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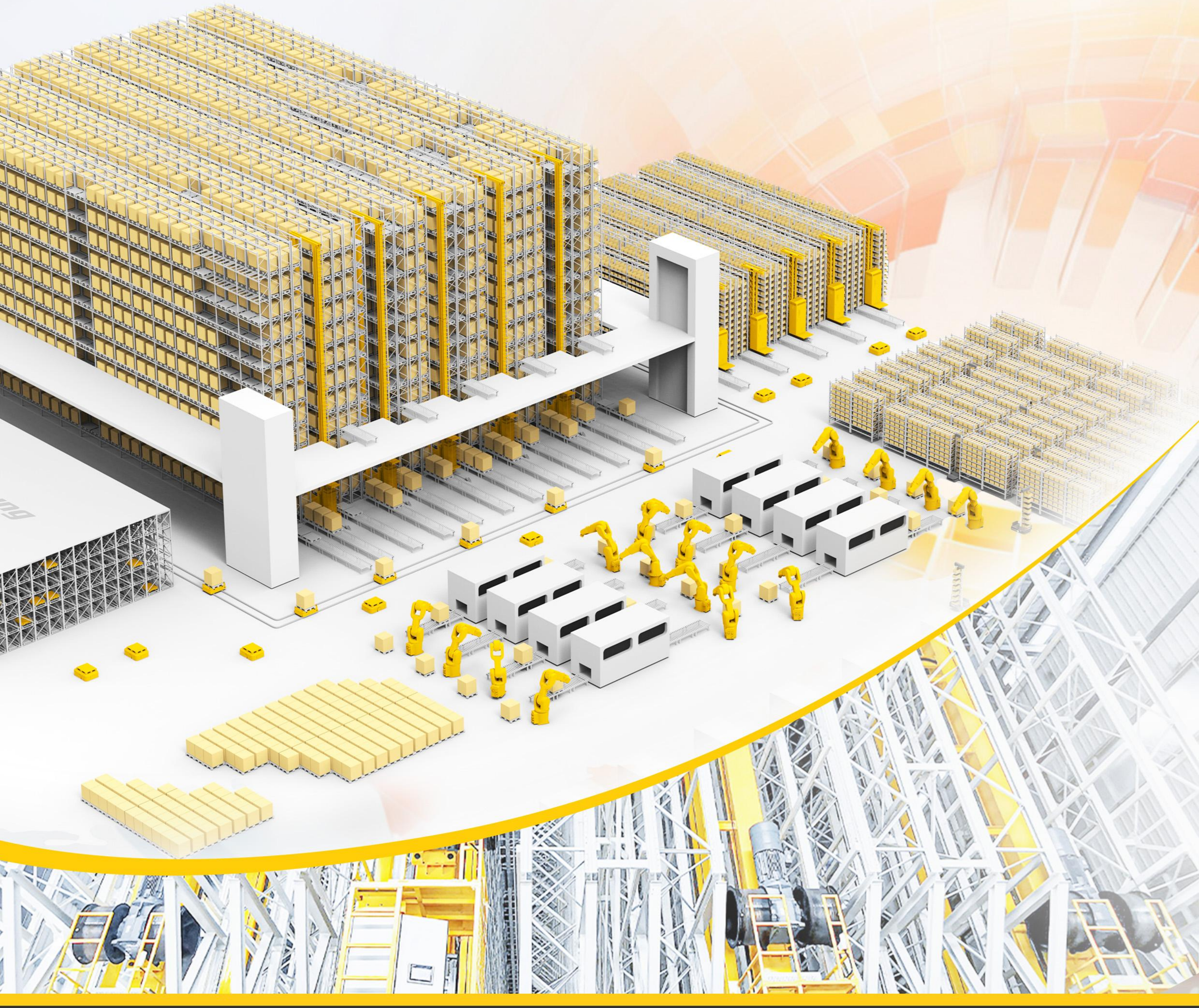
Comprehensive Industry Solution Cases Manual

More efficient, more futuristic

Zoneyung
中扬立库

全行业解决方案案例手册

更高效
更未来



浙江中扬立库技术有限公司

Zoneyung Automatic Warehouse Technology Co.,Ltd.



New Energy · Industry Solutions

Green Energy, Smart Warehouse Control

新能源
行业解决方案

绿色能源，智慧仓控

行业介绍

Industry Overview

新能源行业以风、光、储、氢为核心，聚焦清洁能源生产、存储与利用，推动传统能源结构转型。通过技术创新与规模化应用，实现发电侧低碳化、用电侧智能化，为全球可持续发展提供核心动力，引领绿色革命新浪潮。

紧跟新能源 “安全化、高效化、绿色化” 的变革浪潮，中扬立库以安全为核，协同为脉，绿色为魂，提供新能源全产业链仓储解决方案。覆盖动力电池、光伏组件、风电装备等核心品类，打造“防爆锂电仓、重型风电仓、智能光伏仓”等特色场景，实现 “安全存储→产线直供→绿色运营” 的全链路贯通，助力新能源企业在安全与效率的平衡中，加速能源转型的步伐。

The new energy industry centers on wind, solar, storage, and hydrogen, focusing on clean energy production, storage, and utilization to drive the transformation of traditional energy structures. Through technological innovation and large-scale application, it achieves decarbonization on the power generation side and intelligence on the consumption side, providing core momentum for global sustainable development and leading a new wave of green revolution.

Riding the trend of new energy's "safety-oriented, high-efficiency, and green" transformation, Zoneyung prioritizes safety as its core, synergy as its pulse, and sustainability as its soul, offering comprehensive warehousing solutions for the entire new energy industry chain. Covering key categories such as power batteries, photovoltaic modules, and wind power equipment, it creates specialized scenarios like "explosion-proof lithium battery storage, heavy-duty wind power storage, and smart photovoltaic storage," achieving end-to-end integration from "safe storage → direct production line supply → green operations." This supports new energy enterprises in balancing safety and efficiency while accelerating their energy transition journey.



行业特点

Industry Characteristics

安全风险突出

锂电池易热失控，需防爆、温控（24 小时监测）；光伏组件易碎，需防磕

Prominent safety risks.

Lithium batteries are prone to thermal runaway, requiring explosion-proof measures and temperature control (24/7 monitoring). Photovoltaic modules are fragile and need protection against impact and moisture.

单体重大异形

风电叶片（数十米长）、光伏支架（重型）、电池包（大重量），对存储、搬运设备要求极高。

Large and irregularly shaped individual units.

Wind turbine blades (dozens of meters long), photovoltaic brackets (heavy-duty), and battery packs (high weight) impose extremely high demands on storage and handling equipment.

产线协同极严

光伏产线节拍达“分钟级”，需仓储实时供料；电池生产需全流程追溯（MES 联动）。

Extremely strict production line coordination.

Photovoltaic production lines operate at a "minute-level" cycle, requiring real-time material supply from warehouses; battery production demands full-process traceability (MES integration).

环保要求严苛

需遵循“双碳”目标，仓储运营需低碳（如光伏供电、电动搬运），废弃物规范处理。

Stringent environmental requirements.

Must adhere to the "Dual Carbon" goals, requiring low-carbon warehouse operations (e.g., solar power supply, electric handling) and standardized waste disposal.

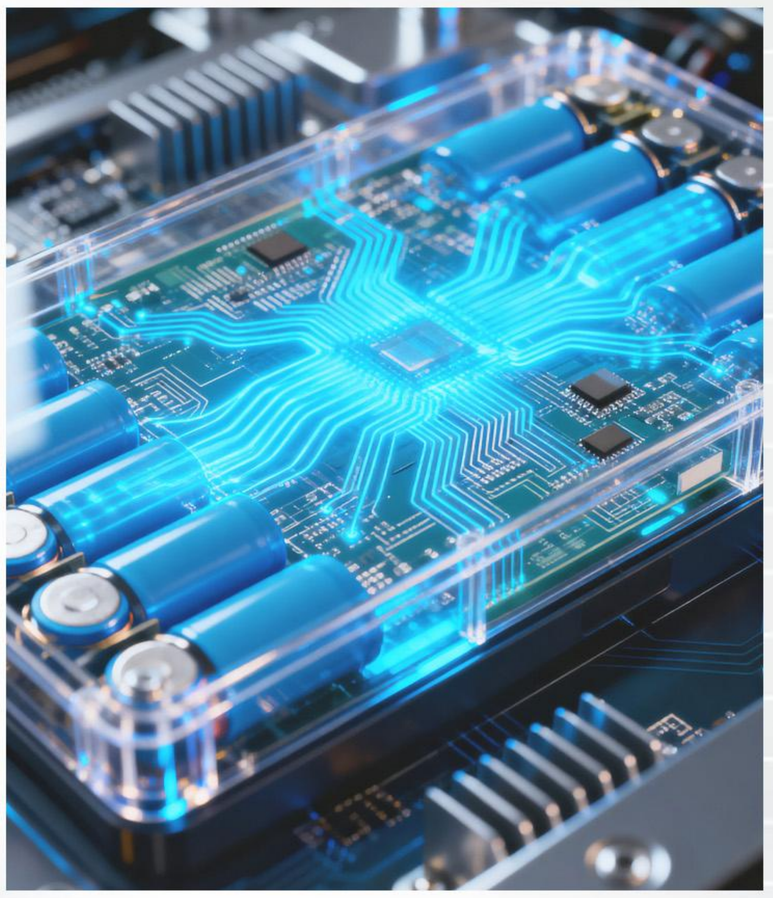


方案概述

Solution Overview

新能源行业面临安全风险高（电池防爆）、单体重大（风电部件）、产线协同紧（光伏 JIT）、环保要求严等挑战，传统仓储难以平衡“安全”与“效率”。中扬立库聚焦新能源特性，打造“安全仓储 + 产线协同 + 绿色运营”方案：通过锂电池防爆仓（温度监控 + 自动灭火）、风电重型立体库（大载荷设备）、光伏智能分拣系统保障安全与效率；联动 MES 系统实现产线精准供料；引入光伏供电、电动设备构建低碳仓储，深度服务动力电池、光伏组件、风电装备等细分领域，助力客户筑牢安全高效的新能源供应链。

The new energy industry faces challenges including high safety risks (battery explosion prevention), large and heavy individual components (wind power parts), tight production line coordination (photovoltaic JIT), and strict environmental requirements. Traditional warehousing struggles to balance "safety" and "efficiency." Zoneyung Vertical Storage focuses on the characteristics of new energy, creating a solution of "safe storage + production line coordination + green operations": through explosion-proof lithium battery storage (temperature monitoring + automatic fire suppression), heavy-duty wind power automated storage (high-load equipment), and photovoltaic intelligent sorting systems to ensure safety and efficiency; integrates with MES systems to achieve precise material supply for production lines; introduces solar power supply and electric equipment to build low-carbon warehousing, deeply serving segments such as power batteries, photovoltaic modules, and wind power equipment, helping customers build a safe and efficient new energy supply chain.



方案优势

Solution Advantages

安全至上，合规存储
Safety First, Compliant Storage

行业积淀，全链覆盖
Industry Expertise, Full-Chain Coverage

智能联动，产线协同
Intelligent Connectivity
Production Line Coordination

绿色高效，降本提效
Green and Efficient
Cost-Reducing and Efficiency-Boosting

定制化

设备、货架设计可根据不同物料的存储需求进行定制化设计。

Customization

Equipment and racking designs can be customized to meet the storage requirements of different materials.

安全

采用专业、安全的材料搭建货架，提高物料储存的安全性。

Safety

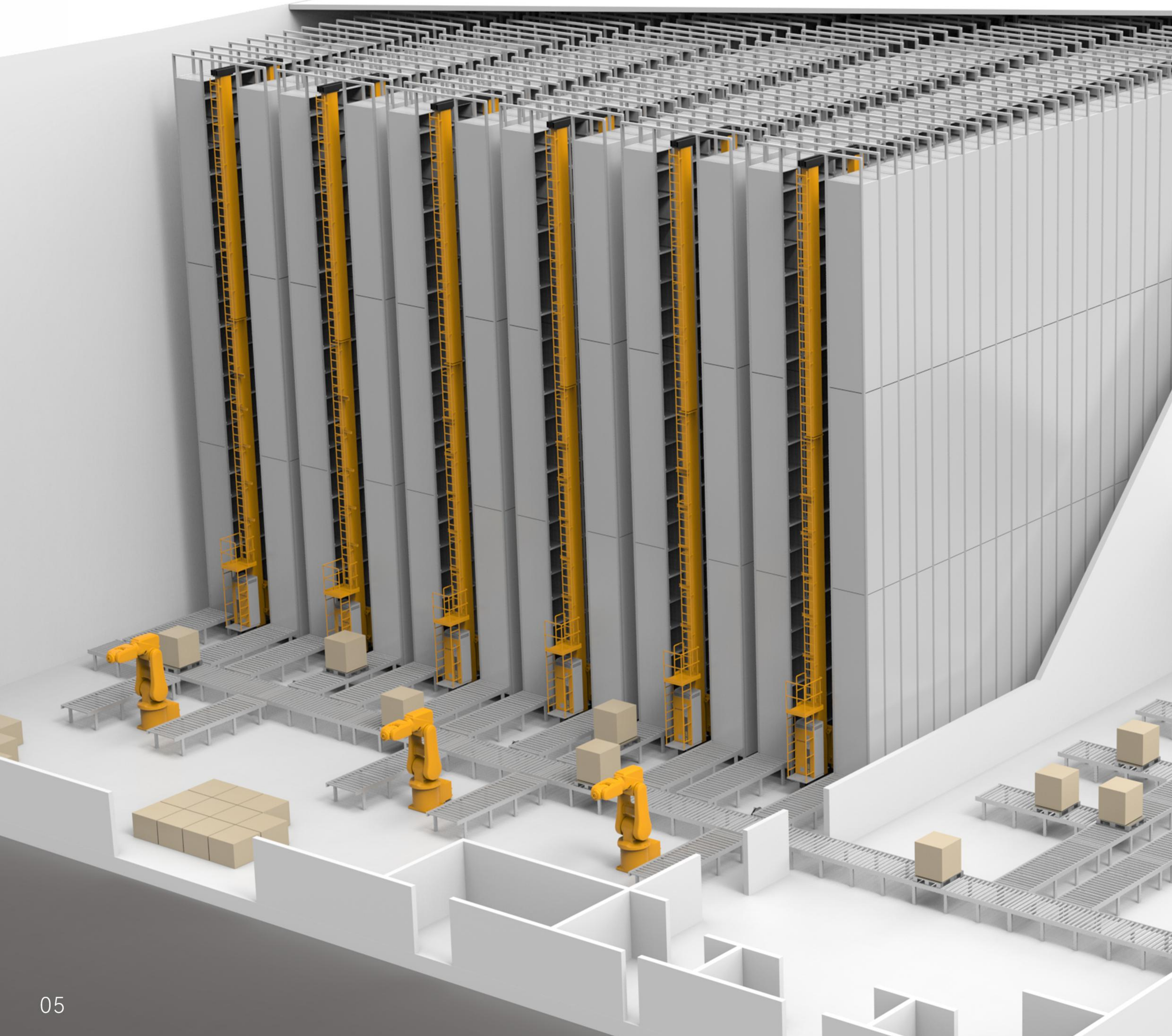
Professional and safety-grade materials are used to construct the racks, enhancing the security of material storage.

稳定

采用堆垛机作为运输主力，减少物料颠簸破损。

Stability

Utilizing stacker cranes as the primary transport method reduces material jostling and damage.



Zoneyung
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新能源仓储解决方案

新能源行业的仓储管理面临传统仓储与新兴技术、特殊物料特性等多重挑战。不同材料（如电池、化学品）对防火、防爆、遮光等有严苛要求。中扬立库有针对性地对储位进行了设计，采用了专业的防火防爆以及遮光材料搭建货架，配合运行平稳的堆垛机和滚筒式运输线，极大地减少了易碎材质的物料在人工运输时会造成的颠簸、破损的情况。

New Energy Storage Solution

The new energy industry faces multiple challenges in warehouse management, including traditional storage constraints, emerging technologies, and unique material properties. Different materials (e.g., batteries, chemicals) require stringent fireproofing, explosion-proofing, and light-blocking measures. Zoneyung has addressed these needs with tailored storage designs, utilizing professional fireproof, explosion-proof, and light-blocking materials for rack construction. Paired with smoothly operating stacker cranes and roller conveyors, the solution significantly reduces jostling and damage to fragile materials that often occur during manual handling.

10~35 m

托盘堆垛机立库高度

Pallet Stacker Crane AS/RS Height

10000 kg

单元最大载重

Unit Maximum Load Capacity

120~200 m/min

水平速度

Horizontal Speed

25~30 m/min

垂直速度

Vertical Speed



新能源

新疆某新能源企业智能立库项目

New Energy

Smart Warehouse Project for a Xinjiang New Energy Enterprise



该项目客户属于全球硅基新材料的龙头企业，其新疆产业园年产20万吨硅基材料，产品销售遍布全球。为解决成品储存问题、实现生产与入库的无人化、优化管理并提升品牌形象，客户在其产业园建设了立体仓库。

The client of this project is a global leader in silicon-based new materials. Its Xinjiang Industrial Park has an annual output of 200,000 tons of silicon-based materials, with products sold worldwide. To address the finished product storage issue, achieve unmanned operation in production and warehousing, optimize management, and enhance brand image, the client has built an automated stereoscopic warehouse in its industrial park.

解决方案

- 设备数量：12台双伸堆垛机、RGV搬运车、自动组托机
- 托盘尺寸：1200mm *1100mm *1210mm
- 仓库高度：20m
- 单元荷载：800kg

Solution

- Equipment Quantity: 12 double extension stacker cranes, RGV handling vehicles, and automatic palletizers
- Pallet Dimensions: 1200mm * 1100mm * 1210mm
- Warehouse Height: 20m
- Unit Load Capacity: 800kg

客户痛点

- 产品SKU多，管理混乱
- 普通平库储存量少，需大量人工干预

Customer Sore Point

- Numerous product SKUs leading to disordered management
- Limited storage capacity in conventional flat warehouses, requiring extensive manual intervention

项目效果

- 共有18816个有效货位，出入库480 托/时，空间利用率提升2-3倍
- 立库WMS系统自动管理大大减少人工管理出错的概率

Project Results

- There are a total of 18816 effective storage spaces, with 480 pallets/hour of inbound and outbound, resulting in a 2-3 times increase in space utilization.
- The automatic management of the Li Ku WMS system greatly reduces the probability of manual management errors.

更多新能源案例

More New Energy Cases











新能源

宁德某新能源企业智能立库项目

New Energy

Smart Warehouse Project for a Ningde New Energy Enterprise

该项目客户是全球领先的新能源创新科技公司，致力于为全球新能源应用提供一流解决方案和服务。其公司总部位于福建省宁德市，在全球已设立六大研发中心和十三大电池产制造基地。

The client for this project is a globally leading new energy innovation technology company, dedicated to providing top-tier solutions and services for global new energy applications. Its headquarters is located in Ningde City, Fujian Province, and it has established six major R&D centers and thirteen battery manufacturing bases worldwide.

解决方案

- 立库高度：20m
- 单元荷载：70kg
- 有效货位：87450个

Solution

- AS/RS Height: 20m
- Unit Load Capacity: 70kg
- Effective Storage Locations: 87450

客户痛点

- 产品及物料SKU多，管理麻烦
- 精密器械多，原有存储搬运方式易损坏物品

Customer Sore Point

- Numerous product and material SKUs, leading to management complexity.
- Abundance of precision machinery, with original storage and handling methods prone to causing damage.

