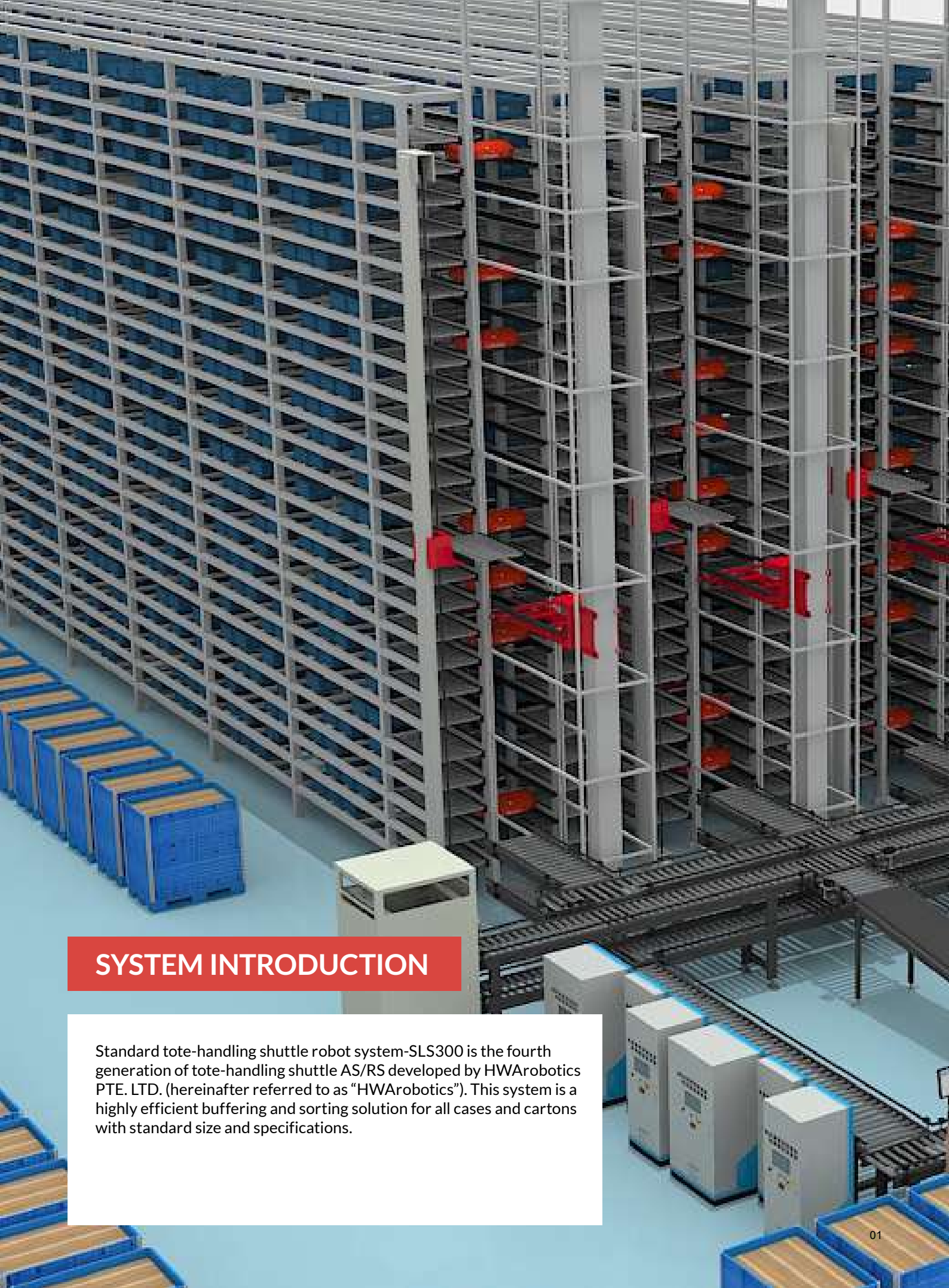




STANDARD TOTE-HANDLING SHUTTLE ROBOT SYSTEM-SLS300

Product Brochure

HWArobotics PTE. LTD.



