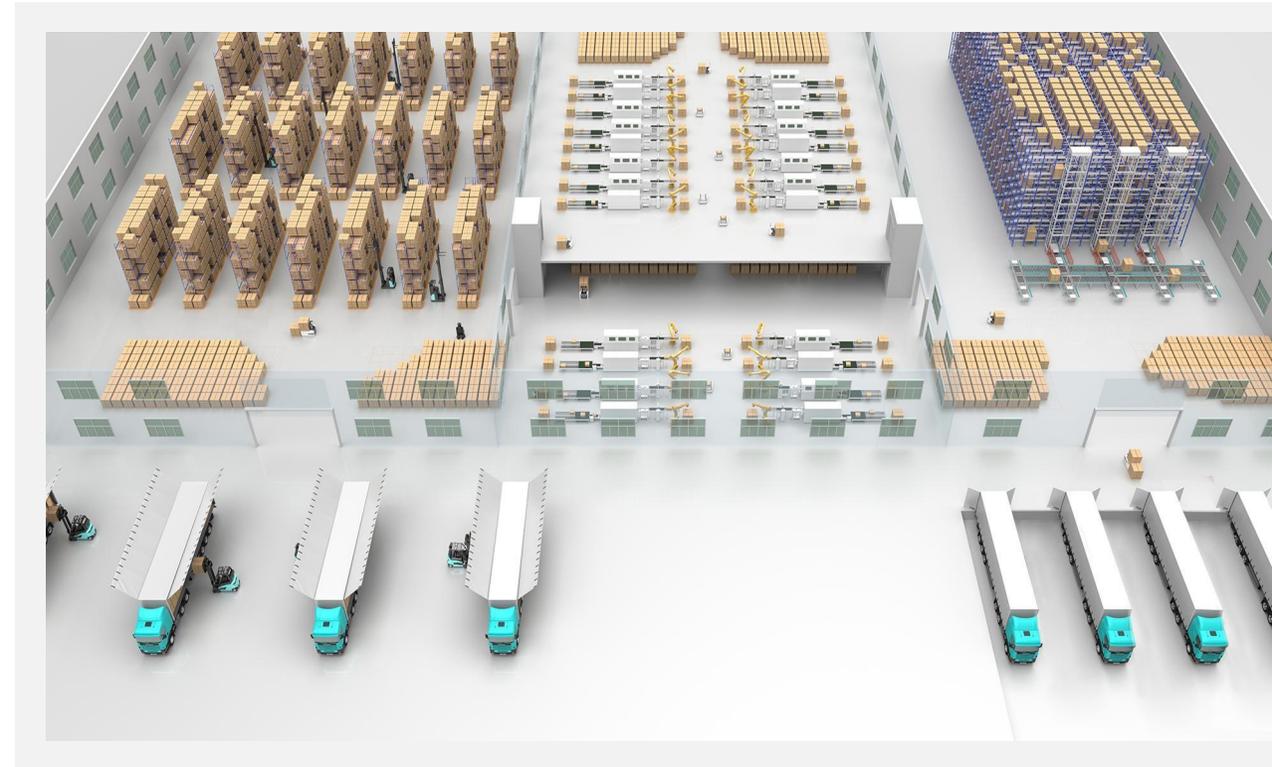# Multiway Robotics

Case Studies

www.mw-r.com

Multiway Robotics (Shenzhen) Co., Ltd.

Applications

Heavy-load handling

Finished product warehouse

High-bay storage

Docking with AS/RS

Unmanned loading/ unloading

Production line transfer

cage stacking

Material In-bound/ Out-bound

Multi-vehicle collaborative operation

Intelligent warehousing

Handling from buffer area to production line

Wooden frame stacking

Material warehousing

Four-way shuttle intensive dispatching /pickup operations

Out-door handling

Food

Auto

New energy

Pharmacy

Machining

Construction Material

Printing and packaging

Cold chain

Furniture

Military

Clothing

Pallet stacker + AMR + Total Intelligent Logistics

Product Model: MW-SL14+AMR

Software: Fleet management system (RCS)+ equipment control system (WCS)+ warehouse management system (WMS)

