
Lifting device	Rated Load Capacity	>160kg (352lb) (shuttle & tote)
	Positioning accuracy (mm)	±2mm (0.08in)
Speed	No-load speed	≥3m/s (10ft/s)
	No-load acceleration	≥3m/s ² (10ft/s ²)
	Full load speed	≥3m/s (10ft/s)
	Full load acceleration	≥3m/s ² (10ft/s ²)
Single lift efficieny (Max)		Compound throughput efficiency: 120 (units/hr)



Application Scenario

With a strong industry applicability, this storage and retrieval system can be applied in numerous industries, such as e-commerce, media, tobacco, pharmaceutical, electric power, electronics and aviation.



E-commerce



Media



Tobacco



Pharmaceutical

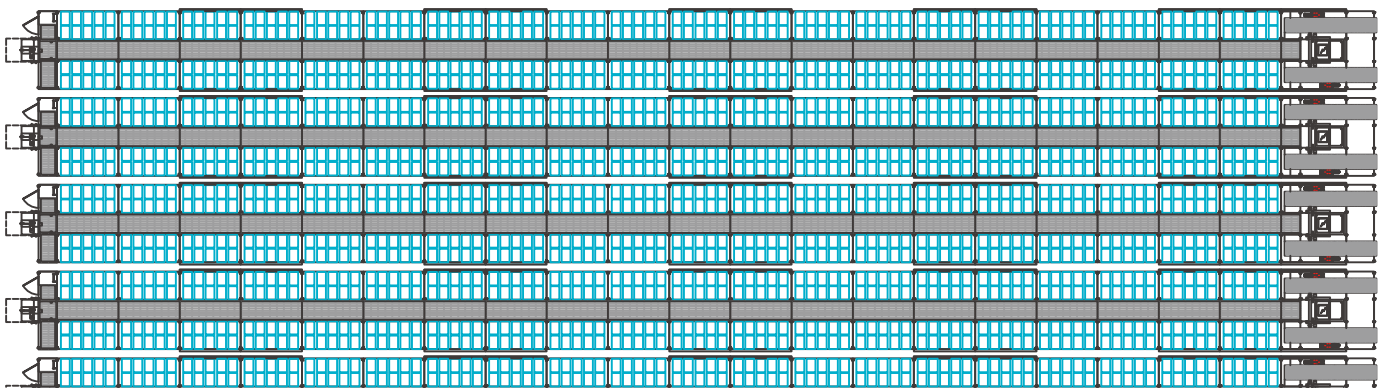


Electric Power



Electronics

SLS400 Series Planning Sample Graph



Case Study

A well-known large electronic parts intelligent warehouse project

Project Features

- Muti-specification tote type mixed storage
- Lifts at both ends

Core Configuration

- Multi-shuttle ASRS: 4 aisles
- Shuttles: 80
- Shuttle Lifts: 8
- Goods lifts: 16

A well-known electric power manufacturing enterprise Intelligent warehousing project

Project Features

- Cartons and totes storage
- Height of warehouse is 20m (66ft)

Core Configuration

- Multi-shuttle ASRS: 4 aisles, 10800 standard totes
- Shuttles: 48
- Goods lifts: 8
- Shuttle Lifts: 4

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HWArobotics

ID: HWArobotics