项目效果

- 智能仓储系统管理减少人工管理出错的概率
- 智能仓储设备操作平稳，减少器械损耗率

Project Results

- The management of intelligent warehousing systems reduces the probability of errors in manual management
- The operation of intelligent warehousing equipment is stable, which reduces the equipment loss rate

更多新能源案例

More New Energy Cases









R5

Smart Manufacturing · Industry Solutions

Flexible intelligent manufacturing, precise operations

智能制造
行业解决方案

柔性智造，精准运营

行业介绍

Industry Overview

智能制造作为工业革命的核心引擎，正深度融合人工智能、物联网与大数据技术，驱动生产模式向柔性化、数字化、智能化跃迁。通过构建虚实融合的智能产线，实现全要素互联、数据驱动决策与生产全流程优化，重塑高效、精准、绿色的现代产业新范式，引领全球制造业价值链升级。

深入洞察智能制造呈现的新变革、新动向，携手行业用户共同应对挑战，为行业用户提供从战略规划至实施落地的全方位、高价值服务。针对新兴需求，我们打造覆盖铸造、加工、组装、涂装、总装、关键部件制造、主线生产、分装线等全领域、全流程的智能制造物流解决方案，不断创新迭代，与行业用户并肩成长，共创长期价值。

Intelligent manufacturing, as the core engine of the industrial revolution, is deeply integrating artificial intelligence, the Internet of Things, and big data technologies, driving production models toward flexibility, digitalization, and intelligence. By building virtual-physical integrated smart production lines, it achieves full-factor connectivity, data-driven decision-making, and optimization of the entire production process, reshaping a modern industrial paradigm that is efficient, precise, and green, while leading the upgrade of the global manufacturing value chain.

With deep insights into the new changes and trends in intelligent manufacturing, we collaborate with industry users to address challenges, providing comprehensive, high-value services from strategic planning to implementation. In response to emerging needs, we develop intelligent manufacturing logistics solutions that cover all areas and processes, including casting, processing, assembly, coating, final assembly, key component manufacturing, mainline production, and sub-assembly lines. Through continuous innovation and iteration, we grow alongside industry users, creating long-term value together.



行业特点

Industry Characteristics

品类繁多，柔性不足

产品品种多，差异性大，生产柔性要求高

Diverse product categories, insufficient flexibility

A wide variety of products with significant differences, demanding high production flexibility.

工艺复杂，管控关键

生产工序繁多，工艺复杂

Complex processes, critical control challenges

Numerous production processes and complex procedures.

流程割裂，协同困难

不同工艺之间的流转涉及到市场需求、时间变化、空间管理、过程控制的衔接和转换

Fragmented workflows, coordination difficulties

The transition between different processes involves the connection and transformation of market demand, time variations, spatial management, and process control.

信息孤岛，计划脱节

企业生产物流信息化覆盖不足，生产计划和生产实际不匹配，达不到均衡生产的目标

Information silos, disjointed planning

Insufficient IT coverage in enterprise production logistics leads to a mismatch between production plans and actual operations, failing to achieve balanced production goals.

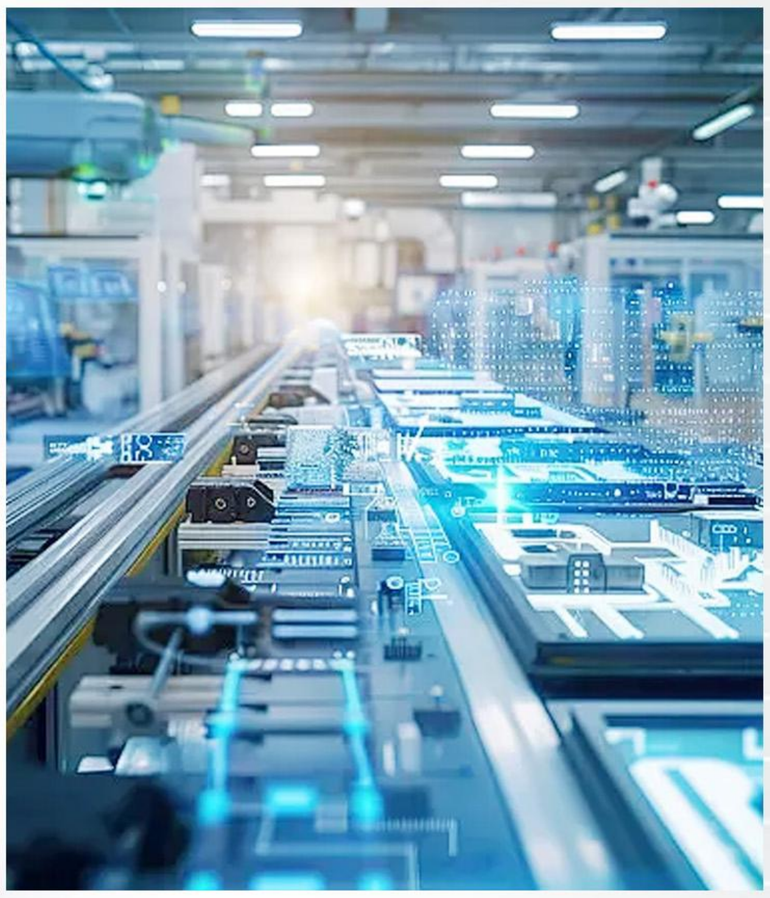


方案概述

Solution Overview

以全系列的智能机器人和自主可控的系统化平台为核心，凭借对制造业，特别是先进制造业的深刻洞察与丰富的实战经验，我们构建了涵盖从铸造、精加工、组装、涂装、总装到关键部件制造、主线生产与分装线的全流程、端到端的智能制造解决方案。我们致力于通过模块化设计与数字孪生技术，提供高度灵活的定制化服务，实现产品的快速迭代与项目的敏捷交付，不仅全面满足制造业在大规模定制生产模式下对高效、柔性、可溯源的内部物流需求，更致力于打通信息孤岛，赋能企业实现生产全流程的数字化管理与持续优化，最终驱动其核心竞争力提升。

Centered on a full range of intelligent robots and self-controlled systematic platforms, and leveraging deep insights into manufacturing—particularly advanced manufacturing—along with extensive practical experience, we have built end-to-end smart manufacturing solutions covering the entire process from casting, precision machining, assembly, coating, and final assembly to key component manufacturing, mainline production, and sub-assembly lines. Through modular design and digital twin technology, we provide highly flexible customization services, enabling rapid product iteration and agile project delivery. Our solutions not only fully meet the demands for efficient, flexible, and traceable internal logistics in large-scale customized production models but also break down information silos, empowering enterprises to achieve digital management and continuous optimization of the entire production process, ultimately driving the enhancement of their core competitiveness.



方案优势

Solution Advantages

产品品类丰富
根据场景提供最优硬件方案

Diverse product categories,
offering optimal hardware solutions tailored
to specific scenarios.

行业积淀深厚
多领域顶尖品牌全面覆盖

Deep industry expertise,
comprehensive coverage of top brands
across multiple sectors.

强大系统平台，赋能多领域
支持大规模集群高效调度

Powerful system platform
empowering multiple domains,
supporting efficient large-scale cluster scheduling.

场景方案标准化、模板化
实现快速复制

Standardized and templated
scenario solutions enabling rapid replication.

智能制造仓储解决方案

智能制造的核心在于柔性化、精益化与实时协同，然而传统仓储模式正成为制约生产的瓶颈。中扬立库设计了以堆垛机立库为核心的仓储解决方案。立库跨越多个楼层，一层用于物料及成品的出入库；二层对接生产线，配备滚筒式运输线，实现从货到人的拣选，大大减少跨楼层搬运成本。同时WMS、WCS系统接入智慧大屏，库存、设备状况等清晰明了。

Smart Manufacturing Warehousing Solution

The core of smart manufacturing lies in flexibility, lean practices, and real-time collaboration. However, traditional warehousing models have become a bottleneck limiting production. Zoneyung has designed a storage solution centered around stacker crane-based automated storage and retrieval systems (AS/RS). The AS/RS spans multiple floors: the first level handles inbound and outbound operations for materials and finished products; the second level interfaces directly with production lines, equipped with roller conveyors to enable goods-to-person picking, significantly reducing cross-floor handling costs. Simultaneously, the WMS and WCS systems integrate with smart dashboards, providing clear visibility into inventory and equipment status.

10~45 m

托盘堆垛机立库高度

Pallet Stacker Crane AS/RS Height

10000 kg

单元最大载重

Unit Maximum Load Capacity

30~50 托/时

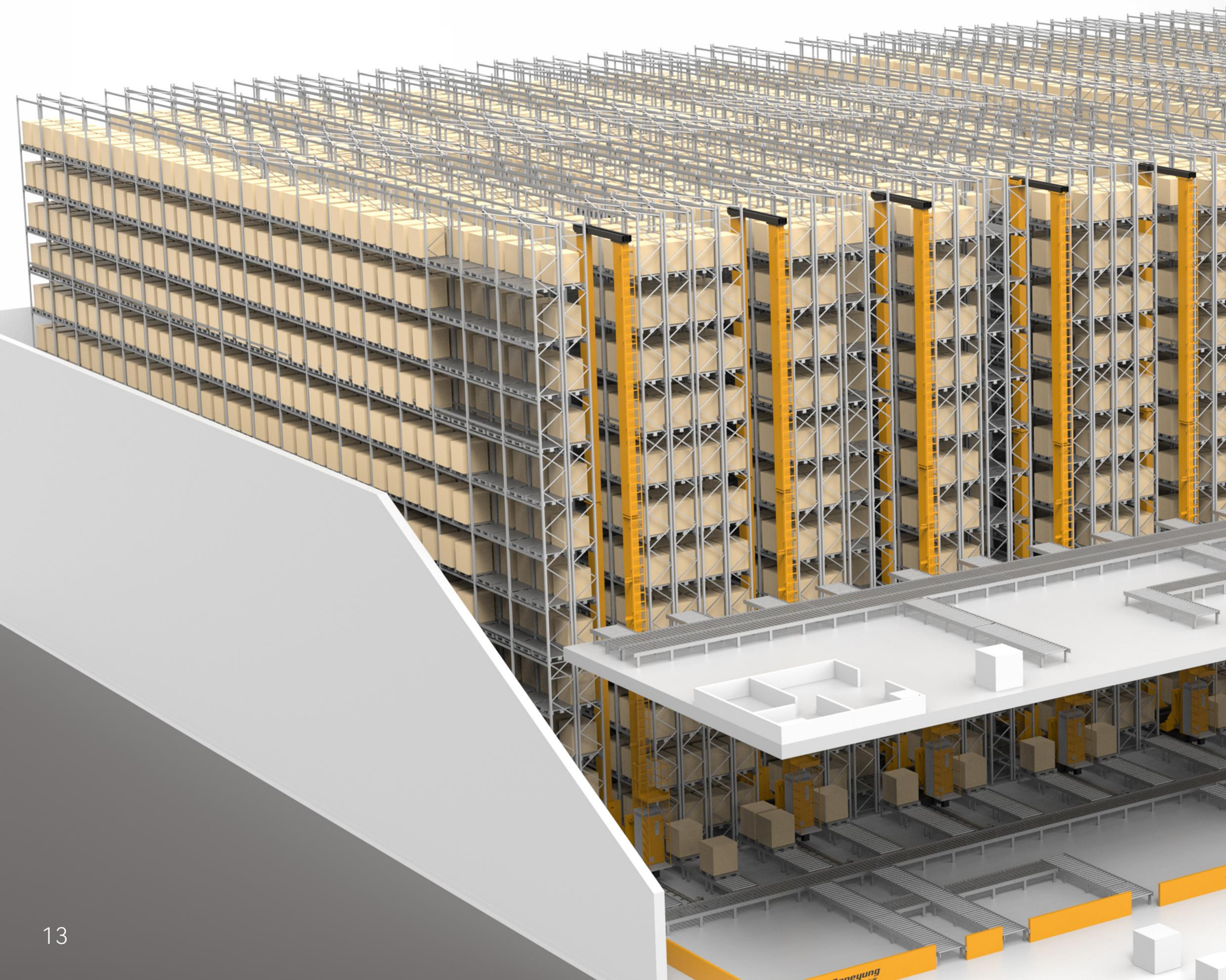
单台堆垛机效率

Single Stacker Crane Efficiency (Pallets/Hour)

400 %

效率提升

Efficiency Improvement



Zoneyung
中扬立库

可拓展

滚筒式运输线可对接生产线，提高工作效率，匹配个性化需求。

Scalable

Roller conveyors can interface with production lines, enhancing workflow efficiency and meeting personalized needs.

高协同性

智慧大屏清晰展示仓库物料、设备状态等情况，协同企业生产。

High Synergy

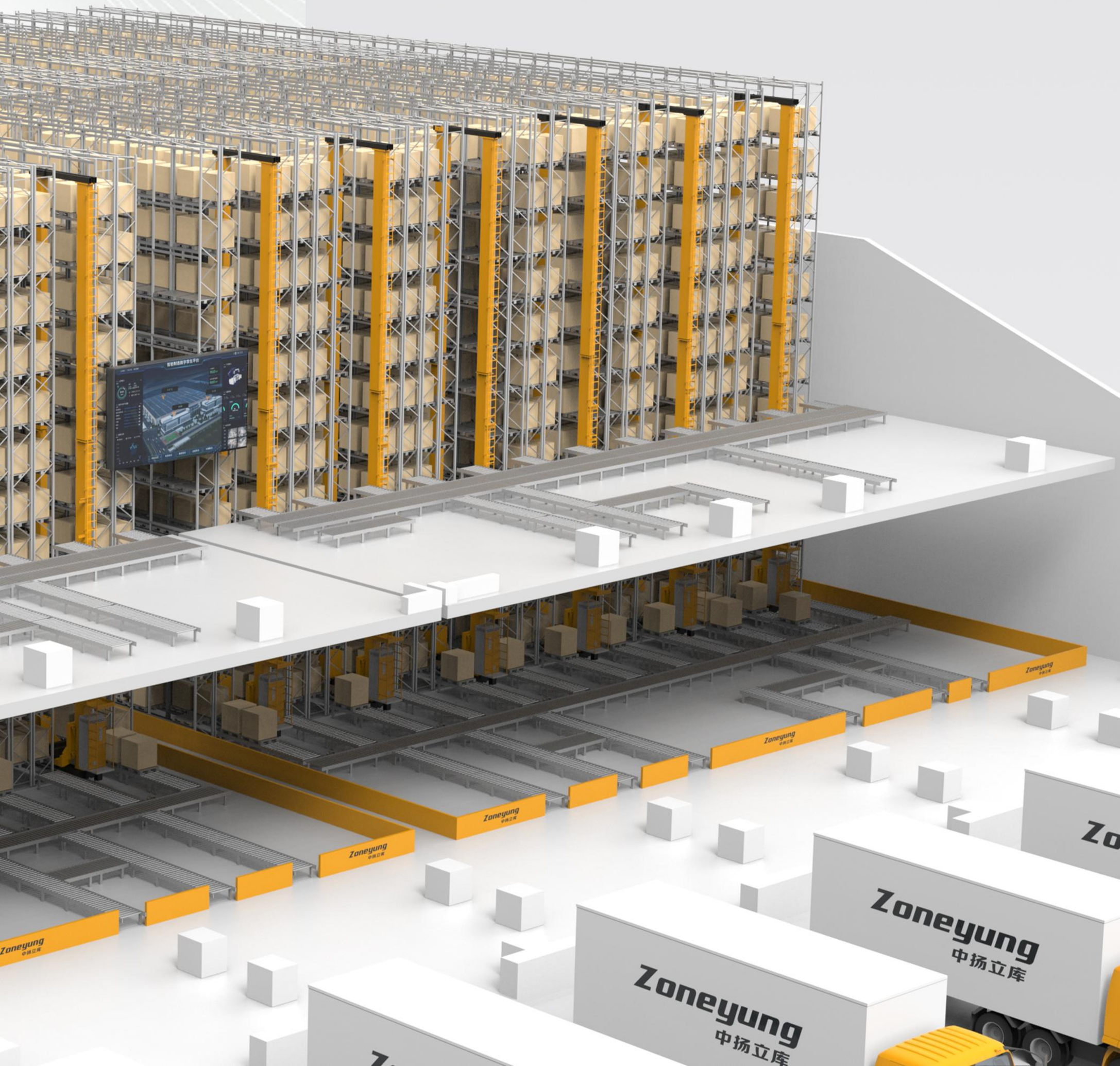
Smart dashboards clearly display warehouse materials, equipment status, and other details, synergizing with enterprise production.

高效

立库跨越多个楼层，缩短厂内物流路径，减少运输成本。

Efficient

The AS/RS spans multiple floors, shortening internal logistics paths and reducing transportation costs.

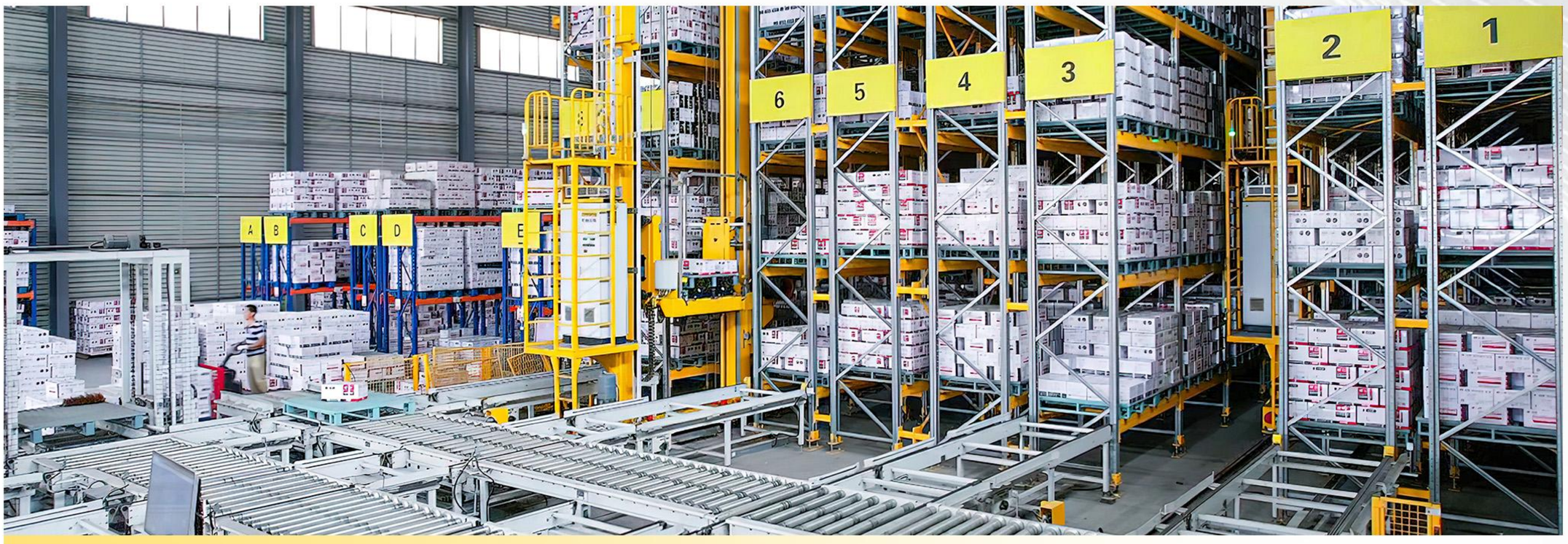


智能制造

上海某制造企业智能立库项目

Smart Manufacturing

Smart Warehouse Project for a Shanghai Manufacturing Enterprise



该项目客户于2008年06月10日在松江市监局登记成立。公司经营范围包括紧固件，螺栓，五金电器，电子产品，开关，通用机械设备（除特种）设计等。

The client company was registered with the Songjiang Market Supervision Administration on June 10, 2008. Its business scope includes fasteners, bolts, hardware and electrical products, electronic devices, switches, and the design of general mechanical equipment (excluding special-purpose machinery).