Project Overview

- A large domestic non-ferrous metal manufacturing enterprise; mainly used in automobile parts, communication base stations, new energy, military, electric tools and other fields

- Handled materials: magnesium, aluminum alloy

- Project scenarios: Automatic transfer of blanks and waste materials between two processes, indoor and outdoor transport

- Handling processes: Die casting workshop, machining workshop, melting workshop (crushing zone)

Demands

Collaborative transfer: High requirement for product collaboration efficiency, time-consuming and laborious manual transfer

Information traceability: Unable to realize the linkage of material distribution information, unable to realize information traceability

Cost input: Difficulty to recruit, repetitive manual operation, stubbornly high labor cost

Enterprise image: To build intelligent factory and improve the image of the factory

Project Value

Benefit increased by 18%

All-round security

Accurate transfer

Visual management

Pallet stacker + Indoor/ Outdoor Operation

Product Model: Pallet stacker MW-SL14

Software: Fleet management system (RCS) + warehouse management system (WMS)+ equipment control system (WCS)

Project Overview

- A leading clothing equipment manufacturing enterprise

- Handled materials: Raw materials

- Project scenario: Circulation and handling between the warehouse and temporary warehouse and storage and handling in the temporary storage areas in the raw material warehouse

Demands

Operation efficiency: Relying on pure manual operation, slow to load/unload goods, and easy to load/ unload wrong goods
Collaborative transfer: High requirement for transfer accuracy of stacking line, high labor intensity
Inventory management: The information on locations of temporary warehouse and inventory cannot be effectively controlled
High cost input: Three shifts, repetitive manual operation, stubbornly high cost

Project Value

Benefit increased by 18%

All-round security
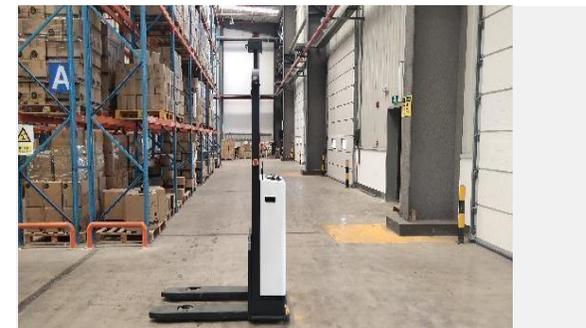
Accurate transfer

Visual management

Pallet Truck + Reach Truck + Multi-Vehicle Collaborative Operation

Product Model: Lightweight Pallet Truck MW-ST10, Reach Truck MW-R14

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- We are committed to bringing innovative and high-quality imported brand toys to Chinese consumers and supply and marketing of products more than 30 domestic and international famous brands and more than 300 SKU
- Handled materials: overseas goods
- Project scenario: Warehouse area of nearly 10,000 m2, involving warehousing and sorting operations
- Handling process: Involving warehousing, sorting, delivery, inspection and other common storage and handling modes

Demands

Invalid walking: Long invalid walking distance due to large warehouse area
Labor intensity: Involving a wide range of handling processes and a large amount of manual handling workload
Future planning: To achieve full automation, high-efficiency and intelligent warehouse management