SYSTEM INTRODUCTION

Standard tote-handling shuttle robot system-SLS300 is the fourth generation of tote-handling shuttle AS/RS developed by HWArobotics PTE. LTD. (hereinafter referred to as “HWArobotics”). This system is a highly efficient buffering and sorting solution for all cases and cartons with standard size and specifications.

SYSTEM COMPOSITION

High Throughput
High Storage Capacity

Single aisle compound
throughput efficiency:
2500 boxes/hr(Max)

Standard tote-handling shuttle robot system-SLS300 is composed of modules including multi-level racks, goods lift, inter-level shuttle lift, 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.
- Standard tote-handling shuttle robot system-SLS300 uses integrated assembled forklifts which adopt 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 reduces the failure rate and maintenance cost of shuttles.
- The innovative high-speed goods lift ensures efficient and dependable transportation of goods to and from the racks. It seamlessly integrates with multi-level shuttles, optimizing operational efficiency by reducing the accumulation of goods on the conveyor. This feature significantly reduces device vacancy rates and accelerates the order circulation process.



ADVANTAGES AND FEATURES

■ SLS300 Advantages

High storage density

Effective double deep location design with high density storage spaces

Large order handling capacity

Multiple shuttles jointly process the storage units simultaneously

High device utilization

Achieve high-speed loading and unloading and increase the picking efficiency

Flexible layout

Adjust the layout flexibly according to customer's needs

Optional Three Power Supply Modes

Power Bus, Lithium Battery, Capacitor

Low power consumption

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

■ SLS300 Features

This product has been CE standard fully certified.

The system is simple to operate and maintain, easy for customization and expansion.

The shuttles are designed to work continuously for 24 hours with minimum maintenance request yet guarantee the highest reliability

Highly flexible

Standardized and universal system

Open and compatible

Maximized storage space

The system is equipped with intelligent deployment and control capabilities, providing two control modes: white box and black box.





PERFORMANCE PARAMETERS

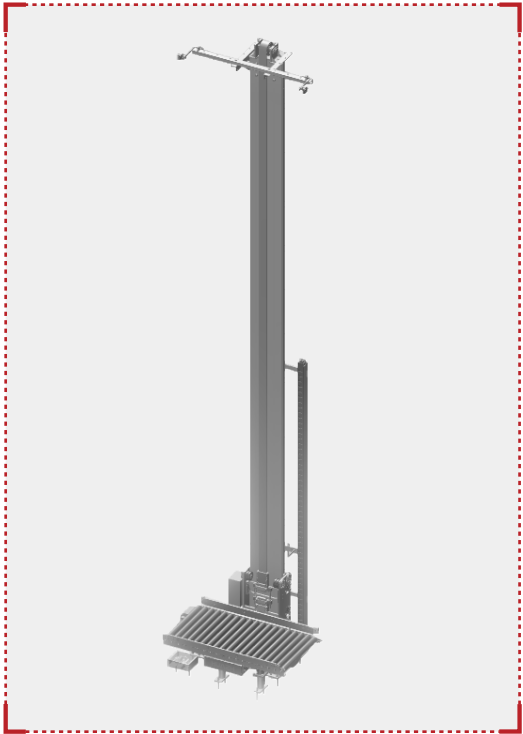
| <i>Item</i> | <i>Parameter</i> |
|---------------------------------------|--|
| Single aisle compound efficiency(MAX) | 2,500boxes/hr |
| Rated Unit Load | 35kg (77lb) |
| Maximum Unit Load | 50kg (110lb) |
| MAX Tote/Carton Size(L*W*H) | 850*650*500mm(33.5*25.6*19.7in) |
| Speed(MAX) | 4m/s (13ft/s) |
| Acceleration(MAX) | 2m/s ² (6.56ft/s ²) |
| MMBF ^① | ≥5000times |
| MTTR ^② | <15mins |

Notes^①: MMBF (Mean Movements Between Failures) refers to the number of cartons handled during the mean time between failures. Please note that this parameter applies to an aisle but not the entire project.