解决方案

- 设备数量：2台托盘堆垛机
- 托盘尺寸：880mm*728mm *610mm
- 立库高度：9m，9层货架
- 单托荷载：800kg

客户痛点

- 土地成本高，原来的地堆存放方式，存放的商品少
- SKU型号种类繁多，人工管理经常出错

项目效果

- 共有1452个有效货位，空间利用率提升3-4倍
- 整个立库出入库效率78托/时，满足使用需求，整体效率提升3-4倍
- WMS系统自动管理大大减少人工管理出错的概率

Solution

- Equipment Quantity: 2 pallet stacker cranes
- Pallet Dimensions: 880mm * 728mm * 610mm
- AS/RS Height: 9m, 9 rack levels
- Unit Load Capacity: 800kg per pallet

Customer Sore Point

- Numerous product SKUs leading to disordered management
- Limited storage capacity in conventional flat warehouses, requiring extensive manual intervention

Project Results

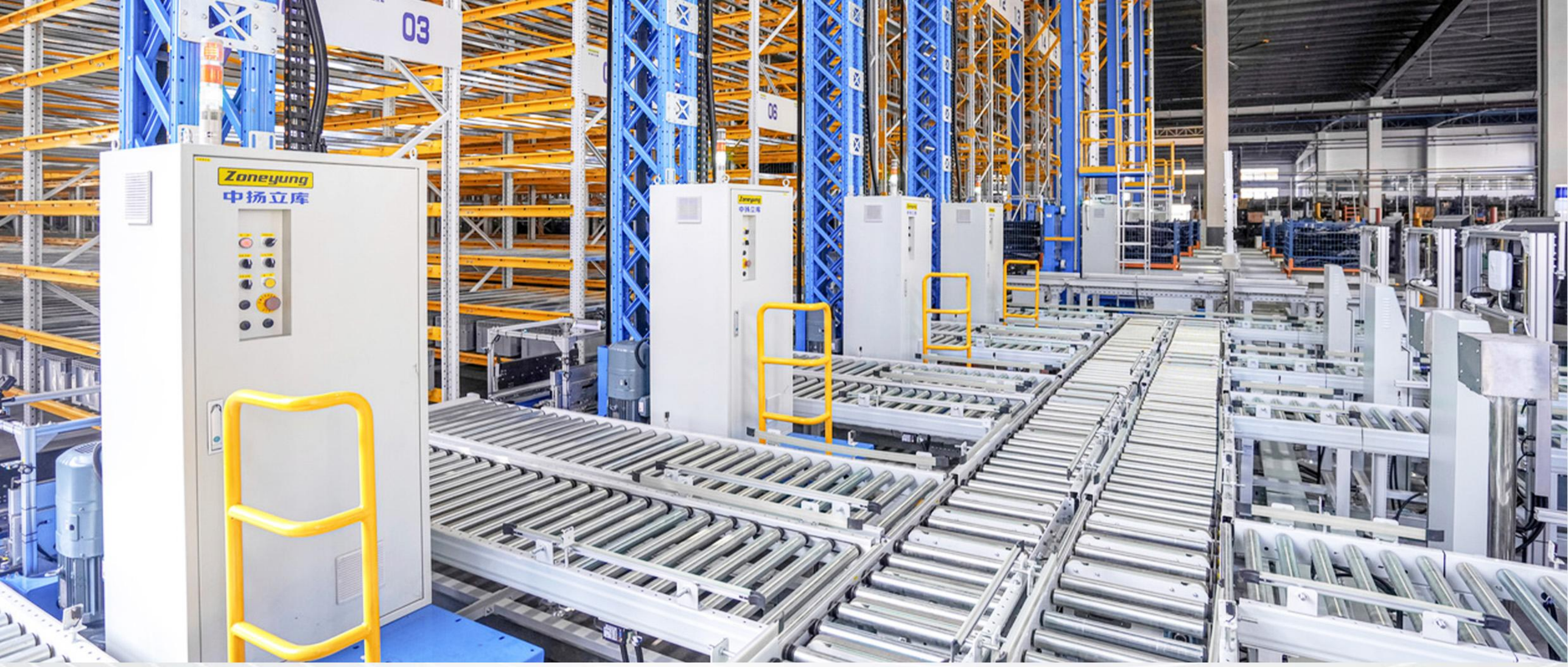
- A total of 1452 effective storage locations, increasing space utilization by 3-4 times.
- The entire AS/RS achieves an inbound/outbound efficiency of 78 pallets per hour, meeting operational needs and improving overall efficiency by 3-4 times.
- The WMS system automates management, significantly reducing the probability of human errors.

更多智能制造案例

More Smart Manufacturing Cases





智能制造

温岭某制造企业智能立库项目

Smart Manufacturing

Smart Warehouse Project for a Wenling Manufacturing Enterprise

该项目客户是一家汽车车身与部件制造商。业务涵盖汽车配件、摩托车配件、电器配件、橡胶制品、塑料制品制造等。得益于汽车行业的大力发展，该客户业务急剧增加，其现有传统仓库形式已无法满足现有货物存储需求。

The client for this project is an automotive body and components manufacturer. Its business covers auto parts, motorcycle parts, electrical components, rubber products, and plastic products manufacturing. Benefiting from the robust development of the automotive industry, the client has experienced rapid business growth, and its existing traditional warehouse setup can no longer meet current storage needs.

解决方案

- 重型堆垛机3套，高度12m
- 托盘尺寸：1280mm *1070mm *1000mm
- 轻型堆垛机4套，高度12m
- 料箱尺寸：600mm *400mm *280mm

Solution

- Heavy-duty stacker cranes: 3 sets, height 12m
- Pallet dimensions: 1280mm * 1070mm * 1000mm
- Light-duty stacker cranes: 4 sets, height 12m
- Tote dimensions: 600mm * 400mm * 280mm

客户痛点

- 场物料堆叠乱，场地占用面积大
- 人找货不方便，货物放置时间长

Customer Sore Point

- Disorganized material stacking, occupying excessive floor space.
- Inefficient manual retrieval processes, leading to prolonged storage durations.

项目效果

- 重型托盘库有效货位3960个，轻型料箱库有效货位24320个
- 有效利用仓库面积，库位最大化使用
- WMS系统智能管理库位，实现先进先出，极大缩短了物料周转周期

Project Results

- Heavy-duty pallet racking: 3960 effective storage locations
  Light-duty tote racking: 24320 effective storage locations
- Maximized warehouse area utilization with optimized storage space
- WMS system intelligently manages inventory, enabling FIFO (First-In-First-Out) and significantly reducing material turnover cycles

更多智能制造案例

More Smart Manufacturing Cases






Textile Industry · Industry Solutions

Smart weaving for the future, flexible chain efficiency enhancement.

鞋服箱包
行业解决方案

智织未来，柔链增效

行业介绍

Industry Overview

鞋服箱包行业作为全球消费市场的核心支柱，正经历从规模化生产向个性化、快反化的深度转型。面对多元消费需求与短周期市场趋势，行业依托数字化设计、柔性供应链与智能生产，实现从原料到成品的全链路精准管控，推动时尚与科技融合，重塑新消费时代的产业竞争力。

在服装行业的专业领域内，我们深度剖析行业新动态与未来趋势，紧密携手行业伙伴，共克时艰。我们为用户提供自方案设计至项目交付的全周期、高品质一站式服务。针对服装行业的新兴需求，我们倾力打造了一套涵盖面料裁剪、精密缝制、熨烫整理、成品检验及高效仓储物流等全环节、全工艺的自动化生产解决方案，并不断推动方案的升级与创新。我们矢志与行业用户并肩前行，共同为服装行业创造持久价值，彰显专业水准与卓越品质。

The footwear, apparel, and luggage industry, as a core pillar of the global consumer market, is undergoing a profound transformation from large-scale production to personalized and rapid-response models. Faced with diverse consumer demands and short-cycle market trends, the industry relies on digital design, flexible supply chains, and intelligent production to achieve end-to-end precision control from raw materials to finished products, driving the integration of fashion and technology to reshape competitiveness in the new consumer era.

Within the professional domain of the apparel industry, we deeply analyze emerging trends and future directions, working closely with industry partners to overcome challenges. We provide users with full-cycle, high-quality, one-stop services from solution design to project delivery. Addressing the evolving needs of the apparel industry, we have developed a comprehensive automated production solution covering all stages and processes, including fabric cutting, precision sewing, ironing and finishing, finished product inspection, and efficient warehousing and logistics. We continuously advance and innovate our solutions, committed to walking alongside industry users to create lasting value, demonstrating professional expertise and exceptional quality.



行业特点

Industry Characteristics

安全为先，制度护航

建立健全的仓库安全管理制度，严格落实防火、防盗等措施，全面保障货物与人员安全。

Safety First, Systems Safeguard

Establish a sound warehouse safety management system, strictly implement fire prevention, theft control, and other measures to fully ensure the safety of goods and personnel.

快反周转，精准匹配

应对流行周期短的特点，通过高效仓储实现快速周转，精准匹配市场需求，有效减少库存积压。

Rapid Response Turnover, Precise Matching

To address the short fashion cycles, efficient warehousing enables rapid turnover and precise alignment with market demand, effectively reducing inventory backlog.

标准严格，质量可溯

执行严格的技术标准与检验制度，建立完善的质量追溯体系，确保品质稳定、问题可追。

Stringent Standards, Traceable Quality

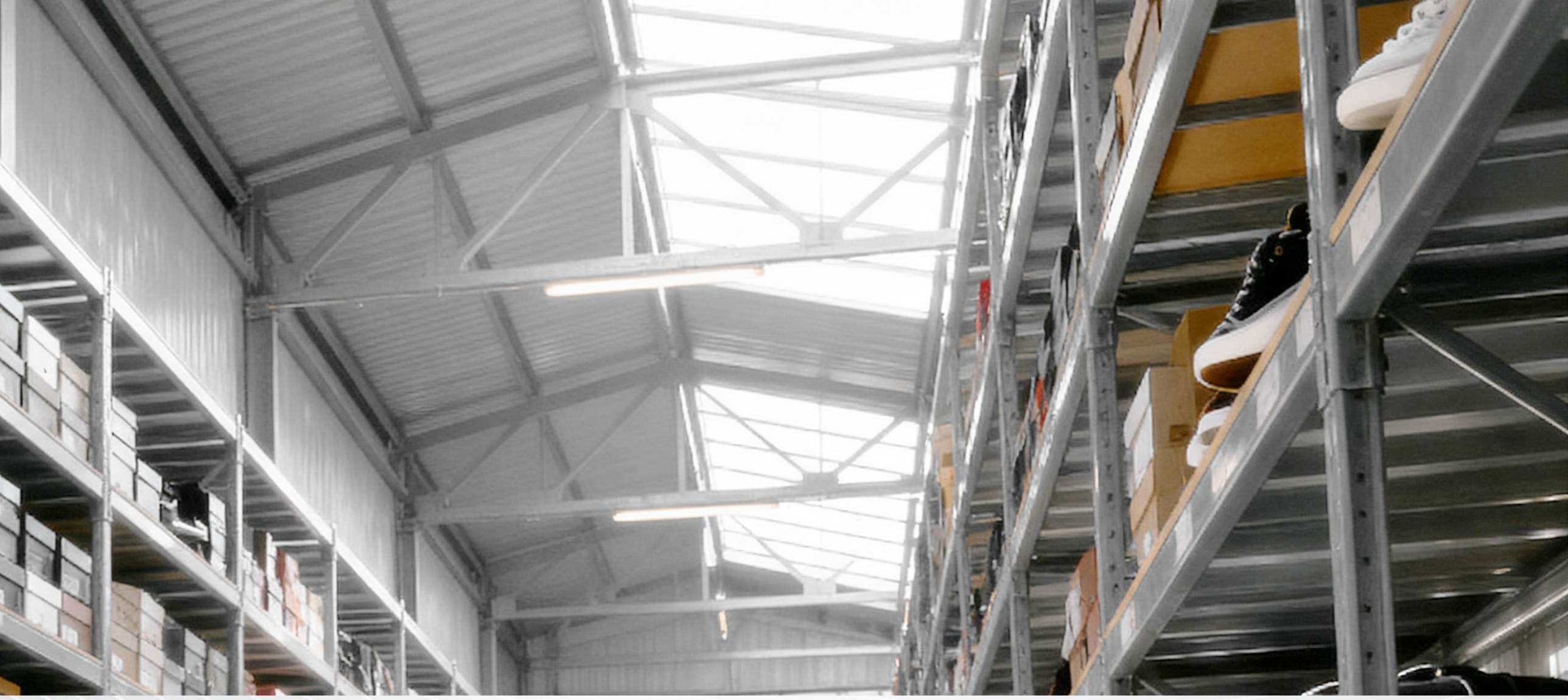
Implement strict technical standards and inspection systems, and establish a comprehensive quality traceability framework to ensure consistent quality and issue accountability.

绿色低碳，可持续运营

积极采用环保材料与节能设备，降低能源消耗与环境污染，推动绿色低碳的可持续发展。

Green and Low-Carbon, Sustainable Operations

Actively adopt eco-friendly materials and energy-saving equipment to reduce energy consumption and environmental pollution, promoting green and low-carbon sustainable development.



方案概述

Solution Overview

以全品类智能物流设备和系统平台为基石，凭借对服装行业，特别是快时尚与高端定制领域的深入理解与丰富的实战经验，我们精心构建了涵盖面料裁剪、缝制加工、熨烫整理、成品检验、仓储管理、分拣配送等全链条的解决方案。我们支持高度灵活的定制化服务，实现快速迭代与交付，充分满足服装行业面向多样化、个性化消费趋势的场内物流需求。通过引入RFID全流程追踪及动态路径规划等智能技术，我们进一步强化了方案的精准性与适应性，助力企业在快速变化的市场中构建韧性供应链，实现降本增效与数字化升级的核心价值。

Based on a full range of intelligent logistics equipment and system platforms, coupled with deep understanding and extensive practical experience in the apparel industry—particularly in fast fashion and high-end customization—we have meticulously built an end-to-end solution covering fabric cutting, sewing processing, ironing and finishing, finished product inspection, warehouse management, sorting, and distribution. We support highly flexible customized services to achieve rapid iteration and delivery, fully meeting the intralogistics needs of the apparel industry in response to diverse and personalized consumption trends. By introducing smart technologies such as RFID full-process tracking and dynamic path planning, we further enhance the precision and adaptability of the solution, helping companies build resilient supply chains in a rapidly changing market and realize core value in cost reduction, efficiency improvement, and digital upgrade.



方案优势

Solution Advantages

产品品类丰富
根据场景提供最优硬件方案

Diverse product categories,
offering optimal hardware solutions tailored
to specific scenarios.

行业积淀深厚
多领域顶尖品牌全面覆盖

Deep industry expertise,
comprehensive coverage of top brands
across multiple sectors.

强大系统平台，赋能多领域
支持大规模集群高效调度

Powerful system platform
empowering multiple domains,
supporting efficient large-scale cluster scheduling.

场景方案标准化、模板化
实现快速复制

Standardized and templated
scenario solutions enabling rapid replication.



Zoneyung
中扬立库

鞋服箱包仓储解决方案

鞋服箱包行业的仓储管理是典型的高动态、高复杂、高成本场景，关乎企业的库存周转、现金流和市场响应。中扬立库方案采用双伸位托盘堆垛机+潜伏式AGV的形式，设计大量的缓存位应对购物旺季的发退货。双伸位托盘堆垛机减少轨道位，大幅提升储位空间。潜伏式AGV可对接堆垛机和缓存区，提高搬运效率、节省人工成本。方案配备WMS、WCS系统，显著提升盘点效率与准确率。

Footwear, Apparel, and Luggage Storage Solution

Warehouse management in the footwear, apparel, and luggage industry is a typical high-dynamic, high-complexity, and high-cost scenario, directly impacting inventory turnover, cash flow, and market responsiveness. The Zoneyung solution employs double-deep pallet stacker cranes with stealth AGVs, with extensive buffer positions designed to handle peak season returns and shipments. Double-deep pallet stacker cranes reduce track occupancy, significantly increasing storage space. Stealth AGVs interface with stacker cranes and buffer zones, improving handling efficiency and reducing labor costs. The solution is equipped with WMS and WCS systems, markedly enhancing inventory counting efficiency and accuracy.

高准确性

多SKU精准拣选，差错率低。

High Accuracy

Precise picking of multiple SKUs with a low error rate.

柔性化

适应鞋服箱包行业高动态、高复杂度、高成本压力场景，实现多品种小物件从货到人的拣选。

Flexibility

Adapted to the high-dynamic, high-complexity, and high-cost pressure scenarios of the footwear, apparel, and luggage industry, the project enables efficient goods-to-person picking for multiple varieties of small items.

拓展性强

可根据存取需求选择投放设备的数量，缓存位在未来可根据需要扩展为自动化立体库。

Highly Scalable

The number of deployed devices can be selected based on access demands, and buffer positions can be expanded into automated storage and retrieval systems (AS/RS) in the future as needed.

10000 kg & 20000 kg

单元最大载重

Unit Maximum Load Capacity

500 %

托盘堆垛机 & AGV效率

Pallet Stacker & AGV Efficiency

30~50 托/时 & 20~60 托/时

效率提升

Efficiency Improvement(Pallets/Hour)

15 %

拣货准确率提升

Picking Accuracy Improvement

鞋服箱包

台州某纺织业智能立库项目

Textile Industry

Smart Warehouse Project for a Taizhou Textile Enterprise



该项目客户是全球缝制设备行业产销规模最大、综合实力最强的全球化企业之一，也是集面辅料仓储、数字版房、智能验布、智能裁剪、吊挂缝纫、后道分拣、成品仓储及APS、MES、WMS、PDM等软硬件为一体的服装智能制造成套解决方案服务商。产品惠及全球170多个国家和地区，服务于服装、鞋业、箱包、家具、皮革、汽车、航空等多个领域。

The client for this project is one of the global leaders in the sewing equipment industry, with the largest production and sales scale and strongest comprehensive capabilities. It is also a full-solution provider for smart apparel manufacturing, integrating fabric and accessory storage, digital pattern rooms, intelligent fabric inspection, automated cutting, hanging sewing systems, post-sewing sorting, finished product warehousing, and software/hardware such as APS, MES, WMS, and PDM. Its products benefit over 170 countries and regions worldwide, serving industries including apparel, footwear, luggage, furniture, leather, automotive, and aviation.

解决方案

- 设备数量：12台双伸托盘堆垛机
- 托盘尺寸：1350mm*1350mm*1500mm
- 立库高度：22m，11层货架
- 单元荷载：1000kg

Solution

- Quantity: 12 double-deep pallet stacker cranes
- Pallet Dimensions: 1350mm * 1350mm * 1500mm
- AS/RS Height: 22m,11 rack levels
- Unit Load Capacity: 1000kg

客户痛点

- 土地成本高，原来的地堆存放方式，存放的商品少
- 传统仓库无法满足现在使用需求

Customer Sore Point

- High land costs: The original floor-stacking method stored limited goods.
- Traditional warehouses can no longer meet current operational demands.

项目效果

- 库区占地面积约13800㎡，共有48576个有效货位，充分利用仓库高区域的空间
- 整个立库出入库效率350托/时，满足使用需求，整体效率提升3-4倍。
- 节省了60%以上的人力成本

Project Results

- The storage area covers approximately 13800 m^2 with 48576 effective storage locations, fully utilizing the vertical space of the warehouse.
- The entire AS/RS achieves an inbound/outbound efficiency of 350 pallets per hour, meeting operational needs and improving overall efficiency by 3-4 times.
- Reduced labor costs by over 60%.

更多鞋服箱包案例

More Footwear, Apparel, and Luggage Cases











鞋服箱包

嘉兴某纺织企业智能立库项目

Textile Industry

Smart Warehouse Project for a Jiaxing Textile Enterprise

该项目客户自成立以来，始终引领行业发展，凭借敏锐的市场洞察力与专业技术实力，持续推出引领潮流的箱包产品。在工业4.0时代，为突破现状、保持竞争力，客户亟需实现仓储环节的智能化、自动化与信息化转型。公司集ABS、EVA、PC为原料，专注硬箱质造二十年，以环保、健康、安全为前提，品质、时尚、个性为基础，不断进取、推陈出新，适时满足国内中高端消费人群对箱包的需求。

Since its establishment, the client of this project has always led the industry development, relying on keen market insight and professional technical strength to continuously launch trendy luggage products. In the era of Industry 4.0, in order to break through the status quo and maintain competitiveness, customers urgently need to achieve intelligent, automated, and information-based transformation in the warehousing process. The company uses ABS, EVA, and PC as raw materials and has been focusing on the production of hard boxes for 20 years. With environmental protection, health, and safety as the premise, quality, fashion, and personality as the foundation, we constantly strive to innovate and meet the needs of domestic high-end consumers for luggage and bags.