Project Value

Benefit increased by 35%

All-round security
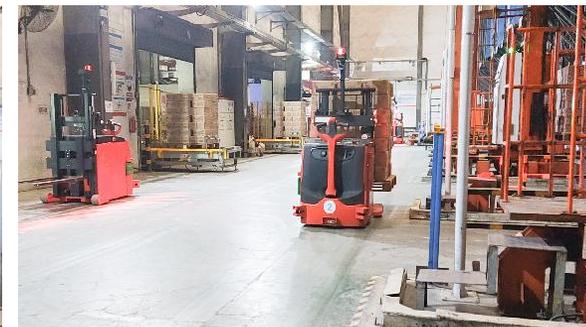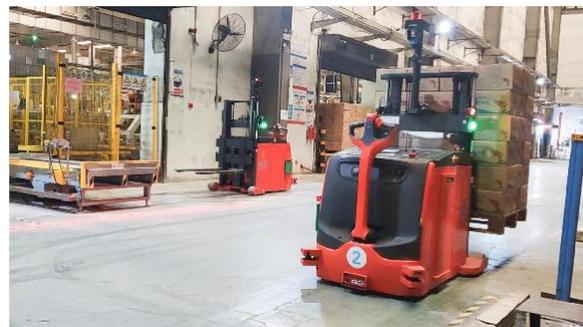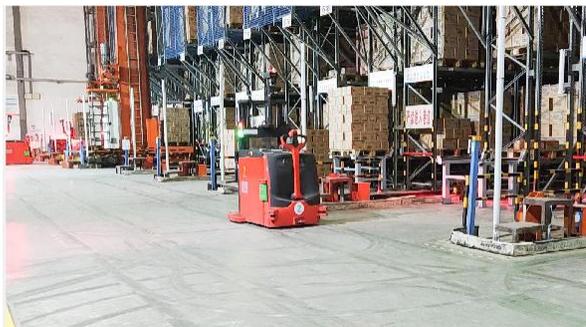
Accurate transfer

Visual management

Food Industry | **Intelligent Warehouse+ Intelligent Production Line**

Counterbalanced stacker + Docking with AS/RS + Multi-vehicle collaborative operation

Product Model: Counterbalanced stacker MW-SE08

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- Top brand of Chinese fast-moving consumer food field (jelly, pudding and seaweed)
- Handled materials: Fast-moving consumer goods
- Project scenario: Automatic or manual palletizing and automatic storage of finished products

Demands

Collaborative transfer: Involving the collaborative transfer of conveyor line and elevator, low artificial efficiency

Cost input: Three shifts, repetitive and ineffective walking operation, cost rise year after year

Appearance monitoring: Highly arbitrary artificial palletizing; labor-consuming and time-costing when the products are returned due to appearance nonconformity

Clear off-season and peak season: There is great flow gap between off-season and peak season and resource allocation is difficult to be unified

Flexible logistics: Compact site space and the second transformation of site environment not allowed

Project Value

Benefit increased by 10%

Work efficient improved by 8%
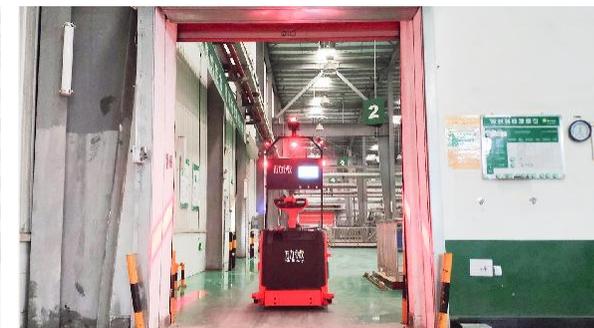
Accurate transfer

Visual management

Pallet Truck + Dense Pick-up + Automatic Door docking

Pallet Truck MW-T20

Software: Fleet management system (RCS)+warehouse management system (WMS)+equipment control system (WCS)

Project Overview

- One of the early domestic enterprises specializing in the production of packaged drinking water, and a well-known enterprise in China's packaged drinking water industry; and we have 18 production bases in China

- Handled materials: Carton packaging materials

- Project scenario: Raw material supply and online

- Handling process: Auxiliary material warehouse → production line

Demands

Collaborative transfer: Material request from time to time shall be made according to the production line demand; low efficiency of manual coordination

Cost input: The personnel work on two shifts, featuring repetitive and ineffective moving around during work and cost rise year after year

Operation efficiency: There is no storage location information management on site, so it is quite slow to find and pick up goods

Project Value

Benefit increased by 10%

All-round security

Accurate transfer

Visual management

Food Industry | Intelligent Warehouse + Intelligent Production Line

Counterbalanced stacker + Interconnection of Production Line +Six Wooden Frame Stacking + Automatic Door /Automatic Charging Equipment

