



Mixed Layer Picking System

—New Ideas for Large-Volume Warehouse Picking



Why does a warehouse need a hierarchical picking system?

In the fast-moving consumer goods (FMCG) industry, rapid stock preparation is essential. However, manual single-box picking is inefficient, and order peaks are straining the limits of manual labor. Warehouses for products such as beverages and dairy products have a daily inventory turnover of 3-5 times, meaning that picking speed directly determines the efficiency of inventory monetization. Delayed shipments lead to out-of-stock situations in distribution channels and ultimately result in the loss of market share. To address these challenges, hierarchical hybrid coding picking systems are optimizing warehouse operations.

● Pain points :

- The average time consumption for picking is 3-4 minutes per whole layer.
- Labor dependence: Requires 3-person collaboration (forklift operator + 2 movers)
- Movement waste: Personnel repeatedly move multiple times within the warehouse.
- High labor intensity: The weight of a single layer is about 200kg, and manual handling easily causes fatigue.
- Manual handling of materials involves less inspection of individual boxes.

● Value of the solution:

- It takes 0.5 minutes per whole layer.
- Layer picking to improve the efficiency of single handling.
- Minimalist path: for multiple workstations at the same time.
- Batch verification: Scanning codes for whole -layer boxes in seconds to ensure correct batch information.



What are the highlights of the system?

1. The product has a wide range of applications.

It has excellent adaptability to products with different packaging, including cartons, heat-shrinkable films, and strap packaging.

2. High operational efficiency.

Layer picking directly increases the efficiency by nearly 10 times compared with single-box picking, which greatly improves the operational efficiency per unit area.

3. Good flexible customization.

Products of different specifications can be mixed on the same pallet according to customer orders, thereby improving the loading utilization rate of the pallet.

4. Good scalability.

The whole-layer system can interface with automated storage and retrieval systems (AS/RS) or AGVs to achieve pallet-to-pallet picking or warehousing and palletizing of goods. It can also interface with the whole-box system to realize mixed coding operations of layers and boxes.



The core driver of the system -- IPS

The Layered Mixed-Coding Picking System is driven by our self-developed core software, IPS (Intelligent Picking System), which enables robotic mixed palletizing and schedules peripheral docking equipment.

1. Full-process task management

Order analysis and task generation: Receive orders from customers' business systems, automatically analyze order structures, split and generate whole-layer picking tasks and whole-box picking tasks, sort them by priority, and assign tasks to corresponding workstations to reduce equipment switching time.

2. AGV and robot scheduling:

Schedule AGVs to transport pallets of materials to be picked from the AS/RS (automated storage and retrieval system) to the de-palletizing position of the picking workstation, or deliver completed order pallets to the film-wrapping/labeling workstation. Monitor the status of robots in real time (e.g., idle, working, faulty), and dynamically assign tasks to idle workstations to avoid equipment idling.

How does the system improve stock preparation capabilities?

Take the stock preparation warehouse of fast-moving consumer goods (FMCG) as an example. The warehouse needs to deliver 20,000 to 30,000 loose items daily to distributors, with over 70% of shipments being whole-layer deliveries. For this type of warehouse, the whole-layer picking system can meet the stock preparation requirements.

1、A food warehouse in Zhongshan: Equipped with 2 layer picking systems and connected with 8-10 AGV devices, it achieves a daily shipment of 30,000 boxes.