解决方案

- 设备数量：50台AGV，物流搬运连接4个车间和楼层
- 料架尺寸：L1300mm*W950mm*H2000mm

客户痛点

- 人工搬运物料费时费力，增加人工成本。
- 无法实现信息化管理，盘点效率低。

项目效果

- 最大程度减少人工操作和搬运耗时。
- 自动化系统实时监控所有物料现状，提高订单处理能力
- 提高厂区利用率，储存更多物料

Solution

- Equipment quantity: 50 AGVs, logistics handling connecting 4 workshops and floors
- Rack size: L1300mm * W950mm * H2000mm

Customer Sore Point

- Manual material handling is time-consuming and labor-intensive, increasing labor costs.
- Unable to achieve information management and low inventory efficiency.

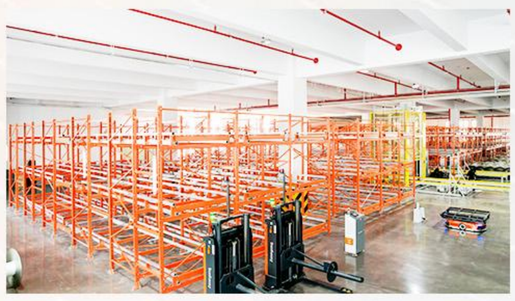
Project Results

- Minimize manual operation and handling time to the greatest extent possible.
- The automation system monitors the current status of all materials in real time to improve order processing capabilities
- Improve the utilization rate of the factory area and store more materials

更多鞋服箱包案例

More Footwear, Apparel, and Luggage Cases









Automotive Parts · Industry Solutions

Lean Intelligent Manufacturing, End-to-End Empowerment

汽车配件
行业解决方案

精益智造，全程赋能

行业介绍

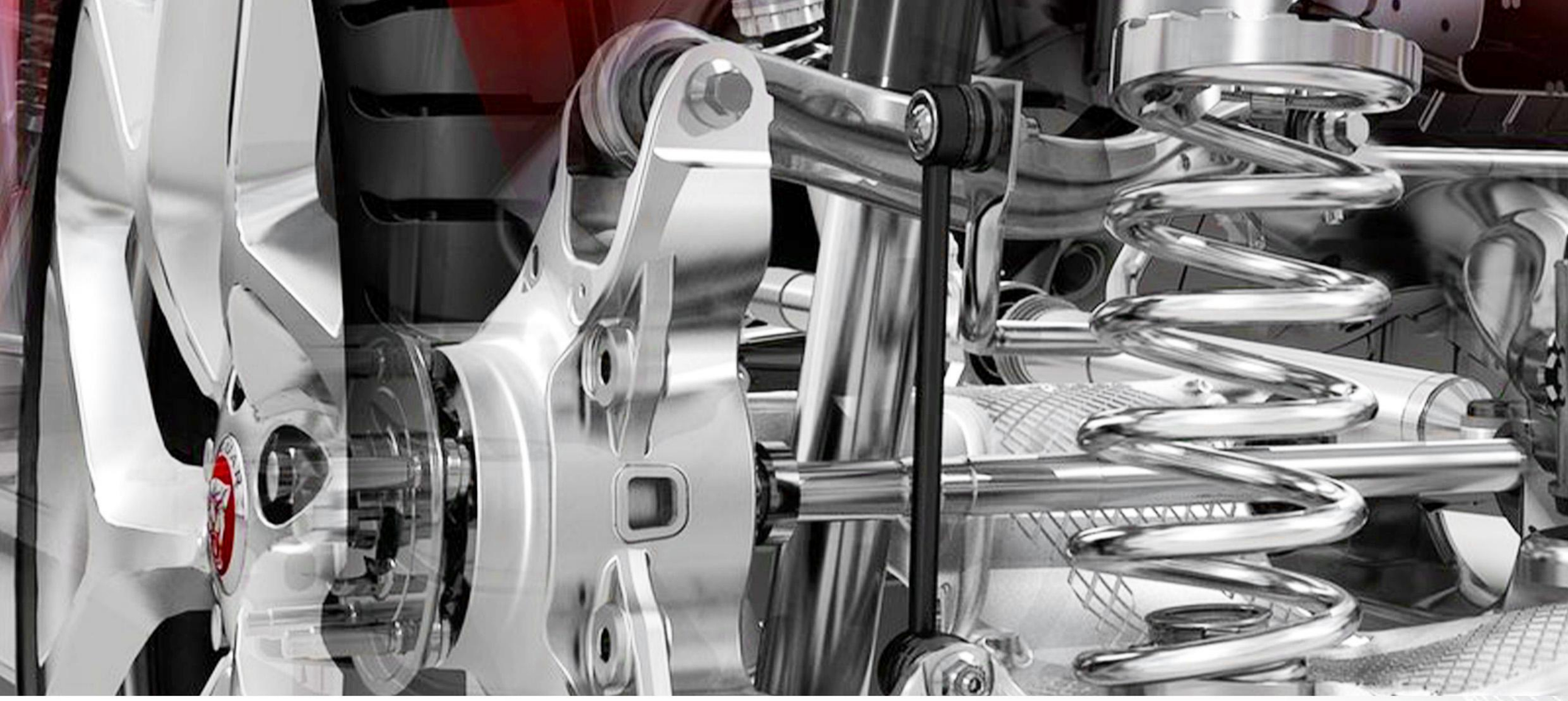
Industry Overview

汽车配件行业作为整车制造的核心支撑，正伴随电动化、智能化趋势向高技术、高可靠性方向升级。行业聚焦精密制造、智能供应链与全生命周期管理，严控品质标准，强化与主机厂协同创新，推动零部件向模块化、集成化发展，成为汽车产业变革的关键驱动力。

在汽车及零部件制造行业的专业领域内，我们深度洞察行业新动向与未来发展趋势，紧密携手行业合作伙伴，共同迎接挑战。我们为用户提供自方案设计至项目交付的全方位、高品质一站式服务。针对汽车及零部件制造行业的新兴需求，我们精心打造了一套涵盖原材料处理、精密加工、组装装配、质量检验及高效仓储物流等全环节、全流程的自动化生产解决方案，并不断推进方案的升级与创新。我们矢志与行业用户并肩前行，为汽车及零部件制造行业创造持久价值，彰显我们的专业素养与卓越品质。

The automotive parts industry, as a core pillar of vehicle manufacturing, is evolving toward high technology and reliability alongside electrification and smart trends. The industry focuses on precision manufacturing, intelligent supply chains, and full lifecycle management, strictly adhering to quality standards while strengthening collaborative innovation with OEMs. It drives the transition of components toward modularization and integration, becoming a key enabler of automotive industry transformation.

Within the professional domain of automotive and parts manufacturing, we deeply analyze industry trends and future directions, working closely with partners to tackle challenges. We provide users with end-to-end, high-quality, one-stop services from solution design to project delivery. Addressing emerging needs in automotive and parts manufacturing, we have developed a comprehensive automated production solution covering raw material processing, precision machining, assembly, quality inspection, and efficient warehousing and logistics. We continuously advance and innovate our solutions, committed to walking alongside industry users to create lasting value, demonstrating professional expertise and exceptional quality.



行业特点

Industry Characteristics

品类繁多，柔性不足

产品品种多，差异性大，生产柔性要求高

Diverse product categories, insufficient flexibility

A wide variety of products with significant differences, demanding high production flexibility.

工艺复杂，管控关键

生产工序繁多，工艺复杂

Complex processes, critical control challenges

Numerous production processes and complex procedures.

流程割裂，协同困难

不同工艺之间的流转涉及到市场需求、时间变化、空间管理、过程控制的衔接和转换

Fragmented workflows, coordination difficulties

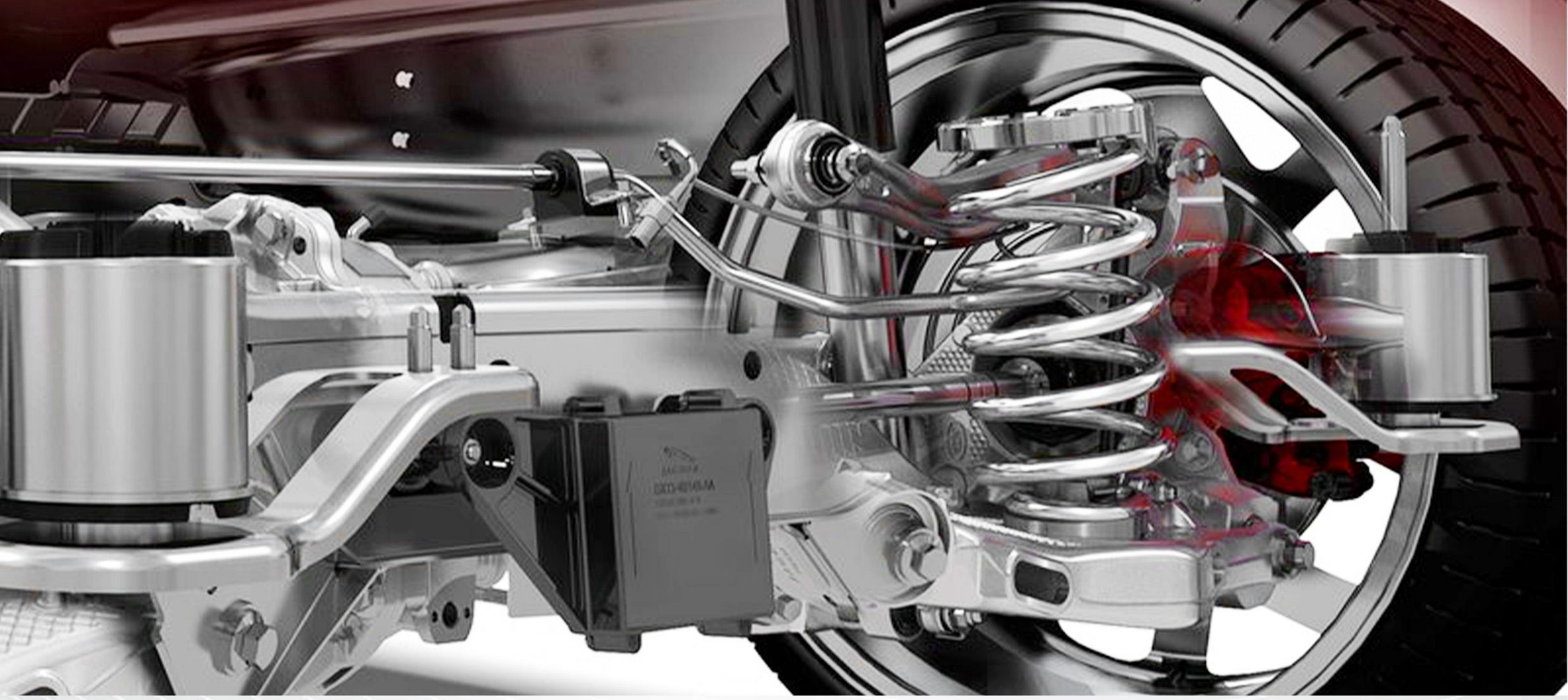
The transition between different processes involves the connection and transformation of market demand, time variations, spatial management, and process control.

信息孤岛，计划脱节

企业生产物流信息化覆盖不足，生产计划和生产实际不匹配，达不到均衡生产的目标

Information silos, disjointed planning

Insufficient IT coverage in enterprise production logistics leads to a mismatch between production plans and actual operations, failing to achieve balanced production goals.



方案概述

Solution Overview

以全品类移动机器人和系统平台为基座，基于对汽车行业尤其是新能源汽车行业的深刻理解和丰富的实践经验，打造覆盖压铸、冲压、焊装、涂装、总装、三电、主线、分装线的全流程解决方案。我们提供标准化的场景解决方案，支持高度敏捷定制，实现快速迭代与交付，满足汽车行业面向大规模定制制造模式的场内物流需求。通过集成数字孪生与AI调度技术，构建实时感知、动态优化的柔性产线，显著提升物料配送精准度与生产线平衡率，为客户实现降本增效与数字化转型升级的核心价值。

Based on a full range of mobile robots and system platforms, along with deep understanding and extensive practical experience in the automotive industry—especially new energy vehicles—we have built end-to-end solutions covering die casting, stamping, welding, painting, final assembly, three-electric systems (battery/motor/electronic control), main production lines, and sub-assembly lines. We provide standardized scenario-based solutions that support highly agile customization, enabling rapid iteration and delivery to meet the intralogistics needs of the automotive industry under large-scale customized manufacturing models. By integrating digital twin and AI scheduling technologies, we create flexible production lines with real-time perception and dynamic optimization, significantly improving material delivery accuracy and production line balance rates. This helps clients achieve core value in cost reduction, efficiency gains, and digital transformation.



方案优势

Solution Advantages

产品品类丰富
根据场景提供最优硬件方案

Diverse product categories,
offering optimal hardware solutions tailored
to specific scenarios.

行业积淀深厚
多领域顶尖品牌全面覆盖

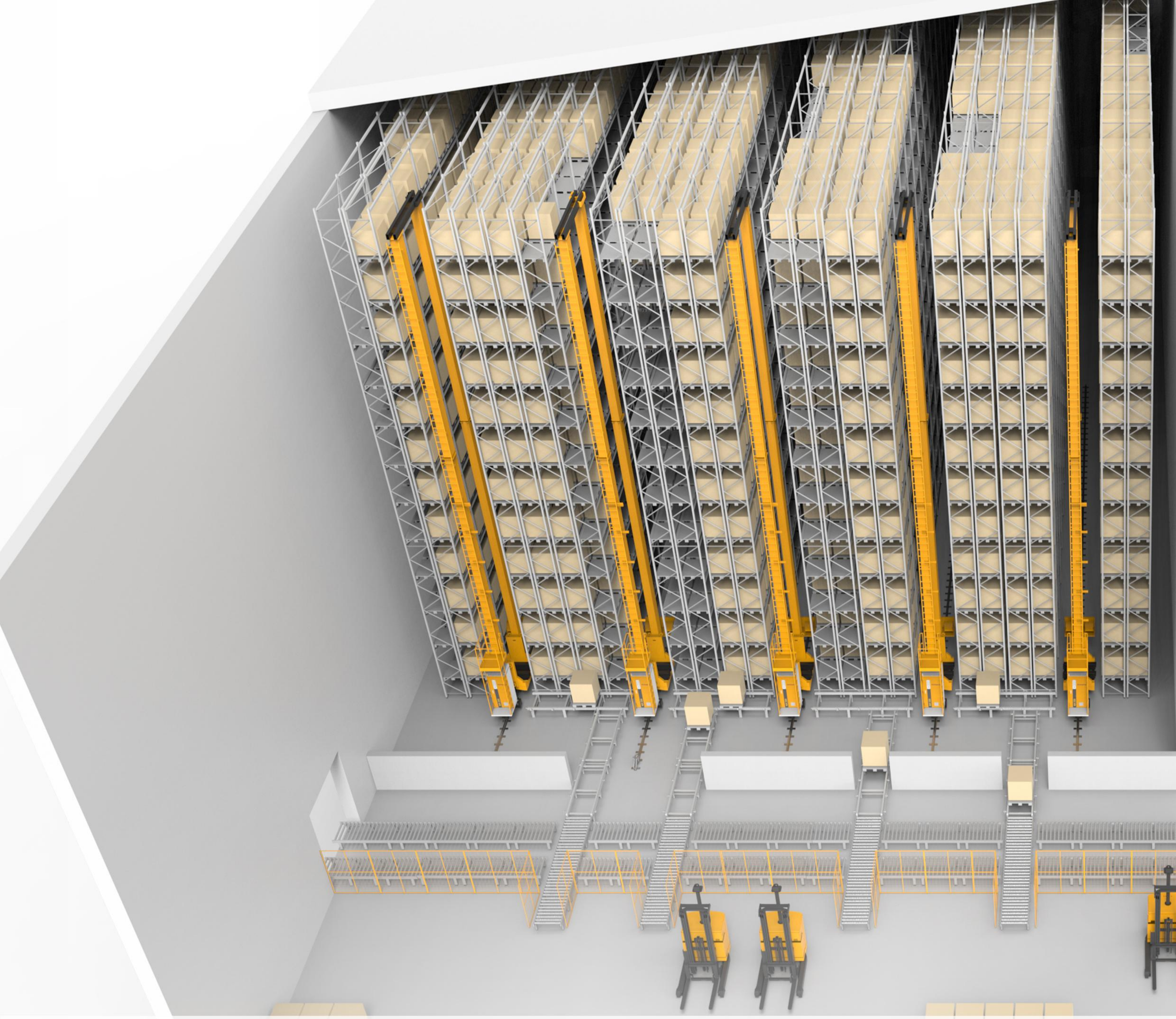
Deep industry expertise,
comprehensive coverage of top brands
across multiple sectors.

强大系统平台，赋能多领域
支持大规模集群高效调度

Powerful system platform
empowering multiple domains,
supporting efficient large-scale cluster scheduling.

场景方案标准化、模板化
实现快速复制

Standardized and templated
scenario solutions enabling rapid replication.



汽车配件仓储解决方案

汽车零部件行业仓储的核心痛点在于极端复杂性、供应链高协同要求，海量不同规格零件挑战空间利用与库存准确。中扬立库使用托盘堆垛机库+料箱堆垛机库解决方案，适应不同大小规格的零部件。托盘机载重大、稳定性强，适用于存取大型零部件；料箱堆垛机轻型、高速、储位多，适用于存取小型部件。每个最小包装配备条码，实现全流程追溯与高效盘点。

高效率

托盘堆垛机库+料箱堆垛机库双重解决方案，完美适应多品种、小批量的生产计划与节奏。

High Efficiency

The dual solution of Pallet AS/RS and Tote AS/RS perfectly adapts to multi-variety, small-batch production plans and rhythms.

高准确性

为每个最小包装的零部件配备单独条码，系统可以精准定位和追溯。

High Accuracy

Each smallest packaged component is assigned a unique barcode, enabling the system to achieve precise positioning and traceability.