Product Model: Counterbalanced stacker MW-SE12

Software: Fleet management system (RCS)+equipment control system (WCS)+warehouse management system (WMS)
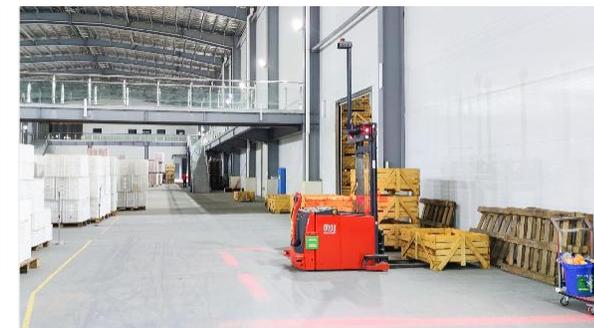
Project Overview

- A modern agricultural enterprise integrating "ecology, leisure, sightseeing and tourism" into one

- Handled materials: fresh fruit

- Project scenario: Automatic transfer and turnover from fruit loading workshop → fresh preservation warehouse

- Handling process: Fruit loading machine → stacking area → stacking in fresh preservation warehouse (6 layers of single stack)

Demands

Operation efficiency: Relying on pure manual operation, slow to load/ upload goods, and easy to load/ unload wrong goods Transfer accuracy: High requirement for the accuracy of manual stacking wooden boxes, high labor intensity
Inventory management: Fresh preservation temporary warehouse and inventory information cannot be effectively controlled
Impact of cargo damage: The standardization of manual operation is not supervised and the damage rate of fresh fruit is stubbornly high
Cost input: Harvest and production is concentrated, and it is difficult to recruit temporary forklift workers

Project Value

Benefit increased by 30%

All-round security

Accurate transfer

Visual management

Food Industry | **Intelligent Warehouse + Intelligent Production Line**

Counterbalanced stacker + Drive-In Rack + Manipulator Transfer+ Enabling Whole Factory

Product Model: Counterbalanced stacker MW-E35

Software: Fleet management system (RCS)+warehouse management system (WMS)+equipment control system (WCS)

Project Overview

- A cross-regional agricultural and animal husbandry enterprise group focusing on livestock and poultry breeding, supporting related businesses

- Handled materials: feed in bags (2800 Kg)

- Project scenario: Raw material warehouse and finished product warehouse with a total area of nearly 8000㎡

Demands

Physiological challenges: Heavy special smell in the warehouse and poor working environment

Warehouse volume: Artificial stacking on the ground by one layer (two layers at most), storage capacity in tension

Inventory management: The warehouse inventory information is

controlled in paper and cannot be effectively controlled

Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo is very serious

Cost input: Two shifts, repetitive manual operation, stubbornly high

Project Value

Storage capacity doubled

Work efficient improved by 8%

All-round security

Visual management

Counterbalanced stacker + Six-Layer Rack Stacking

Product Model: Counterbalanced stacker MW-SE20, MW-SE30

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- Belonging to a large auto parts (automatic gearbox) production group in Japan
- Handled materials: gearbox
- Project scenario: Automatic warehousing of finished products, stacking, unstacking and delivery after removal from production line

Demands

Cost input: 24h uninterrupted operation, stubbornly high labor input cost

Labor intensity: High palletizing requirements (6- layer palletizing), higher manual labor intensity

Inventory management: Due to no interconnection of material information, the inventory cannot be effectively controlled

Project Value

Benefit increased by 14%

All-round security

Accurate transfer

Visual management

Auto Industry | **Logistics in Whole Factory**

Outdoor Unmanned Tractor + All-Weather Outdoor Handling + 6T Load + 5% Slop

Product Model: Outdoor Unmanned Tractor MW-OSP60   **Software: Fleet management system (RCS)+ interface with MES**

Project Overview

- A large domestic automobile group, mainly engaged in its own engine assembly manufacturing

- Handled materials: Cylinder block, cylinder head, crankcase of engine

- Project scenario: Cross-workshop transport in the park, all-weather turnover, regardless outdoor, dark and rainy days

- Handling process: Transporting blanks from warehouse to workshop, and transportation of finished products from workshop to warehouse

Demands

Cost input: long transport distance, 24h uninterrupted production, high labor cost
Information traceability: Unable to realize the linkage of material distribution information, and information traceability
Future planning: Intelligent planning requirements of the new factory for development of the next 10 years