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



SHUTTLE LIFT

| PROJECT NAME | | PARAMETER/BRAND |
|----------------------------|--------------------------|---|
| Lifting Device | Rated load capacity(kg) | >160kg (352 lb) (shuttle & tote) |
| | Positioning accuracy(mm) | ±2mm (0.08 in) |
| Speed | No-load speed | ≥3m/s (10 ft/s) |
| | No-load acceleration | ≥3m/s ² (10 ft/s ²) |
| | Full load speed | ≥3m/s (10 ft/s) |
| | Full load acceleration | ≥3m/s ² (10 ft/s ²) |
| Single lift efficieny(Max) | | Compound throughput efficiency: 120(units/hr) |



APPLICATION SCENARIO

The SLS300 has a broad industry fit, can be applied in numerous industries, such as e-commerce, media, tobacco, pharmaceutical, electric power, electronics, etc.



E-commerce



Media



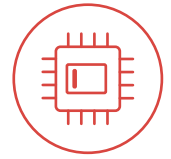
Tobacco



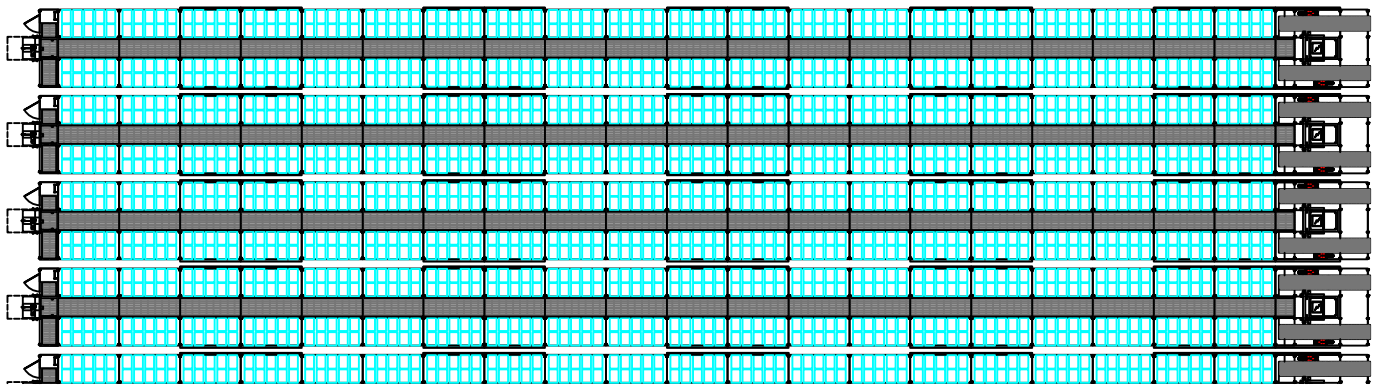
Pharmaceutical



Electric Power



Electronics



SLS300 Series Planning Sample Graph

CASE STUDY



Joyson Safety System's intelligent manufacturing plant in Ningbo

Project Features

1. Shuttle ASRS + AMR tote-handling robot constitutes streamlined components supply chain from storage to assembly line- whole warehouse operation under central control room monitoring.
2. 22 meters(72 ft) reciprocating cross-floor lift, efficiency is 500 boxes/hr.

Core Configuration

- Aisles: 3
- Standard Boxes: 23,800
- Shuttles: 21
- Goods lifts: 3
- Level-changing lifts: 2 sets (Height: 22m(72 feet), acceleration: $7\text{m/s}^2(23\text{ft/s}^2)$)





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