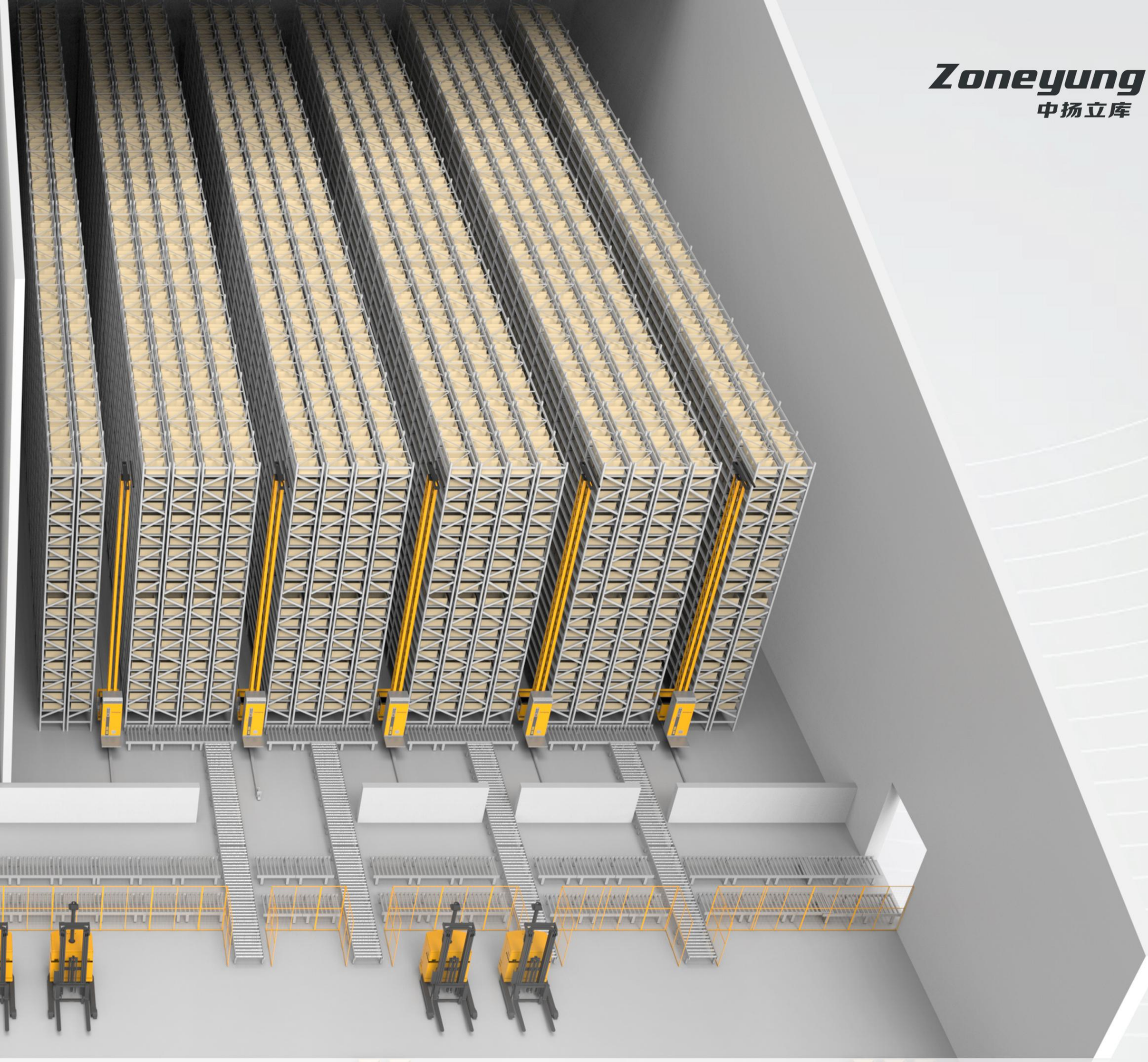
高标准化

零部件存取以托盘、笼箱和料箱为基本单位，便于存取和库存记录。

High Standardization

Parts are handled in standardized units such as pallets, cages, and totes, facilitating access and inventory manage-

Zoneyung
中扬立库



Automotive Parts Storage Solution

The core challenges in automotive parts warehousing lie in extreme complexity, high supply chain coordination demands, and the management of vast quantities of parts with varying specifications, which test both space utilization and inventory accuracy. Zoneyung employs a solution combining pallet stacker AS/RS and tote stacker AS/RS to accommodate parts of different sizes. Pallet stackers offer high load capacity and stability, ideal for large parts handling, while tote stackers are lightweight, high-speed, and multi-compartment, suitable for small components. Each smallest packaging unit is barcode-labeled, enabling end-to-end traceability and efficient inventory counting.

10000 kg & 20000 kg

单元最大载重
Unit Maximum Load Capacity

10~45 m & 6~24 m

托盘堆垛机 & 料箱堆垛机高度
Pallet Stacker & Tote Stacker Height

120~200 m/min & 200~300 m/min

托盘堆垛机 & 料箱堆垛机水平速度
Pallet Stacker & Tote Stacker Horizontal Speed

25~30 m/min & 45~65 m/min

托盘堆垛机 & 料箱堆垛机垂直速度
Pallet Stacker & Tote Stacker Vertical Speed

汽车配件

绍兴某汽配企业智能立库项目

Auto Parts

Smart Warehouse Project for a Shaoxing Auto Parts Enterprise



该项目客户专注于汽车关键零部件的生产，主要产品包括汽车雨刮系统零部件、玻璃升降器系统零部件、中央集控门锁零部件、轿车门内板系统零部件以及汽车挡风玻璃洗涤系统总成等。公司尤其在精密塑料齿轮的设计与制造方面实力突出，其精密注塑技术在国内享有很高的知名度。

The client for this project specializes in the production of critical automotive components. Key products include wiper system parts, window regulator system parts, central locking system parts, car door inner panel system components, and windshield washer system assemblies. The company excels particularly in the design and manufacturing of precision plastic gears, with its precision injection molding technology enjoying high recognition domestically.

解决方案

- 设备数量：3台重型堆垛机
- 托盘尺寸：1250mm*1050mm*160mm
- 立库高度：8.3m，4层货架
- 单位荷载：1350kg

Solution

- Quantity: 3 heavy-duty stacker cranes
- Pallet Dimensions: 1250mm*1050mm*160mm
- AS/RS Height: 8.3m,4 rack levels
- Unit Load Capacity: 1350kg

客户痛点

- 土地成本高，传统仓库存放的商品少
- SUK种类多，人工找货易出错

Customer Sore Point

- High land costs: Traditional warehouses have limited storage capacity for goods.
- Numerous SKU varieties: Manual retrieval is prone to errors.

项目效果

- 库区占地面积约800m²，共有2883个有效货位
- 每库区出入库效率35托/时，满足分拣需求
- 增加存储、减少人工、便于管理

Project Results

- The storage area covers approximately 800 m² with 2883 effective storage locations.
- Each zone achieves an inbound/outbound efficiency of 35 pallets per hour, meeting sorting requirements.
- Increases storage capacity, reduces labor, and simplifies management.

更多汽车配件案例

More Auto Parts Cases








汽车配件

台州某汽配企业智能立库项目

Auto Parts

Smart Warehouse Project for a Taizhou Auto Parts Enterprise

该项目客户成立于1998年，是一家专业从事汽车减振器及电控悬架设计、研发、生产与销售的“国家高新技术企业”。作为国内同行业中关键零部件自主生产率最高的减振器生产企业，公司紧跟整车发展趋势，积极引进高端科技人才，成功开发出复合气囊悬架、磁流变减振器、单筒式减振器等高端产品，并已实现量产。

The client for this project, established in 1998, is a "National High-Tech Enterprise" specializing in the design, R&D, production, and sales of automotive shock absorbers and electronically controlled suspension systems. As the shock absorber manufacturer with the highest self-production rate of critical components in China's industry, the company closely follows vehicle development trends, actively recruits high-end technical talent, and has successfully developed and mass-produced advanced products such as composite air suspension systems, magnetorheological shock absorbers, and monotube shock absorbers.

解决方案

- 设备数量：6台双伸料箱堆垛机
- 料箱尺寸：570mm*420mm*230mm
- 立库高度：8m，16层货架
- 单箱荷载：50kg

客户痛点

- 土地成本高，原来的地堆存放方式，存放的商品少
- 传统仓库无法满足现在使用需求
- SKU型号种类繁多，人工管理经常出错

项目效果

- 库区占地面积约817㎡，共有22400个有效货位
- 整个立库出入库效率260箱/时，整体效率提升5-6倍
- 立库WMS系统自动管理大大减少人工管理出错的概率

Solution

- Quantity: 6 double-deep tote stacker cranes
- Tote Dimensions: 570mm*420mm*230mm
- AS/RS Height: 8m,16 rack levels
- Unit Load Capacity: 50kg per tote

Customer Sore Point

- High land costs: The original floor-stacking method stored limited goods.
- Traditional warehouses can no longer meet current operational demands.
- Numerous SKU models and varieties: Manual management frequently leads to errors.

Project Results

- The storage area covers approximately 817 m^2 with 22400 effective storage locations.
- The entire AS/RS achieves an inbound/outbound efficiency of 260 totes per hour, improving overall efficiency by 5-6 times.
- The AS/RS WMS system automates management, significantly reducing the probability of human errors.

更多汽车配件案例

More Auto Parts Cases







Warehousing Logistics · Industry Solutions

Intelligent warehousing and distribution, precise and efficient.

仓储物流
行业解决方案

智能仓配，精准高效

行业介绍

Industry Overview

仓储物流行业作为现代供应链的核心环节，正经历从传统人工操作向智能化、平台化的深刻变革。面对电商爆发、制造业升级等趋势，行业依托物联网、人工智能与机器人技术，构建高效、柔性、可视化的智能仓储体系，实现从入库、存储、分拣到配送的全链路数字化管控，驱动供应链降本增效与韧性提升，成为支撑新经济格局的关键基础设施。

紧密捕捉仓储物流领域的新变革与趋势，直面各项挑战，致力于为客户提供从战略蓝图规划到实际落地执行的全面且高附加值的服务。针对不断涌现的新需求，我们精心设计了一整套仓储物流解决方案，实现全领域、全链条覆盖，不断创新优化，与客户共同创造可持续的长期价值。

The warehousing and logistics industry, as a core link in the modern supply chain, is undergoing a profound transformation from traditional manual operations to intelligent and platform-based systems. In response to trends such as the e-commerce boom and manufacturing upgrades, the industry leverages IoT, artificial intelligence, and robotics to build efficient, flexible, and visible smart warehousing systems. This enables end-to-end digital management from receiving and storage to sorting and distribution, driving cost reduction, efficiency improvement, and resilience enhancement in the supply chain, making it a key infrastructure supporting the new economic landscape.

By closely tracking new changes and trends in the warehousing and logistics field and confronting challenges head-on, we are committed to providing customers with comprehensive, high-value services from strategic blueprint planning to practical implementation. To address emerging needs, we have carefully designed a complete set of warehousing and logistics solutions that cover all areas and processes, continuously innovating and optimizing to create sustainable long-term value together with our customers.



行业特点

Industry Characteristics

环境苛刻，成本高企

低温条件下作业环境恶劣，用工成本高，职业危害大

Harsh environments, high costs

Operating in low-temperature environments is challenging, with high labor costs and significant occupational hazards.

非标定制，要求严苛

农产品、食品加工和医药等商品的特殊性决定了仓库没有标准化的解决方案，几乎全为定制化，且具备一定的高要求

Customized non-standard requirements, stringent specifications

The unique nature of commodities such as agricultural products, food processing items, and pharmaceuticals means there are no standardized warehouse solutions—almost all are customized and come with high requirements.

法规严格，安全至上

冷链中的特殊货物，对安全性、卫生性要求较高，有标准化的作业流程及法律法规，物流建设难度更大

Strict regulations, safety first

Special goods in the cold chain demand elevated safety and hygiene standards, standardized operational procedures, and compliance with regulations, making logistics construction more complex.

设备特殊，标准极高

低温、高能耗、高湿、结霜、结雾、洁净，对作业设备的性能要求更高，建设的整体标准也更严格

Specialized equipment, extremely high standards

Low temperatures, high energy consumption, humidity, frost, condensation, and cleanliness impose higher performance demands on equipment and stricter overall construction standards.



方案概述

Solution Overview

鉴于仓储物流行业的独特性质，其规划与执行面临较大挑战，这促使项目实施方不能仅仅依赖标准化的通用方案来应对各行业的差异化需求。相反，必须开展定制化的规划设计，乃至进行设备技术的革新研发，以精准的方案与专用设备直击客户的核心难题。中扬立库凭借创新的解决方案与技术实力，有效对接市场需求，在物流领域已广泛涉足肉类、果蔬、药品等多个细分行业，通过构建智能化温控管理与全流程可追溯系统，确保货物品质安全，助力客户实现高效低碳的冷链运营新模式。

Given the distinctive characteristics of the warehousing and logistics industry, its planning and execution present significant challenges. This compels project implementers to move beyond standardized generic solutions to address the diverse needs of various sectors. Instead, customized planning and design, and even innovative equipment technology development, are essential to tackle clients' core issues with precisely tailored solutions and specialized equipment. Leveraging innovative solutions and technical expertise, Zoneyung effectively aligns with market demands, engaging extensively in logistics segments such as meat, fruits, vegetables, and pharmaceuticals. By establishing intelligent temperature-controlled management and end-to-end traceability systems, it ensures cargo quality and safety, assisting clients in achieving efficient and low-carbon cold chain operations.



方案优势

Solution Advantages

产品品类丰富
根据场景提供最优硬件方案

Diverse product categories,
offering optimal hardware solutions tailored
to specific scenarios.

行业积淀深厚
多领域顶尖品牌全面覆盖

Deep industry expertise,
comprehensive coverage of top brands
across multiple sectors.

强大系统平台，赋能多领域
支持大规模集群高效调度

Powerful system platform
empowering multiple domains,
supporting efficient large-scale cluster scheduling.

场景方案标准化、模板化
实现快速复制

Standardized and templated
scenario solutions enabling rapid replication.

高效率

机械设备代替人工在低温环境作业，提高作业效率。

High Efficiency

Mechanical equipment replaces manual labor in low-temperature environments, improving operational efficiency.

稳定性强

四向穿梭车可在-45℃~-25℃的低温下运作，稳定性极强。

Strong Stability

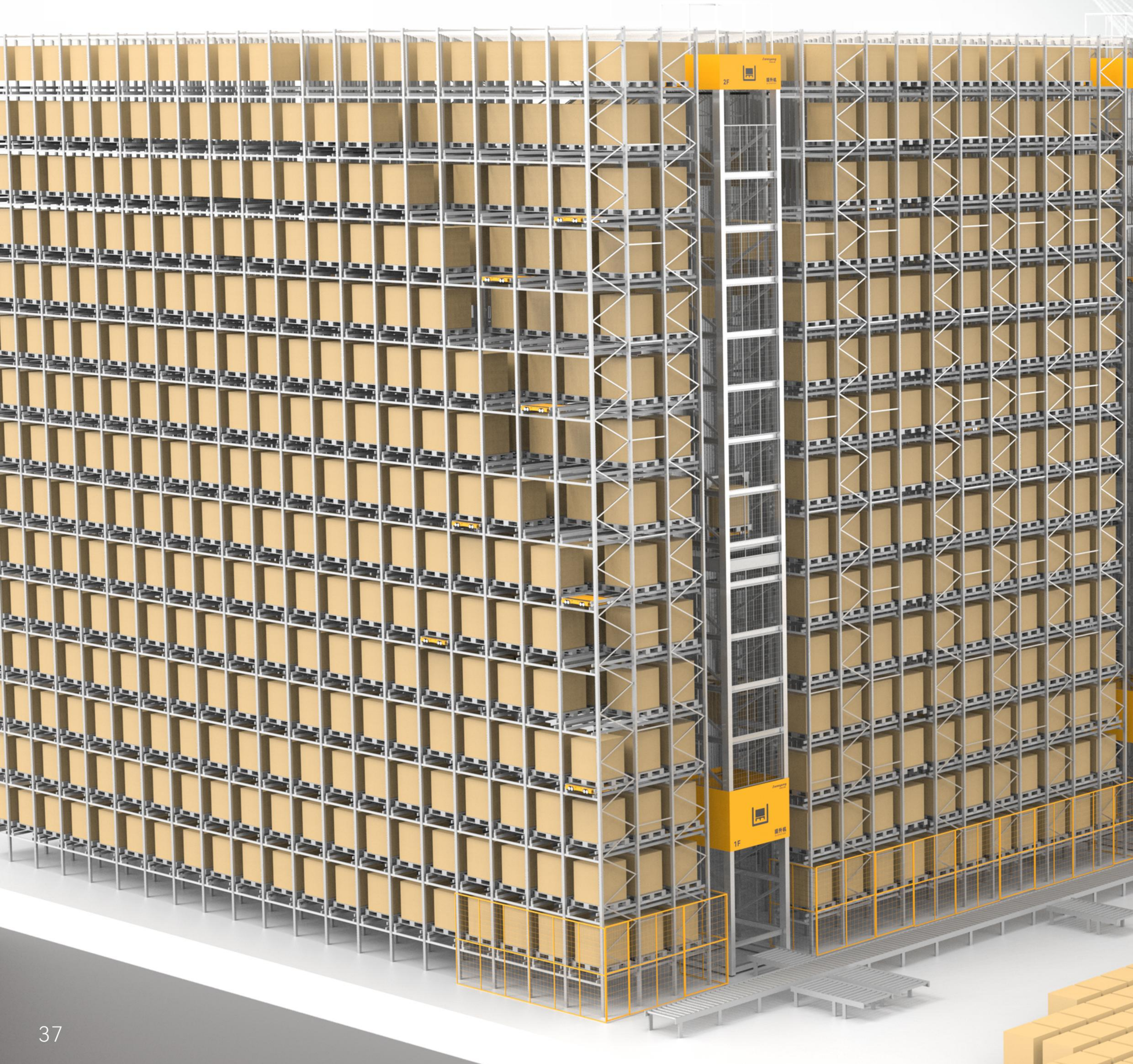
Four-way shuttles can operate in low temperatures ranging from -45℃ to -25℃ with exceptional stability.

模块化

四向穿梭车规格大小统一，可增减替换。

Modular Design

Four-way shuttles feature uniform specifications and can be added, reduced, or replaced as needed.

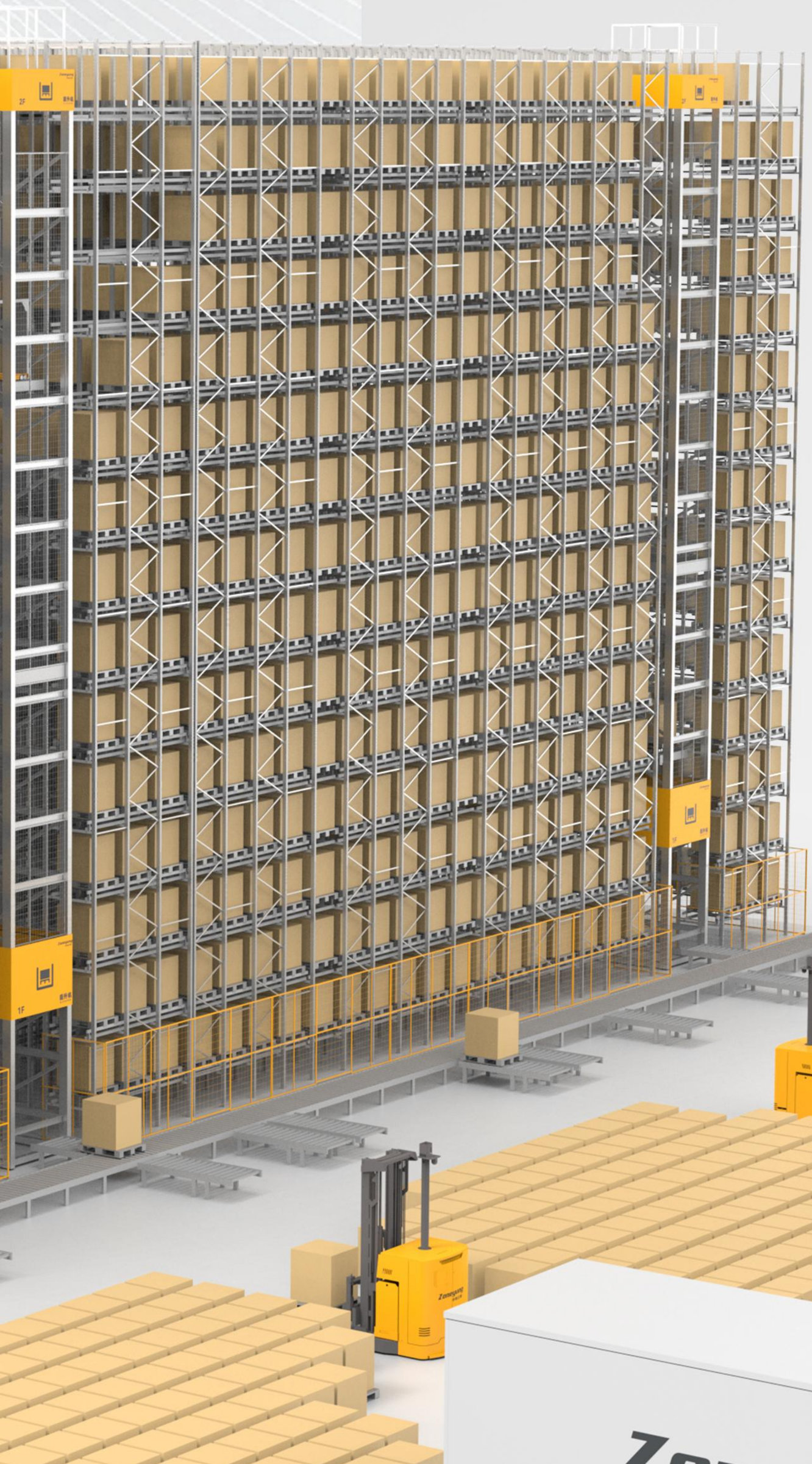


仓储物流仓储解决方案

仓储物流严苛的温控、复杂的记录/追溯、库存管理困难，严重制约人机效率。面对以上难题，中扬立库的解决方案以四向穿梭车为核心，能在-45℃~-25℃的低温下运作，灵活应对出入库波动，故障可快速替换。搭配自研WMS/WCS系统，高效适配穿梭车、提升机等硬件，可实时监控和管理库存信息和设备状态，有效提高存取、库存盘点等方面的效率。

Warehousing Logistics Storage Solution

Warehouse logistics face stringent temperature control requirements, complex record-keeping/traceability needs, and inventory management challenges that severely constrain human and machine efficiency. To address these issues, Zoneyung's solution centers on four-way shuttles capable of operating in low temperatures ranging from -45°C to -25°C, flexibly handling fluctuations in inbound/outbound activity, and allowing quick replacement in case of faults. Paired with in-house developed WMS/WCS systems, it efficiently integrates hardware such as shuttles and lifts, enabling real-time monitoring and management of inventory information and equipment status, significantly improving efficiency in storage/retrieval, inventory counting, and other operations.