Project Value

Benefit increased by 10%

Work efficient improved by 8%
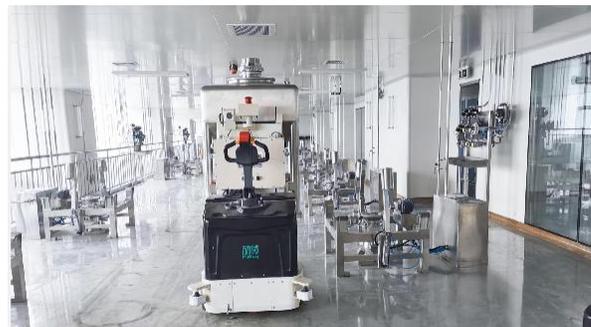
Accurate transfer

Visual management

Medical Industry | Intelligent Production Line

Explosion-proof Pallet stacker + Dust Explosion-Proof Scene + Full-Field Equipment Monitoring Linkage

Explosion-proof Pallet stacker MW-LS10Ex

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- A famous modern pharmaceutical enterprise in Shandong, national top 50 enterprises in pharmaceutical industry
- Handled materials: pharmaceutical cans
- Project scenario: Unpacking → blanking→ re-weighing → washing → cleaning in pharmaceutical workshop

Demands

Safety hazards: The electrical spark caused by manual rough operations will cause safety accidents

Formula secret: High requirements for formula accuracy and confidentiality requirements; manual operations uncontrollable

Transfer accuracy: high blanking precision (±5mm), automatic opening of valve

Labor input: 24 h uninterrupted operation, high labor input cost

Information linkage: Information linkage requirements of fully automatic pharmaceutical workshop

Project Value

Benefit increased by 15%

All-round security

Accurate transfer

Visual management

Counterbalanced stacker + Light-OFF Warehouse + In-bound/ Out-bound of Finished Products

Product Model: Counterbalanced stacker MW-LD-L06AC

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- State-owned large medical equipment manufacturer, affiliated to the Tianjin Pharmaceutical Group
- Handled materials: medical instruments, drugs
- Project scenario: 4.2 m beam racks in and out of storage

Demands

Difficult to recruit workers: Located in the suburb of the northern city, single work type, difficult to recruit workers

Operation efficiency: Low matching speed between manual physical flow and information flow

Information management: The information on drugs and medical devices cannot be effectively controlled

Warehouse volume: Goods placed on the ground and the space cannot be effectively utilized

Project Value

Storage capacity tripled

All-round security

Goods searching efficiency increased by 13%
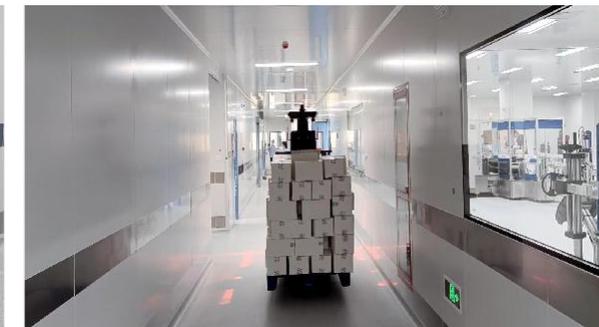
Visual management

Medical Industry | **Intelligent Production Line**

Pallet stacker + SLAM Navigation + No Field Transformation+ Coexistence of People and Vehicles

Product Model: Pallet stackerMW-SL14

Software: Fleet management system (RCS)+warehouse manage system (WMS)

Project Overview

- A key enterprise specialized in the research and development, production and sales of pharmaceutical raw materials and preparations, the national key high-tech enterprise
- Handled materials: raw materials, finished products
- Project scenario: Raw material distribution to production line, transfer of semi-finished products, warehousing of finished products and plant linkage operation

Demands

Cost input: 24h uninterrupted operation, stubbornly high labor input cost
Handling frequency: high production tempo, high handling frequency of materials and finished products
Labor intensity: The working environment challenges human physiology
Information management: There are problems of strict batch control and management of period of validity