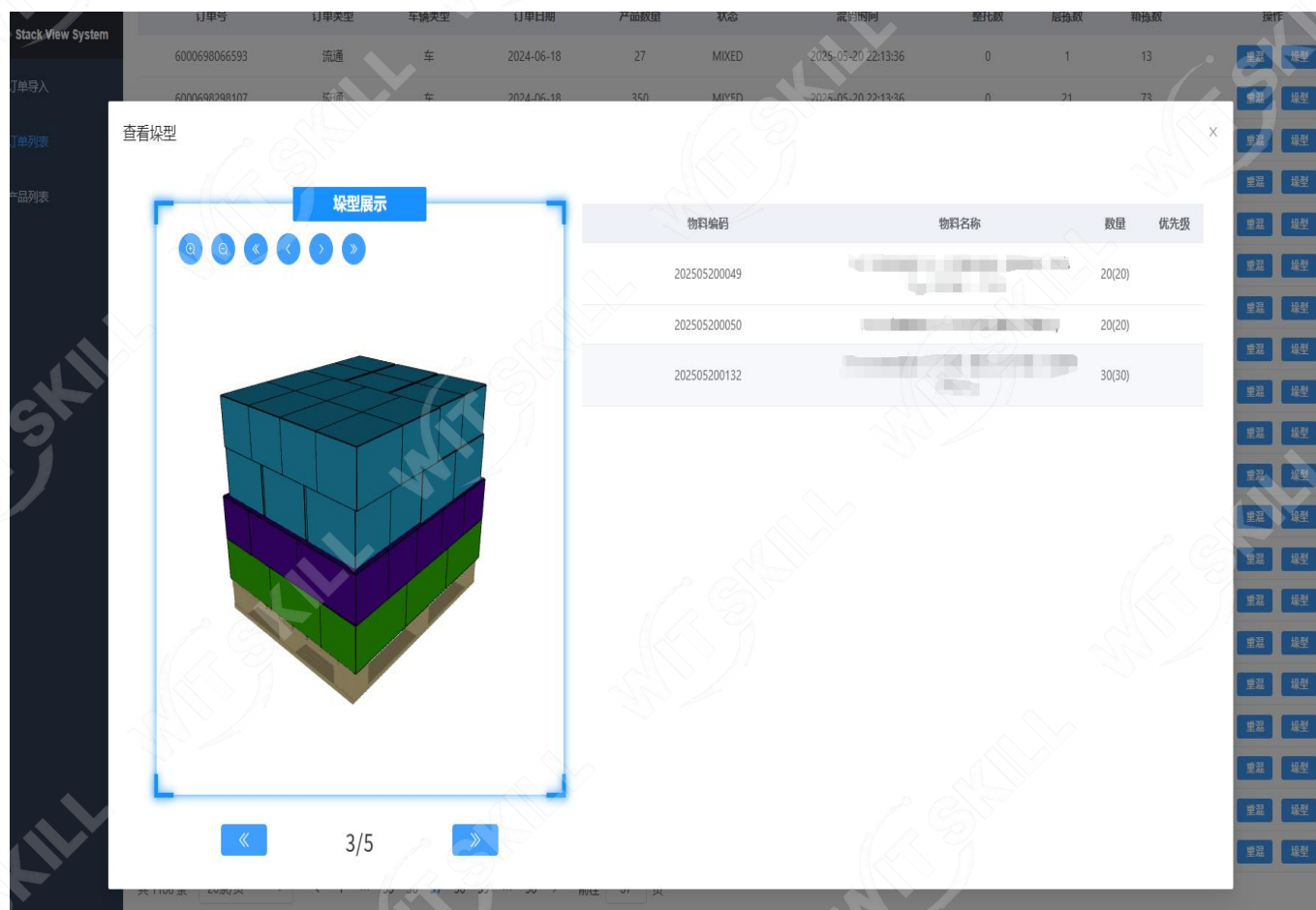
● Features:

- It processes more than 300 types of products daily, with the heaviest products weighing up to 30 kg, which greatly reduces the intensity of manual labor.
- Through efficient order management, the system can accurately complete the stacking of whole-layer products, reducing repeated handling while ensuring the stability of the stack shape.

2、A beverage warehouse in Zhengzhou: Equipped with 1 layer picking system, connected to the automated storage and retrieval system (AS/RS) through a conveyor line, with a daily picking volume of approximately 1,200 layers.

● Features:

- The product includes shrink films and cartons, and can accommodate high-bottle products, achieving simultaneous compatibility with various products of different specifications.



How is the warehouse efficiency?

1、Efficiency Improvement and Capacity Breakthrough

With the cooperation of material supply and transportation equipment, one robot can handle approximately 30,000 boxes per day. Compared with traditional manual picking (about 150 boxes per person per hour), the efficiency is 10 times higher than before.

2、Zero-error picking guarantee

The carton dropping rate is approximately 0.01%. Through 3D vision camera review and stack shape verification, the software system guides robots to pick according to order requirements, ensuring a picking accuracy rate of 99.9%. This improves accuracy by 5-10 percentage points compared to manual picking.

3、Significant reduction in labor costs and excellent return on investment

Each workstation requires only 0.5-1 maintenance personnel (responsible solely for handling exceptions), reducing labor input by 90% compared to manual picking, with a return on investment (ROI) of less than 1 year.



System Performance

Core Parameters	
Picking workstation efficiency	15000 boxes/10h/unit
The floor area of the picking workstation	40 m ² /unit
Scope of Adaptation	It can be compatible with cartons or shrink films at the same time.
Single-layer weight range	It is recommended to be below 300 kg.
Single-layer size range	800mm ≤ L ≤ 1200mm , 800mm ≤ W ≤ 1200mm , 100mm ≤ H ≤ 600mm
Adaptable Stack Height	Maximum 2 meters including the pallet.

Contact Us

Guangzhou WIT-SKILL Intelligent Technology Co., Ltd

Address : No. 16, Liye Road, Nansha District, Guangzhou City

Telephone : (020)400-025-8418

E-mail : info@wit-skill.com

Website : <https://www.wit-skill.com>