2000 kg

单元最大载重

Unit Maximum Load Capacity

-45℃ ~ -25℃

设备适应环境

Equipment Environmental Adaptability

1.2~1.5 m/s

四向车速度

Four-Way Shuttle Speed

6~8 h

单辆四向车续航能力

Single Four-Way Shuttle Endurance Capacity

仓储物流

诸暨某物流行业智能立库项目

Warehousing Logistics

Smart Warehouse Project for a Zhuji Logistics Industry Enterprise



诸暨大唐街道被誉为“国际袜都”。近些年袜业行业的数字化管理升级在不断的推广，电商走热对袜企“生产-市场”的反应模式提出了要求。该项目客户不同于线下订单式生产，电商售袜要求制袜厂商快速反应，即“频率快、时间短”，因此仓储智能化升级迫在眉睫。

Zhuji Datang Street is renowned as the "International Sock Capital." In recent years, the digital management upgrade of the hosiery industry has been continuously promoted, and the rise of e-commerce has imposed demands on the "production-market" response model of sock enterprises. Unlike offline order-based production, e-commerce sock sales require manufacturers to respond quickly—characterized by "high frequency and short timelines"—making intelligent warehouse upgrades urgently necessary.

解决方案

- 设备数量：4台双伸托盘堆垛机
- 托盘尺寸：1200mm*1300mm*1960mm
- 立库高度：20m
- 单元荷载：1000kg

Solution

- Equipment Quantity: 4 double-deep stacker cranes
- Pallet Dimensions: 1200mm*1300mm*1960mm
- AS/RS Height: 20m
- Unit Load Capacity: 1000kg

客户痛点

- 原料SKU多，管理混乱
- 全国各地原料分散，物流成本大，物流时间不可控

Customer Sore Point

- Raw material SKUs are numerous, leading to management chaos.
- Raw materials are scattered across various regions nationwide, resulting in high logistics costs and unpredictable logistics timelines.

项目效果

- 库区占地面积约1500m²，共有8000多个有效货位
- 库区出入库效率127托/时，自动缠膜后入库
- 产品出入库实现无人化出入库动作，节省人工

Project Results

- The storage area covers approximately 1500 m² with 3840 effective storage locations.
- The warehouse achieves an inbound/outbound efficiency of 127 pallets per hour, with automated wrapping before storage.
- Product handling achieves fully unmanned inbound/outbound operations, reducing labor costs.

更多仓储物流案例

More Warehousing Logistics Cases








仓储物流

宁波某冷链物流智能立库项目

Warehousing Logistics

Smart Warehouse Project for a Ningbo Cold Chain Logistics Enterprise

该项目客户是某物流集团旗下推出的自营快递品牌，致力于为电子商务提供融合成本与服务质量优势的差异化优质快递服务。公司为天猫超市等平台上的商家和品牌，提供涵盖上门揽收、中转配送、在途拦截、逆向退货、售后客服等环节的一站式服务，并承诺提供快速、可靠、准时且保证送货上门的快递体验。

The client of this project is a self-operated express brand launched by a logistics group. It is committed to providing e-commerce with differentiated high-quality express services that combine cost advantages and service quality advantages. The company offers one-stop services covering door-to-door pickup, transit and delivery, in-transit interception, reverse return, after-sales customer service and other links for merchants and brands on platforms such as Tmall Supermarket. It also promises to provide a fast, reliable, on-time express experience with guaranteed door-to-door delivery.

解决方案

- 设备数量：4套四向穿梭车、3套提升机、1套输送线
- 托盘尺寸：1200mm*1000mm*1400mm
- 立库高度：9m

客户痛点

- 仓库空间利用率低，土地成本高
- 作业效率低下，严重影响货物出入库

项目效果

- 项目采用上存下拣的模式，让仓库利用率大大提高
- 托盘库有效货位1350个，通过智能设备实现自动化拣选
- 提高分拣速度，机器人自动搬运至分拣口

Solution

- Equipment Quantity: 4 sets of four-way shuttles, 3 sets of lifts, 1 set of conveyor lines
- Pallet Dimensions: 1200mm*1000mm*1400mm
- AS/RS Height: 9m

Customer Sore Point

- Low warehouse space utilization and high land costs.
- Inefficient operations severely impact goods inbound/outbound processes.

Project Results

- The project adopts an "upper storage, lower picking" model, significantly improving warehouse utilization.
- The pallet racking system provides 1,350 effective storage locations, enabling automated picking through intelligent equipment.
- Sorting speed is enhanced, with robots automatically transporting goods to sorting ports.

更多仓储物流案例

More Warehousing Logistics Cases









Home Furnishing Industry · Industry Solutions

Flexible Smart Manufacturing, One-Stop Home Delivery

家具业
行业解决方案

柔性智造，一站到家

行业介绍

Industry Overview

家居行业作为与民生息息相关的消费支柱产业，正经历从传统制造向智能化、个性化、绿色化的全面转型。面对消费升级与市场多元化需求，行业通过融合智能制造、数字化营销与绿色材料创新，实现从产品设计、生产制造到终端服务的全链路升级，推动家居空间向智能化、健康化、美学化方向发展，持续满足人们对高品质生活的追求。

聚焦家居行业“大件存储难、物流破损高、服务链条长”的痛点，中扬立库以“智能仓储 + 全链服务”为核心，提供从战略规划到落地执行的一体化方案。覆盖成品家具、定制家居、软装饰品等全品类，打造“重型立体仓（存储大件）+ 拆零拣选仓（适配配件）+ 前置云仓（贴近市场）”的分级仓储体系，结合智能调度与送装协同，助力家居企业实现“高效存储、安全交付、体验升级”的长期价值。

The warehousing and logistics industry, as a core link in the modern supply chain, is undergoing a profound transformation from traditional manual operations to intelligent and platform-based systems. In response to trends such as the e-commerce boom and manufacturing upgrades, the industry leverages IoT, artificial intelligence, and robotics to build efficient, flexible, and visible smart warehousing systems. This enables end-to-end digital management from receiving and storage to sorting and distribution, driving cost reduction, efficiency improvement, and resilience enhancement in the supply chain, making it a key infrastructure supporting the new economic landscape.

By closely tracking new changes and trends in the warehousing and logistics field and confronting challenges head-on, we are committed to providing customers with comprehensive, high-value services from strategic blueprint planning to practical implementation. To address emerging needs, we have carefully designed a complete set of warehousing and logistics solutions that cover all areas and processes, continuously innovating and optimizing to create sustainable long-term value together with our customers.



行业特点

Industry Characteristics

产品形态多样

从沙发、床垫（大件）到五金配件（小件），从标准化到定制化（如异形橱柜），存储策略差异极大。

Diverse product forms

Ranging from sofas and mattresses (large items) to hardware accessories (small items), and from standardized to customized products (e.g., irregular cabinets), storage strategies vary significantly.

物流链条长

需衔接“仓储→长途运输→上门安装”，涉及多次装卸，对包装、搬运设备要求高（防磕、防刮）。

Long logistics chain

Requires seamless integration of "warehousing → long-distance transportation → in-home installation," involving multiple handling stages and demanding high standards for packaging and handling equipment (impact and scratch prevention).

渠道复杂

覆盖线下卖场、电商平台、定制门店等，需适配“批量发货→单套配送”的多模式需求。

Complex channels

Covers offline stores, e-commerce platforms, and custom shops, requiring adaptation to multi-mode needs such as "bulk shipping → single-set delivery."

售后关联强

仓储需联动安装服务（如送装一体），逆向物流（退换货、维修件）管理复杂。

Strong after-sales linkage

Warehousing must coordinate with installation services (e.g., integrated delivery and installation) and manage complex reverse logistics (returns, replacements, and repair parts).



方案概述

Solution Overview

家居业面临产品规格差异大、定制化比例高、物流破损率高等痛点，传统仓储难以平衡“存储效率”与“产品保护”。中扬立库围绕家居供应链，打造“存储+配送+安装”一体化方案：通过智能货架适配大件/异形产品，引入AGV搬运、自动缠绕打包等设备保障货物安全，结合WMS系统实现“订单→仓储→配送→售后”全流程可视化，深度覆盖成品家具、定制家居、家居饰品等细分领域。方案通过流程优化与智能技术融合，显著降低货损率、缩短交付周期，助力客户构建端到端的服务闭环，全面提升终端交付体验与供应链运营效率。

The home furnishing industry faces challenges such as significant variations in product specifications, high customization rates, and elevated logistics damage, making it difficult for traditional warehousing to balance storage efficiency and product protection. Zoneyung addresses the home furnishing supply chain with an integrated storage, distribution, and installation solution: adaptive smart racking accommodates large and irregularly shaped products, while AGV handling and automated wrapping equipment ensure cargo safety. Integrated with a WMS system, it achieves end-to-end visibility from orders to warehousing, distribution, and after-sales, extensively covering segments such as finished furniture, custom home furnishings, and decorative accessories. By optimizing processes and integrating smart technologies, the solution significantly reduces damage rates and shortens delivery cycles, helping clients build an end-to-end service loop and comprehensively enhancing final delivery experiences and supply chain operational efficiency.



方案优势

Solution Advantages

大件适配，灵活存储

Large-Item Adaptation
Flexible Storage

行业沉淀，全链覆盖

Industry Expertise
Full-Chain Coverage

智能调度，降本提效

Intelligent Scheduling
Cost Reduction & Efficiency Improvement

场景复用，快速复制

Scenario Reusability
Rapid Replication

家居业仓储解决方案

在传统家居仓储中，大件物品搬运、组装、打包等环节高度依赖人工，还存在SKU数量庞大，盘点难度高等难题。中扬立库提供解决方案采用双伸位托盘堆垛机，一次可存取两个货位的货物，节省空间，载重大、运行稳，适用大件及易碎家具。配备WMS/WCS系统提升盘点效率与准确率。在入库口设计滚筒式输送线，可对接自动缠膜机等设备，运输平稳，节省人工搬运成本。

Home Furnishing Industry Storage Solution

In traditional home furnishing warehousing, handling, assembly, and packaging of large items heavily rely on manual labor, compounded by challenges such as a vast number of SKUs and high inventory counting complexity. Zoneyung offers a solution utilizing double-deep pallet stacker cranes, which can access two storage positions in a single operation, saving space. With high load capacity and stable operation, they are ideal for large and fragile furniture. The system is equipped with WMS/WCS to enhance inventory counting efficiency and accuracy. Roller conveyors are designed at the inbound ports to interface with automated wrapping machines and other equipment, ensuring smooth transportation and reducing manual handling costs.

高效率

有效提高空间利用率，降低人工成本和作业强度。

High Efficiency

Effectively improves space utilization while reducing labor costs and operational intensity.

稳定

托盘堆垛机载重大、运行稳定，有效减少搬运大件、易碎家具的货损率。

Stable

Pallet stacker cranes offer high load capacity and stable operation, effectively reducing damage rates when handling large and fragile furniture.

可拓展

滚筒式运输线可对接拣选、打包等设备，提高工作效率，匹配个性化需求。

Scalable

Roller conveyors can interface with picking, packaging, and other equipment, enhancing workflow efficiency and meeting personalized needs.

10~35 m

托盘堆垛机立库高度

Pallet Stacker Crane AS/RS Height

10000 kg

单元最大载重

Unit Maximum Load Capacity

120~200 m/min

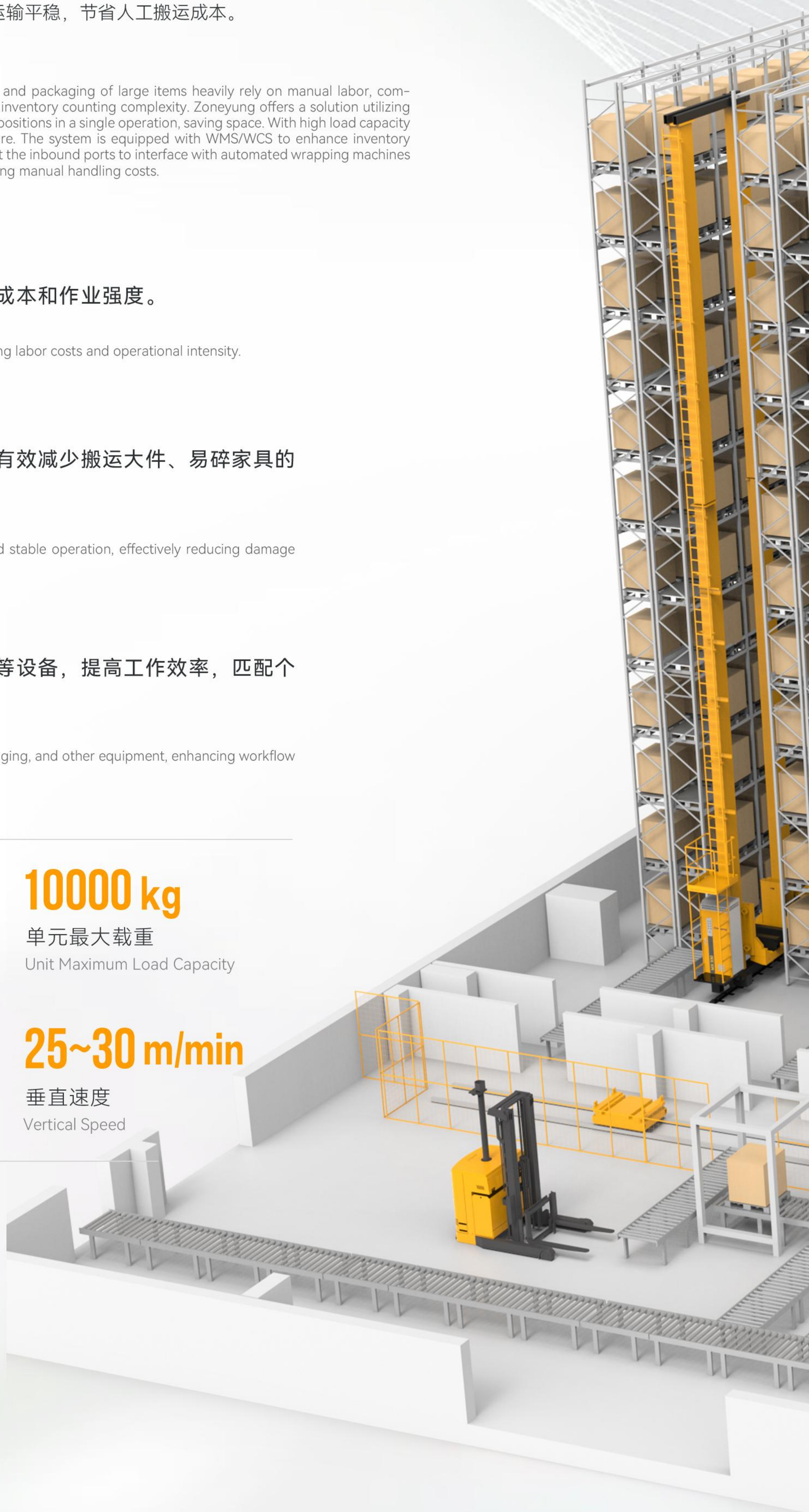
水平速度

Horizontal Speed

25~30 m/min

垂直速度

Vertical Speed



Zoneyung
中扬立库

家居业

海宁某家居业智能立库项目

Home Furnishing

Smart Warehouse Project for a Haining Home Furnishing Enterprise



该项目客户成立于2019年12月09日，家用纺织制成品制造、家居用品制造、羽毛（绒）及制品制造、服装制造、玩具制造、日用杂品制造、箱包制造、皮革制品制造、劳动保护用品生产、日用口罩（非医用）生产。

The client for this project was established on December 9, 2019. Its business includes manufacturing household textile finished products, home goods, feather,a products, apparel, toys, daily necessities, luggage, leather goods, labor protection products, and daily-use masks (non-medical).

解决方案

- 设备数量：2台托盘堆垛机
- 托盘尺寸：1300mm*1300mm*1700mm
- 立库高度：17m，7层货架
- 单元荷载：500kg

Solution

- Equipment Quantity: 2 pallet stacker cranes
- Pallet Dimensions: 1300mm*1300mm*1700mm
- AS/RS Height: 17m,7 rack levels
- Unit Load Capacity: 500kg

客户痛点

- 土地成本高，原来的地堆存放方式，存放的商品少
- 传统仓库无法满足现在使用需求

Customer Sore Point

- High land costs: The original floor-stacking method stored limited goods.
- Traditional warehouses can no longer meet current operational demands.

项目效果

- 共有2247个有效货位，空间利用率提升5-6倍
- 整个立库出入库效率60托/时，满足使用需求
- 整体效率提升2-3倍

Project Results

- A total of 2247 effective storage locations, increasing space utilization by 5-6 times.
- The entire AS/RS achieves an inbound/outbound efficiency of 60 pallets per hour, meeting operational needs.
- Overall efficiency is improved by 2-3 times.

更多家居业案例

More Home Furnishing Industry Cases











家居业

宁波某家居业智能立库项目

Home Furnishing

Smart Warehouse Project for a Ningbo Home Furnishing Enterprise

该项目客户核心业务为竹材的综合利用，涵盖新技术的开发应用、新产品的研发生产、人造板及制品、家具金属构件、金属家居用品以及家具的制造加工。公司引进欧洲最先进的家具生产设备，专业生产符合欧盟环保标准的新颖板式家具，并由此成为全球家具巨头瑞典宜家(IKEA)在中国市场最重要的板式家具供应商之一。

The client's core business focuses on the comprehensive utilization of bamboo resources, covering the development and application of new technologies, R&D and production of new products, manufacturing of artificial boards and related products, metal furniture components, metal household items, and furniture processing. The company has introduced Europe's most advanced furniture production equipment to professionally produce novel panel furniture that meets EU environmental standards, thereby becoming one of the most important panel furniture suppliers for global furniture giant IKEA in the Chinese market.

解决方案

- 设备数量：2台双伸托盘堆垛机
- 托盘尺寸：2500mm/1200mm*800mm*1200mm
- 立库高度：18m，10层货架
- 单元荷载：1600kg/800kg

Solution

- Equipment Quantity: 2 double-deep pallet stacker cranes
- Pallet Dimensions: 2500mm/1200mm*800mm*1200mm
- AS/RS Height: 18m,10 rack levels
- Unit Load Capacity: 1600kg/800kg

客户痛点

- 土地成本高，原来的地堆存放方式，存放的商品少
- 传统仓库无法满足现在使用需求

Customer Sore Point

- High land costs: The original floor-stacking method stored limited goods.
- Traditional warehouses can no longer meet current operational demands.