Project Value

Benefit increased by 20%

All-round security

Accurate transfer

Visual management

Wide-Outrigger Clamp AGV + Mobile Production Line + Horizon + 4T Hold Clamp

Product Model: Wide-Outrigger Clamp AGV MW-LS40WC

Software: Fleet management system (RCS)+warehouse management system (WMS)+equipment control system (WCS)

Project Overview

- One of the first domestic power battery manufacturers with international competitiveness

- Core technologies include R&D and manufacturing technologies in the whole industry chain such as power and energy storage batteries, materials, cells, cell systems, battery recycling and reuse

- Handled materials: electric cabinet group

- Project scenario: Flexible production line of electric cabinet

Demands

Response of cycle time: The stations are in series and parallel, and there are high requirements for handling cycle time response

Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo occurs frequently

Cost input: Difficulty to recruit, repetitive manual operation, stubbornly high labor cost

Labor intensity: Large size of electric cabinet, heavy goods, and high labor intensity of manual handling

Future planning: Committed to realizing intelligent manufacturing of fully automated flexible production line and logistics upgrading

Project Value

Benefit increased by 10%

All-round security

Accurate transfer

Visual management

New Energy Industry | **Intelligent Warehouse**

Wide-Outrigger Pallet Truck + Alkaline Environment + Information/ QR Code Reading+ Multi-Specification Rack Position Detection

Product Model: Wide-Outrigger Pallet TruckMW-LD-TS20LW   **Software: Fleet management system (RCS)+PLC System**

Project Overview

- Singapore photovoltaic accessories manufacturer
- Handled materials: 1.5 m and 2.2 m material racks
- Project scenario: Product cleaning workshop, corrosive alkaline liquid
- Handling process: Temporary storage area → cleaning line

Demands

Cost input: Difficulty to recruit, repetitive manual operation, stubbornly high labor cost

Physiological challenges: Relatively harsh production environment and high labor intensity of manual handling

Impact of cargo damage: Manual rough operation leads to rollover accidents from time to time

Project Value

Benefit increased by 20%

All-round security

Accurate transfer

Visual management

Reach Truck + AS/RS Transfer+ Weighing Function + QR Code Scanning Function

Product Model: Reach TruckMW-MR15

Software: Fleet management system (RCS)+equipment control system (WCS)

Project Overview

- Cooperate with a well-known state-owned aviation logistics enterprise to create the fully automatic warehouse of intelligent logistics, handling and three-dimensional storage of accessories
- Handled materials: Supply cages
- Project scenario: Pick up goods by visual recognition and transport them to the connection point of the three-dimensional warehouse
- Handling process: Connection point of the three-dimensional warehouse → connection point of stock-in and stock-out warehouse→ connection point of the three-dimensional warehouse

Demands

Collaborative transfer: High requirement for product collaboration efficiency, time-consuming and laborious manual transfer

Information traceability: Unable to realize the linkage of material distribution information, unable to realize information traceability

Manual weighing: Manual operations are tedious and inefficient

Enterprise image: To build intelligent factory and improve the image of the factory

Project Value

Benefit increased by 15%

All-round security

Accurate transfer

Visual management

Sideloader + Pallet stacker + Intensive Dispatching / Pickup + 1.2 m Narrow Aisle

Product Model: Sideloader MW-LS01F, Pallet stacker MW-L14

Software: Fleet management system (RCS)+warehouse management system (WMS)

Project Overview

- Affiliated to the State Grid
- Handled materials: Turnover boxes, standard pallets
- Project scenario: Automatic warehousing and ex-warehousing of turnover boxes
- Handling process: Incoming material operation area - conveyor line - storage area

Demands

Operation efficiency: Replace high-intensity manual operations and reduce the error rate

Collaborative transfer: Transfer to conveyor line, radio frequency door and stacker with efficient collaboration

Improved efficiency: Strong data traceability, no manual input and proofreading

Project Value

Storage capacity doubled

All-round security

Accurate transfer

Visual management

Pallet stacker + Interconnection between Buffer area and Production Line + High Accuracy of Production Line ±2mm Docking

Product Model: Pallet stackerMW-L14

Software: Fleet management system (RCS)+warehouse management system (WMS)+equipment control system (WCS)