项目效果

- 库区占地面积约800㎡，共有4360个有效货位
- 整个立库出入库效率62托/时，整体效率提升3-4倍
- 立库对接多楼层，节省了人工跨楼层搬运的时间

Project Results

- The storage area covers approximately 800 m^2 with 4360 effective storage locations.
- The entire AS/RS achieves an inbound/outbound efficiency of 62 pallets per hour, improving overall efficiency by 3-4 times.
- The AS/RS connects multiple floors, saving time on manual cross-floor transportation.

更多家居业案例

More Home Furnishing Industry Cases






3C Products · Industry Solutions

Precision Engineered for Intelligent, High-Efficiency Synergy

3C产品
行业解决方案

智造精工，高效协同

行业介绍

Industry Overview

3C行业作为全球消费电子市场的核心驱动力，涵盖计算机、通信和消费电子三大领域，正经历从硬件创新向生态融合的深度变革。面对智能化、个性化与绿色化趋势，行业依托芯片技术突破、人工智能融合与柔性制造升级，推动产品向轻薄化、智能物联、沉浸体验方向演进，持续重塑全球消费电子产业格局与用户体验。

紧密捕捉3C行业“快迭代、高时效”的变革趋势，直面SKU管理、物流效率、供应链协同等挑战，中扬立库为3C企业提供从智能仓储规划→全流程运营→逆向物流闭环的全链条高附加值服务。针对“新品爆发、促销波峰”等场景，设计模块化仓储方案，覆盖手机、智能穿戴、数码配件等全品类，实现存储密度、分拣效率、数据协同的多维突破，与客户共筑灵活响应的3C供应链体系。

The 3C industry, serving as the core driver of the global consumer electronics market and encompassing the three major fields of computers, communication, and consumer electronics, is undergoing a profound transformation from hardware innovation to ecosystem integration. In response to trends of intelligentization, personalization, and sustainability, the industry leverages breakthroughs in chip technology, the integration of artificial intelligence, and upgrades in flexible manufacturing to propel products toward slimmer and lighter designs, smart connectivity, and immersive experiences, continuously reshaping the global consumer electronics landscape and user experience.

Closely attuned to the 3C industry's trends of "rapid iteration and high time-sensitivity," and directly addressing challenges such as SKU management, logistics efficiency, and supply chain coordination, Zoneyung provides 3C enterprises with end-to-end, high-value-added services—from smart warehouse planning to full-process operations and closed-loop reverse logistics. For scenarios like "new product launches and promotional peaks," we design modular storage solutions covering all categories, including mobile phones, smart wearables, and digital accessories. This achieves multi-dimensional breakthroughs in storage density, sorting efficiency, and data coordination, working with clients to build agile and responsive 3C supply chain systems.



行业特点

Industry Characteristics

产品属性复杂

SKU 繁多（如手机型号、配件），尺寸小、精度高，需防静电、防尘存储环境

Product attributes are complex

Numerous SKUs (e.g., mobile phone models, accessories) with small sizes and high precision, requiring anti-static and dust-proof storage environments.

时效为王

新品首发、促销活动对 “入库→分拣→出库” 时效要求达“小时级”，逆向退换货流程复杂

Speed is King

New product launches and promotional events impose "hour-level" timeliness requirements on the "inbound → sorting → outbound" process, while reverse logistics for returns and exchanges involve complex procedures.

供应链联动紧

与生产端（JIT 模式）、销售端（电商平台）深度绑定，库存动态同步要求极高

Tightly Coupled Supply Chain

It is deeply integrated with production (JIT mode) and sales (e-commerce platforms), requiring extremely high levels of real-time inventory synchronization.

技术迭代驱动

需适配折叠屏、穿戴设备等新型产品的存储与物流创新

Technology iteration-driven

Must adapt to storage and logistics innovations for new products such as foldable screens and wearable devices.

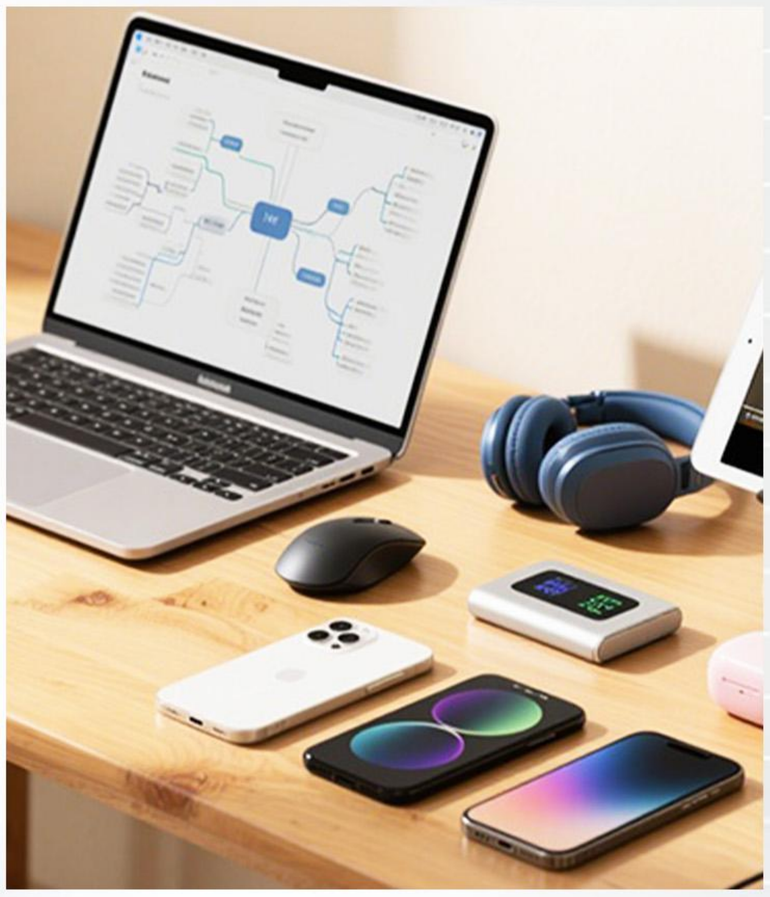


方案概述

Solution Overview

3C行业面临产品迭代周期短、SKU爆炸式增长、物流时效要求严苛等挑战，传统仓储难以适配"小批量、多批次、高周转"需求。中扬立库聚焦3C供应链痛点，通过定制化仓储规划（如立体存储、防静电货架）、智能设备研发（高速分拣机、微型AGV）、全链路数据协同，构建覆盖"原料仓→生产仓→成品仓→逆向退换仓"的全流程方案。我们针对行业特性优化作业流程与管理模式，提升订单响应速度与库存周转效率，为客户降低运营成本并增强市场应变能力，助力客户实现库存精准管控与物流效率跃迁。

The 3C industry faces challenges including short product iteration cycles, explosive SKU growth, and stringent logistics timeliness requirements. Traditional warehousing struggles to meet the demands of "small-batch, multi-frequency, and high-turnover" operations. Zoneyung focuses on addressing these 3C supply chain pain points by offering customized warehouse planning (e.g., vertical storage systems, anti-static shelving), developing intelligent equipment (such as high-speed sorters and micro-AGVs), and enabling full-link data synchronization. This integrated approach builds an end-to-end solution covering "raw material storage → production storage → finished goods storage → reverse logistics storage." By optimizing operational processes and management models tailored to industry characteristics, we enhance order response speed and inventory turnover efficiency, helping clients reduce operational costs and strengthen market adaptability. Ultimately, we support customers in achieving precise inventory control and a significant leap in logistics efficiency.



方案优势

Solution Advantages

精准适配，柔性方案

Precise Adaptation, Flexible Solutions

行业深耕，生态协同

Industry Expertise, Ecosystem Synergy

智能系统，秒级响应

Intelligent Systems, Second-Level Response

模块复用，快速迭代

Module Reusability, Rapid Iteration

柔性化

采用AGV、堆垛机、辊筒式运输线等多种设备协同，适应行业存储需求

Flexibility

Utilizes coordinated operation of AGVs, stackers, roller conveyors, and other equipment to adapt to diverse industry storage needs.

信息化

智能仓储系统与其他自动化系统打通，实现数据驱动决策

Informatization

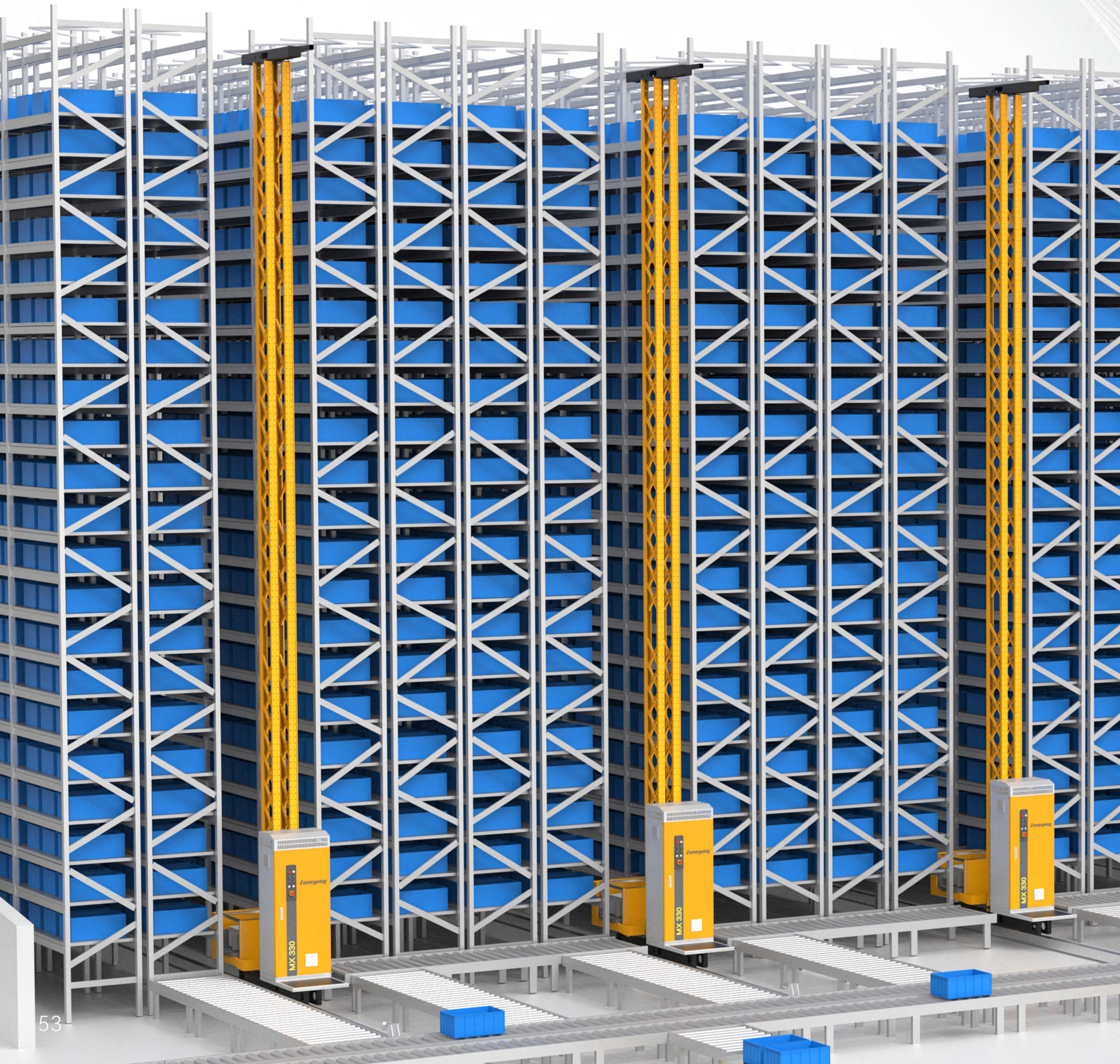
Intelligent warehouse systems are integrated with other automated systems to enable data-driven decision-making.

精准化

仓储设备与智能系统高效协同，精准管理库存

Precision

Warehouse equipment and intelligent systems work in efficient synergy to achieve accurate inventory management.



Zoneyung
中扬立库

3C产品仓储解决方案

3C产品通常技术迭代快，产品生命周期短，SKU量大；同时该行业与电商平台的深度绑定让旺季与促销期间的订单波峰巨大。中扬立库引入AGV、堆垛机立体库，减少对人力的依赖，提高分拣效率和准确率，并能轻松应对订单波峰；部署先进的WMS和WES系统：实现库存的精细化管理、波次规划、路径优化，并与ERP、TMS、OMS系统打通，实现数据驱动决策。

3C Product Warehousing Solutions

The 3C industry is characterized by rapid technological iteration, short product life cycles, and a massive volume of SKUs. At the same time, its deep integration with e-commerce platforms leads to significant order peaks during promotional periods and high-demand seasons. Zoneyung addresses these challenges by introducing AGVs and automated storage and retrieval systems (AS/RS) to reduce reliance on manual labor, improve sorting efficiency and accuracy, and effortlessly handle order surges. Additionally, the deployment of advanced WMS and WES enables refined inventory management, wave planning, and route optimization. By seamlessly integrating with ERP, TMS, and OMS systems, Zoneyung helps achieve data-driven decision-making across the supply chain.

200 kg & 2000 kg

料箱堆垛机 & AGV单元最大载重

Maximum Load Capacity of Tote Stackers & AGV Units

30-50 箱/时 & 20-60 托/时

料箱堆垛机 & AGV效率

Tote Stacker & AGV Efficiency
(Cases/Hour & Pallets/Hour)

300 %

效率提升

Efficiency Improvement

20 %

拣货准确率提升

Order Picking Accuracy Improvement

3C产品

宁波某3C产品智能立库项目

3C Products

Smart Warehouse Project for a Ningbo 3C Products Enterprise



该项目客户公司成立于2003年，是一家集研发、加工、组装、销售及售后服务于一体，专业从事压力机及周边自动化设备生产的企业。该公司致力产品不断创新，始终站在机械压力机生产技术前端，持续改进产品质量。主要生产开、闭式单、双点及四点式机械压力机及周边自动化设备等相关系列产品，广泛运用于汽车、家电、电子、电机、电器、IT、五金、农机、仪表仪器等金属成型行业。

The client company for this project was established in 2003. It is an enterprise integrating R&D, processing, assembly, sales, and after-sales services, specializing in the production of presses and peripheral automation equipment. The company is committed to continuous product innovation, always staying at the forefront of mechanical press production technology, and consistently improving product quality. Its main products include open and closed single-point, double-point, and four-point mechanical presses, as well as related peripheral automation equipment. These products are widely used in metal forming industries such as automotive, home appliances, electronics, motors, electrical applianc-

解决方案

- 设备数量：1台双工位托盘堆垛机，1台RGV穿梭车
- 托盘尺寸：L1500mm(进叉)*W1000mm*H200mm
- 货架高度：11.6米，9层货架
- 单元荷载：1500kg

Solution

- Equipment Quantity: 1 dual-station pallet stacker crane, 1 RGV shuttle vehicle
- Pallet Dimensions: L1500mm (fork entry) × W1000mm × H200mm
- Racking Height: 11.6m, 9 rack levels
- Unit Load Capacity: 1500kg

客户痛点

- 原仓库货位严重不足，存储空间捉襟见肘，物料堆放混乱。
- 原有人工搬运或传统设备效率低下
- 原拣选作业依赖人工，劳动强度大，拣选错误率高。
- 原管理依赖人工记录和调度，库存准确率低，出入库响应慢。

Customer Sore Point

- The original warehouse suffered from severe insufficient storage locations, cramped space, and disorganized material stacking.
- Manual handling or traditional equipment resulted in low efficiency.
- Picking operations relied heavily on manual labor, leading to high workload and elevated error rates.
- Management depended on manual records and scheduling, resulting in low inventory accuracy and slow response times for inbound/outbound processes.

项目效果

- 900 个有效货位，仓储能力提升3倍
- 本项目设计复合循环效率为 37托/时，效率提升4倍
- 堆垛机取货，RGV配合接驳出库，桁架机械手辅助拣选
- WMS、WCS系统自动管理，实现整场仓库管理，全程自动化。

Project Results

- 900 effective storage locations, increasing warehouse capacity by 3 times.
- The project's designed composite cycle efficiency is 37 pallets per hour, improving efficiency by 4 times.
- Stacker cranes handle retrieval, RGVs assist in transferring goods for outbound operations, and gantry robots aid in picking.
- WMS and WCS systems automate overall warehouse management, enabling full-process automation.

更多3C产品案例

More 3C Product Cases








3C产品

珠海某3C产品智能立库项目

3C Products

Smart Warehouse Project for a Zhuhai 3C Products Enterprise

该项目客户成立于1991年，1996年11月在深交所挂牌上市。公司成立初期，主要依靠组装生产家用空调，现已发展成为多元化、科技型的全球工业制造集团，产业覆盖家用消费品和工业装备两大领域，产品远销190多个国家和地区，并在国内外建有77个生产基地。

The client company for this project was established in 1991 and listed on the Shenzhen Stock Exchange in November 1996. Initially focused on assembling and producing household air conditioners, it has since evolved into a diversified, technology-driven global industrial manufacturing group. Its operations span two major sectors: consumer products and industrial equipment. Products are exported to over 190 countries and regions, with 77 production bases established both domestically and internationally.

解决方案

- 设备数量：3台双深位堆垛机，1台RGV穿梭车
- 托盘尺寸：2400mm*1200mm*2400mm
- 立库高度：15.9m
- 单元荷载：1500kg

Solution

- Equipment Quantity: 3 double-deep stacker cranes, 1 RGV shuttle vehicle
- Pallet Dimensions: 2400mm × 1200mm × 2400mm
- AS/RS Height: 15.9m
- Unit Load Capacity: 1500kg

客户痛点

- 存储需求高，现有仓库无法满足仓储需求
- 货物SUK类型繁多，管理麻烦
- 部分货物尺寸大，人工搬运费时费力

Customer Sore Point

- High storage demand, existing warehouse cannot meet storage needs.
- Numerous SKU types, making management cumbersome.
- Some goods are large in size, requiring time-consuming and labor-intensive manual handling.

项目效果

- 自动化系统实时监控所有物料现状，提高订单处理能力
- 有效提高库房利用率，储存更多货品
- 大载重设备提高出入库效率

Project Results

- Automated systems monitor all material status in real time, enhancing order processing capacity.
- Effectively improves warehouse utilization, enabling storage of more goods.
- Heavy-duty equipment boosts inbound and outbound efficiency.

更多3C产品案例

More 3C Product Cases









New Materials · Industry Solutions

Intelligent Manufacturing's Foundation is Preceded by Materials

新材料
行业解决方案

智造基石，材料先行

行业介绍

Industry Overview

新材料行业作为高端制造的基础支撑，正处于技术突破与产业升级的关键阶段。行业聚焦前沿材料研发与创新应用，通过突破传统材料性能极限，推动新能源、电子信息、生物医疗等领域的跨越式发展。当前正加速向绿色化、智能化、复合化方向演进，以材料创新驱动产业变革，为构建现代化产业体系提供核心动能。

紧盯新材料行业“高端化、定制化、协同化”的发展趋势，中扬立库以安全存储为基，智能协同为翼，提供从仓储规划到全链运营的定制服务。覆盖复合材料、特种金属、功能膜材等全品类，打造“恒温恒湿仓、防爆危化仓、智能追溯系统”等核心能力，实现新材料“存储安全、流转高效、追溯精准”的全周期管理，助力客户筑牢高端制造的供应链基石。

The new materials industry, serving as the foundational support for high-end manufacturing, is currently at a critical stage of technological breakthrough and industrial upgrading. The industry focuses on cutting-edge material R&D and innovative applications, driving leapfrog development in fields such as new energy, electronic information, and biomedicine by pushing the performance limits of traditional materials. It is now rapidly evolving toward greener, smarter, and more composite-oriented directions, using material innovation to fuel industrial transformation and provide core momentum for building a modern industrial system.

Keeping a close watch on the industry's trends of "premiumization, customization, and collaboration," Zoneyung builds on safe storage as its foundation and intelligent synergy as its wings, offering tailored services from warehouse planning to full-chain operations. Covering all categories including composite materials, specialty metals, and functional films, it has developed core capabilities such as "climate-controlled warehouses, explosion-proof hazardous materials storage, and intelligent traceability systems." This achieves full-cycle management of new materials, ensuring "secure storage, efficient flow, and precise traceability," helping customers solidify the supply chain foundation for high-end manufacturing.



行业特点

Industry Characteristics

存储条件苛刻

如碳纤维需防潮（湿度≤30%）、特种金属需防氧化（氮气保护）、危化材料需防爆隔离

Stringent Storage Requirements

For instance, carbon fiber requires moisture control (humidity ≤30%), specialty metals need oxidation prevention (nitrogen protection), and hazardous materials demand explosion-proof isolation.

价值密度极高

单批次材料价值百万级，对防盗、盘点精度（±0.1%）要求严苛

Extremely High Value Density

Single batches of materials can be worth millions, necessitating strict anti-theft measures and inventory counting accuracy (±0.1%).

供应链协同深

与高端制造（航空航天、半导体）深度绑定，需按生产节拍精准供料（JIT/JIS）

Deep Supply Chain Integration

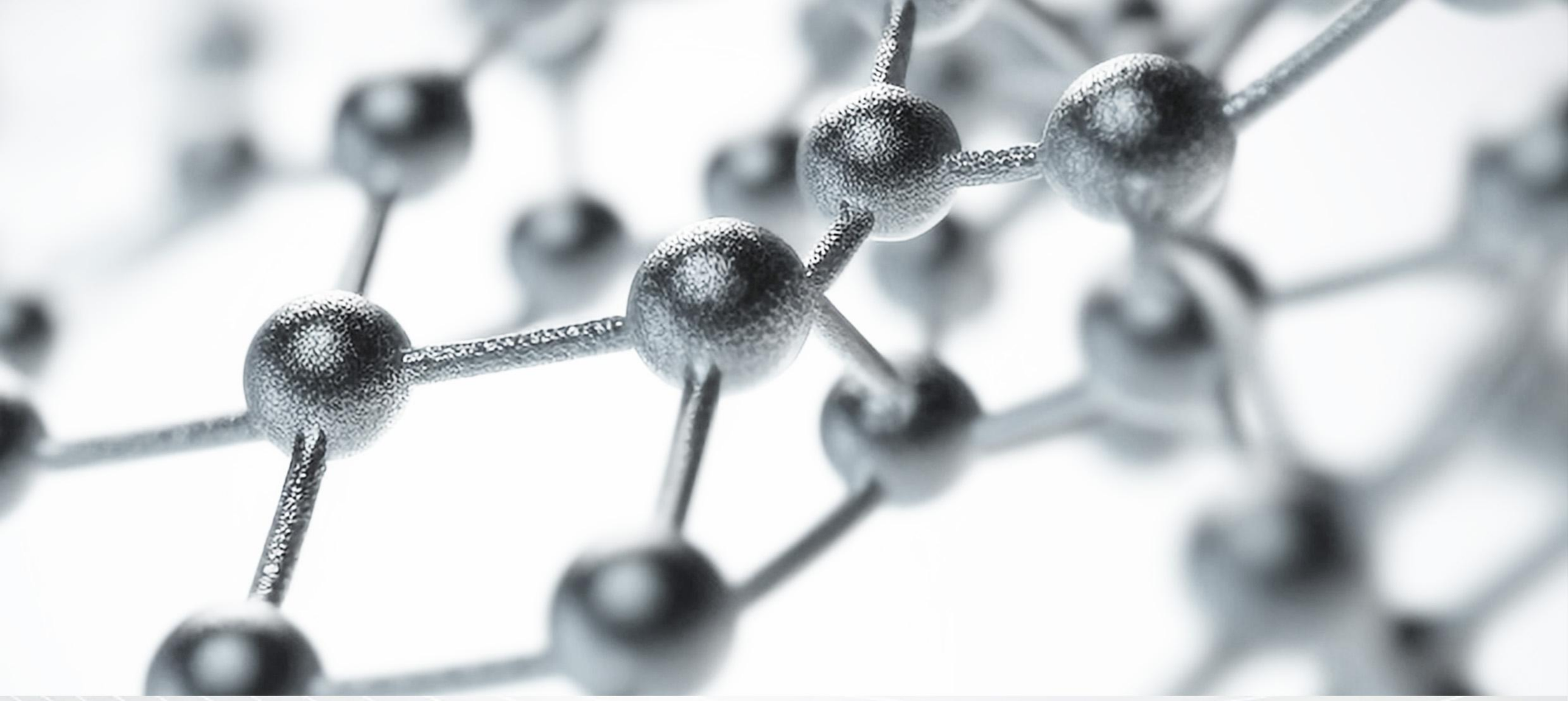
Closely integrated with high-end manufacturing (aerospace, semiconductors), requiring precise material supply synchronized with production cycles (JIT/JIS).

追溯要求严格

需记录“入仓时间、存储环境、流转路径”，满足下游客户的质量审计

Rigorous Traceability Demands

Must record "inbound time, storage environment, transfer path" to comply with downstream customers' quality audits.

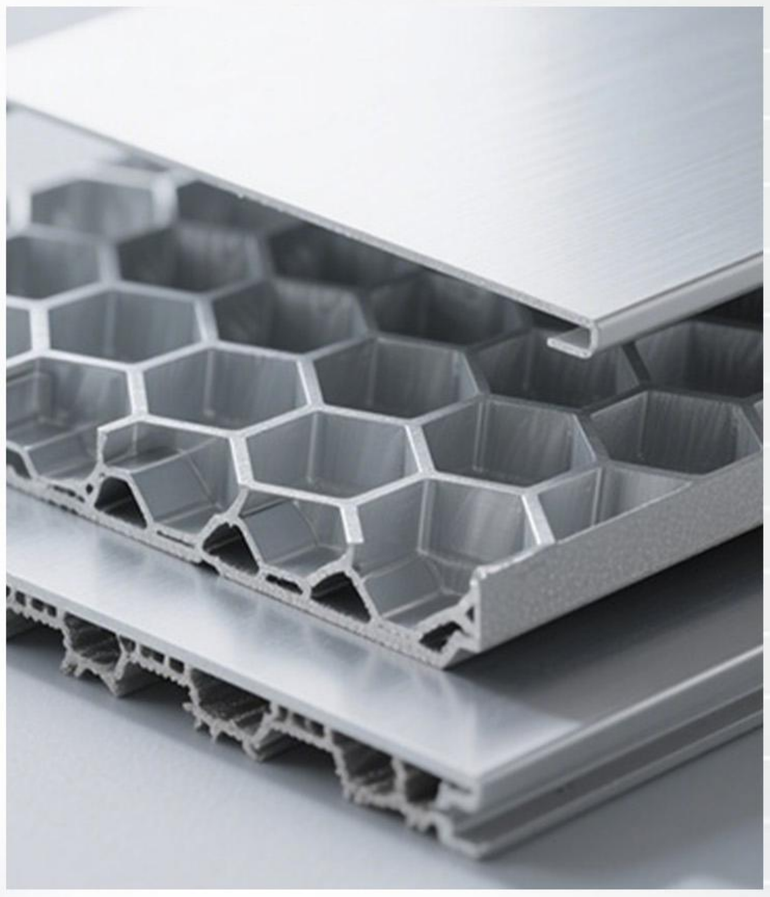


方案概述

Solution Overview

新材料行业面临存储条件严苛（防潮、防腐蚀）、价值密度高、供应链协同复杂等挑战，传统仓储易引发“材料变质、追溯缺失、交付延误”等问题。中扬立库聚焦新材料特性，打造“安全存储 + 智能追溯 + 协同供应”方案：通过恒温恒湿仓库、防爆货架、自动盘点设备保障存储安全；利用 WMS 系统实现批次精准管理与全链追溯；联动生产端与客户端，构建 JIT/JIS 供应模式，深度服务复合材料、特种金属、高端膜材等细分领域，助力客户守护材料价值与供应链效率。

The new materials industry faces challenges such as stringent storage requirements (moisture-proof, corrosion-resistant), high value density, and complex supply chain coordination. Traditional warehousing often leads to issues like material deterioration, lack of traceability, and delivery delays.
Zoneyung focuses on the unique characteristics of new materials, offering a solution centered on "secure storage + intelligent traceability + coordinated supply." This is achieved through climate-controlled warehouses, explosion-proof shelving, and automated inventory equipment to ensure storage safety. The WMS system enables precise batch management and end-to-end traceability. By integrating production and client-side operations, Zoneyung builds JIT/JIS supply models, providing in-depth services to segments such as composite materials, specialty metals, and high-end films, helping customers safeguard material value and enhance supply chain efficiency.



方案优势

Solution Advantages

定制存储，适配特性

Customized Storage, Adapted to Characteristics

行业深耕，安全为先

Deep Industry Expertise, Safety First

智能追溯，全程可控

Intelligent Traceability, End-to-End Control

协同联动，降本增效

Collaborative Integration,
Cost Reduction and Efficiency Improvement

新材料仓储解决方案

新材料行业的仓储困境核心在于：其产品形态、性质的极端多样性，难以进行标准化、通用化的存储。针对多样化的产品形态和严苛的存储要求，中扬立库采用了分库存放和库内无人化运输的方式，不同规格的产品分别存放在托盘库和料箱库，提升机和辊筒式运输线代替人工运输，极大减少了操作安全与错漏问题。并部署强大的WMS系统以管理复杂的SKU、存储条件，实现强制的先进先出。

New Materials Warehousing Solutions

The core of the storage dilemma in the new materials industry lies in the extreme diversity of product forms and properties, making standardized and universal storage difficult. To address the diverse product forms and stringent storage requirements, Zoneyung adopts a method of segregated storage and unmanned in-warehouse transportation. Products of different specifications are stored separately in pallet warehouses and bin warehouses, while elevators and roller conveyors replace manual transportation, greatly reducing operational safety risks and errors. A powerful WMS system is also deployed to manage complex SKUs and storage conditions, ensuring strict first-in, first-out.

可追溯

应用条码或RFID技术，配合手持终端，实现物料信息的快速、准确采集和全程追踪

Traceability

Utilizes barcode or RFID technology, combined with handheld terminals, to achieve rapid and accurate collection of material information and end-to-end tracking.

柔性化

针对多样化的产品形态和严苛的存储要求，采取定制化存储策略

Flexibility

Implements customized storage strategies to address diverse product forms and stringent storage requirements.

安全性

堆垛机、辊筒式运输线稳定性强，替代人工大大减少安全问题

Safety

Stackers and roller conveyors offer high operational stability, significantly reducing safety risks by minimizing manual handling.

10~35 m & 6~24 m

托盘堆垛机&料箱堆垛机高度

Height of Pallet Stackers & Tote Stackers

400 %

效率提升

Efficiency Improvement

10000 kg & 200 kg

水平速度

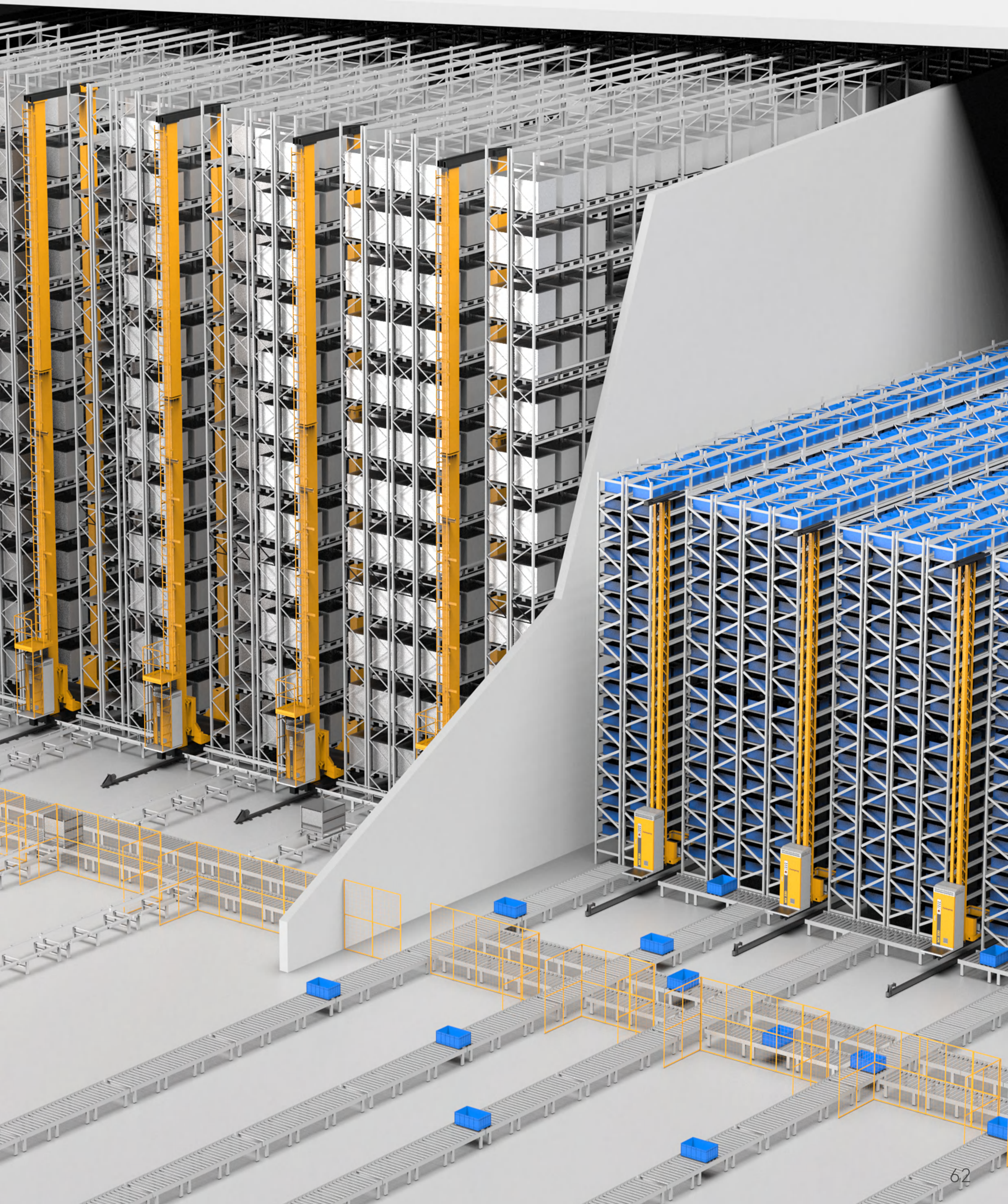
Horizontal Speed

15 %

拣货准确率提升

Order Picking Accuracy Improvement





新材料

安徽某新材料智能立库项目

New Materials

Smart Warehouse Project for an Anhui New Materials Enterprise



该项目客户成立于2022年03月08日，经营范围包括一般项目：橡胶制品制造；橡胶制品销售；玩具制造；玩具销售；体育用品及器材制造；体育用品及器材零售；体育用品及器材批发；会议及展览服务；组织体育表演活动；塑料制品制造；塑料加工专用设备制造；货物进出口。

The client company for this project was established on March 8, 2022. Its business scope includes general items: rubber product manufacturing; rubber product sales; toy manufacturing; toy sales; sporting goods and equipment manufacturing; sporting goods and equipment retail; sporting goods and equipment wholesale; conference and exhibition services; organizing sports performance activities; plastic product manufacturing; specialized plastic processing equipment manufacturing; import and export of goods.

解决方案

- 设备数量：3台双工位托盘堆垛机，2台单工位托盘堆垛机，2台料箱堆垛机，2台二向穿梭车，5台RGV穿梭车，2台提升机，1台倒料机，1套钢平台
- 塑胶箱仓库高度9.7m，半成品仓库高度10.45m

客户痛点

- 传统仓储效率低下，平面地堆存储空间利用率不足，人工效率低。
- 原材料倒料低效，人工倒料效率低、易出错，存在洒落和配比错误风险。
- 信息化水平不足，库存准确率低，缺乏实时数据支持。

项目效果

- 三大存储区优化设计，2F塑胶箱货架4704个有效货位，大原料箱货架3360个有效货位，1F半成品货架3472 个有效货位
- 塑胶箱堆垛机出入库效率240托/时，原料大笼箱堆垛机出入库效率240托/时，半成品堆垛机70托/时，五台RGV出入库效率100托/时
- 原料自动输送至产线，半成品自动归库，成品自动出库。自动识别原料批次，精准计量倒料。
- 配置WMS系统，实现库存实时可视化

Solution

- Equipment Quantity: 3 dual-station pallet stacker cranes, 2 single-station pallet stacker cranes, 2 tote stacker cranes, 2 two-way shuttle vehicles, 5 RGV shuttle vehicles, 2 lifts, 1 material inverter, 1 set of steel platforms. Warehouse Heights:
- Plastic box warehouse 9.7m, semi-finished product warehouse 10.45m.

Customer Sore Point

- Traditional warehousing suffers from low efficiency, with floor stacking utilizing space inadequately and manual operations being inefficient.
- Manual material transfer is slow and error-prone, risking spills and formulation inaccuracies.
- Insufficient digitalization leads to low inventory accuracy and a lack of real-time data support.

Project Results

- Three optimized storage zones: 4,704 effective locations for 2F plastic box racking, 3,360 for large raw material box racking, and 3,472 for 1F semi-finished product racking.
- Plastic box stacker inbound/outbound efficiency: 240 pallets/hour; raw material large Cage box stacker: 240 pallets/hour; semi-finished product stacker: 70 pallets/hour; five RGV systems: 100 pallets/hour.
- Raw materials are automatically conveyed to production lines, semi-finished products are automatically returned to storage, and finished products are automatically shipped out. Batch recognition for raw materials enables precise measured dispensing.
- Equipped with a WMS system for real-time inventory visualization.

更多新材料案例

More New Materials Cases









新材料

烟台某新材料智能立库项目

New Materials

Smart Warehouse Project for a Yantai New Materials Enterprise

该项目客户是一家深耕涂布多功能复合材料，集研发、生产与销售为一体的国家高新技术企业。先后获评国家高新技术企业、国家级专精特新“小巨人”企业、复合薄膜材料省级研究院、获得省级科技进步奖等荣誉。公司主营广告喷墨打印材料、标签标识印刷材料、电子级功能材料、新型薄膜材料、胶粘材料等工业消费品及高端智能装备。

The client for this project is a national high-tech enterprise specializing in coated multifunctional composite materials, integrating R&D, production, and sales. It has been recognized as a National High-Tech Enterprise, a National-Level "Little Giant" Specialist and Innovator, a Provincial Research Institute for Composite Film Materials, and has received provincial awards for technological progress. The company primarily focuses on industrial consumer products and high-end smart equipment, including advertising inkjet printing materials, label and标识 (marking) printing materials, electronic-grade functional materials, new film materials, and adhesive materials.

解决方案

- 设备数量：6台堆垛机，1台RGV穿梭车
- 托盘尺寸：1570mm*1570mm*1700mm
- 立库高度：10.6m，5层货架
- 单元荷载：1200kg

客户痛点

- 仓库空间利用率低，土地成本高
- 作业效率低下，严重影响货物出入库

项目效果

- 共有8040个有效货位
- 出入库效率120托/时

Solution

- Equipment Quantity: 6 stacker cranes, 1 RGV shuttle vehicle
- Pallet Dimensions: 1570mm × 1570mm × 1700mm
- AS/RS Height: 10.6m (5 rack levels)
- Unit Load Capacity: 1200kg

Customer Sore Point

- Low warehouse space utilization and high land costs.
- Inefficient operations severely impact goods inbound and outbound processes.

Project Results

- A total of 8,040 effective storage locations.
- Inbound/outbound efficiency: 120 pallets per hour.

更多新材料案例

More New Materials Cases