Project Overview

- Affiliated to a German measuring instrument manufacturing giant

- Handled materials: Plastic disc for instrument

- Project scenario: Automation transformation and upgrading of finished product workshop

- Handling process: Dry glue production line → high-location shelf warehouse near production line → roll-off

Demands

Operation efficiency: Relying on pure manual operation, slow to load/unload goods, and easy to load/ unload wrong goods

Collaborative transfer: High requirement for transfer accuracy of stacking line, high labor intensity of manual operation

Warehouse volume: Goods placed on the ground results in large footprint and low utilization rate of space

Inventory management: The information on locations of temporary warehouse and inventory cannot be effectively controlled

Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo is very serious

Cost input: Three shifts, repetitive manual operation, stubbornly high labor cost

Project Value

Storage capacity quadrupled

All-round security

Accurate transfer

Visual management

Cable Industry | **Intelligent Production Line**

Wide-Outrigger Clamp Pallet stacker + 80 Wire-Rewinding Machine and Wire Laying Machine in Production Line

Product Model: Wide-Outrigger Clamp Pallet stacker MW-LS15WC | **Software: Fleet management system (RCS)+warehouse management system (WMS)+PLC System**

Project Overview

- One of domestic wire and cable manufacturing enterprises with strong comprehensive strength

- Handled materials: I-wheel cables

- Project scenario: Production line of wire-rewinding machines and wire-laying machines

- Handling process: Empty/full -wheel alternative handling of wire-rewinding machines and wire-laying machines

Demands

Response of cycle time: 80 sets of machines work at the same, and there are high requirements for handling cycle time response

Cost input: Difficulty to recruit, repetitive manual operation, stubbornly high labor cost

Labor intensity: Large size of I-wheel cable, heavy goods, high strength of manual handling

Project Value

Benefit increased by 17% | All-round security | Accurate transfer | Visual management

Counterbalanced forklift + 2T Load + Cleaning and Maintenance Device

Product Model: Counterbalanced forklift MW-E30

Software: Fleet management system (RCS)+warehouse management system (WMS)+equipment control system (WCS)

Project Overview

- A well-known domestic iron and steel group, modern large steel vanadium titanium enterprise group
- Project scenario: Finished product production workshop
- Handled Materials: Finished hoppers (2000 kg)
- Handling process: Kiln unloading area -- heavy hopper area -- empty hopper area -- kiln unloading area

Demands

Physiological challenges: There is metal dust in the air, and the working environment of employees is harsh

Cost input: Difficulty to recruit, repetitive manual operation, stubbornly high labor cost

Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo is very serious

Future planning: Committed to realizing intelligent manufacturing of fully automated flexible production line and logistics upgrading

Project Value

Benefit increased by 20%

All-round security
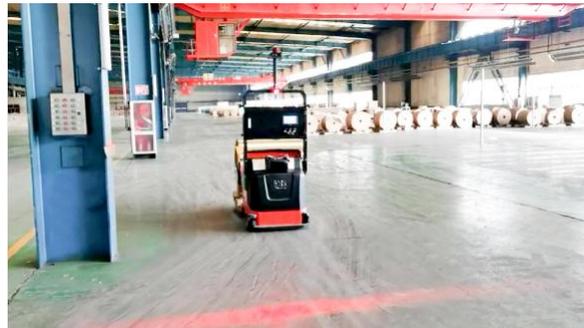
Accurate transfer

Visual management

Pallet Truck + Delivery of Finished Products + Horizon system

Product Model: Pallet Truck: MW-T20

Software: Fleet management system (RCS)+warehouse management system (WMS)+Pallet position detection

Project Overview

- A large aluminum company in Inner Mongolia, engaged in production, sales and import and export trades of aluminum and aluminum alloy, recycling and dismantling of waste aluminum, as well as product processing and sales.

- Handled materials: Full-pallet aluminum coil

- Project Scenario: Pallet Truck transports cargoes from the temporary storage area to the packaging area

Demands

Operation efficiency: Relying on pure manual operations, characterized by high labor strength and low efficiency to find goods
Safety hazards: There is much dust in the factory, and safety hazards are easy to occur during operation
Cost input: Three shifts, repetitive manual operation, stubbornly high labor cost
Low system efficiency: No traceability of interconnection system and low automation
Future planning: To reduce staff and costs, increase efficiency and capacity, and increase value and subsidies

Project Value

Benefit increased by 18%
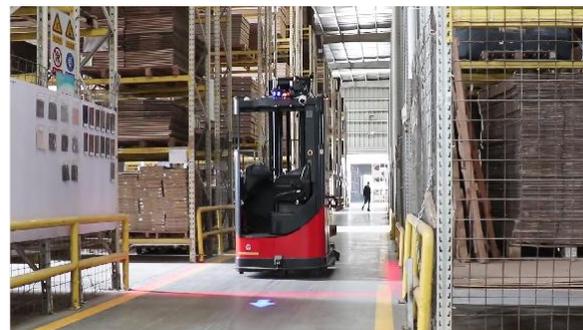
All-round security

Accurate transfer

Visual management

Reach Truck + 8.5 m High-bay Storage/ Pickup + RFID + 5% Slope

Reach Truck: MW-LD-R16

Software: Fleet management system (RCS)+warehouse management system (WMS)+FAST+RFID

Project Overview

- A household supplier manufacturer with world-class production and sale levels

- Handled materials: Sofa

- Project scenario: Transport finished products to the warehouse with high shelves

- Handling process: Incoming material temporary storage area → FAST →RFID→ warehousing

Demands

Operation efficiency: Relying on pure manual operation, easy to load/ unload wrong goods

Physiological challenges: Manual loading and unloading goods from high shelves with high fatigue and labor strength

Inventory management: Due to no interconnection of material information, the inventory cannot be effectively controlled

Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo is very serious

Project Value

Benefit increased by 10%

All-round security

Accurate transfer

Visual management

Pallet stacker + 4-Layer Cotton Hold Clamp + Two-Layer Environment Map Building

Product Model: Pallet stacker AGVMW-LS20WC, MW-SL04C

Software: Fleet management system (RCS)+warehouse managem system (WMS)

Project Overview

- A leading enterprise in chemical fiber down cotton industry

- Handled materials: Down cotton packages

- Project scenario: Transport the filled down cotton to the automatic packaging line before storage

- Handling process: Blanking area - automatic packaging and palletizing line - warehouse area

Demands

Operation efficiency: Replace high-intensity manual operations
Data traceability: System interconnection and warehouse location information management to reduce manual operation errors
Cost input: Repetitive manual operation, stubbornly high labor cost

Project Value

Benefit increased by 20%

All-round security

Accurate transfer

Visual management

Pallet stacker + Natural Navigation AMR + Multi-vehicle Collaborative Operation

Pallet stacker MW-L15, Double-wheel differential AMR MW-C10

Software: Fleet management system (RCS)+equipment control system (WCS)+warehouse management system (WMS)

Project Overview

- Global market share of notebook computer boards up to 40%, undisputed leader in the global notebook computer board field

- Handled materials: PCB

- Project scenario: Transfer goods from the production line to the warehouse with high shelves

- Handling process: Transfer from AMR production line and transportation, loading /unloading by AGV

Demands

Cost input: 24h uninterrupted operation, high labor input cost

Operation efficiency: Relying on pure manual operation,

easy to load/ unload wrong goods

Information traceability: Due to no interconnection of material information, the information traceability cannot be realized
Impact of cargo damage: The standardization of manual operation is not supervised and the damage of cargo is very serious

Project Value

Benefit increased by 18%

All-round security

Accurate transfer

Visual management

Our Customers

Above are some of the partners.

Full Support and After-sales Service

On-site Implementation

Resident Engineer

One-on-One Delivery

Quick Response

Worldwide Coverage

Nearby Response Support

24x7 Customer Service

24H Service Hotline

Process System Support

Weekly Based Delivery

Standardized Delivery Process

Remote Upgrade

Iterating Platform

Remote Upgrade

Professional Training

Classroom and

Hands-on Training

Program Management

Impovement

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