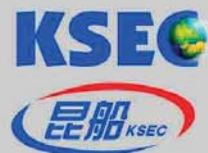




Automatic Logistics System

Kunming Shipbuilding Equipment Co. Ltd.



Kunming Shipbuilding Equipment Co. Ltd.

Address: 3 Renmin Dong Road, Kunming 650051, Yunnan, P.R.China
Tel: +86-871-3132541, 3167657
Fax: +86-871-3134500
E-mail: tobexp@csckm.cn
Web-site: <http://www.csckm.cn>

Automatic Logistics System



Automatic Logistics System

It all began in 1970, Kunming Shipbuilding Equipment Co. Ltd. (KSEC for short) was established as a large state-owned enterprise in China devoting to machinery industry. KSEC owns one state of the art industrial park with area of 6,700 hectares.

With decades of expertise in providing machinery for tobacco industry, KSEC began developing automatic logistics system for tobacco industry in 1995. With comprehensive understanding of technological process and requirement of tobacco industry, KSEC becomes the leading automatic logistics solution designer and supplier for tobacco industry in China. With years of successful application experience in complex tobacco industry logistics system, KSEC has expanded its application into other industries such as electrical appliance, food, pharmacy, banking, power industry, post, airline, book sales and other commercial distributing businesses.

The service KSEC can provide but not limited in:

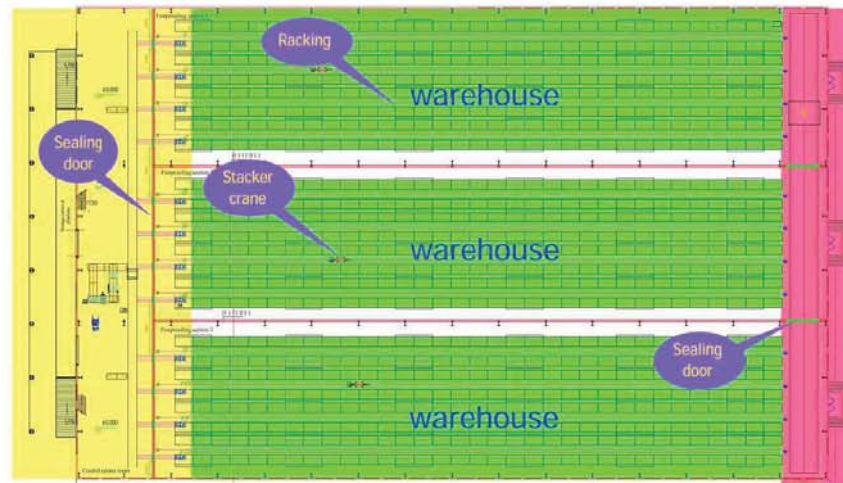
- System plan (consultation, proposal design)
- System design (process, flow, interface, operating plan)
- System integration (equipment, electric control, warehouse and information management software)
- Equipment fabrication
- Installation, commissioning, training and operating guidance
- After sell service (spare parts, upgrading and renovating)

Today, KSEC operates successfully in China and is exploring global area. We have focused all our extensive knowledge, skills and expertise on automatic logistics system solution for tobacco industry and other fields. We are growing to be a global player and willing to provide our tailor-made service to our client's best benefit.

Automatic logistics system for tobacco leaf aging warehouse

System description

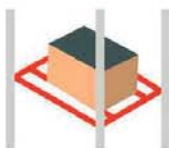
In the tobacco industry, nature aging is widely used for tobacco mature. During the aging period, the greenish amour and thrill taste will be removed, taste of tobacco will be improved. The aging of tobacco leaf is an important link for production. The main function of automatic tobacco leaf aging warehouse is to store enough mature tobacco leaves for production and make the storage/retrieval procedure with high efficiency.



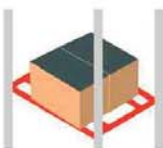
System features

- Large volume storage while less area required.
- Quick dispatching and information management.
- High performance-cost ratio.
- Free pallet storage mode to simplify the operating procedure.
- The stacker crane in the high-bay warehouse can be transferred to isolated area to avoid equipment damage caused by pesticide spraying during tobacco storage.
- Warehouse input/output are set outside of warehousing area.

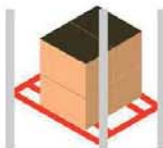
Tobacco leaf bale stored on racking



Single bale stored in the cell of rack. 6 faces of tobacco bale are disposed to outside for best suffocating effect.

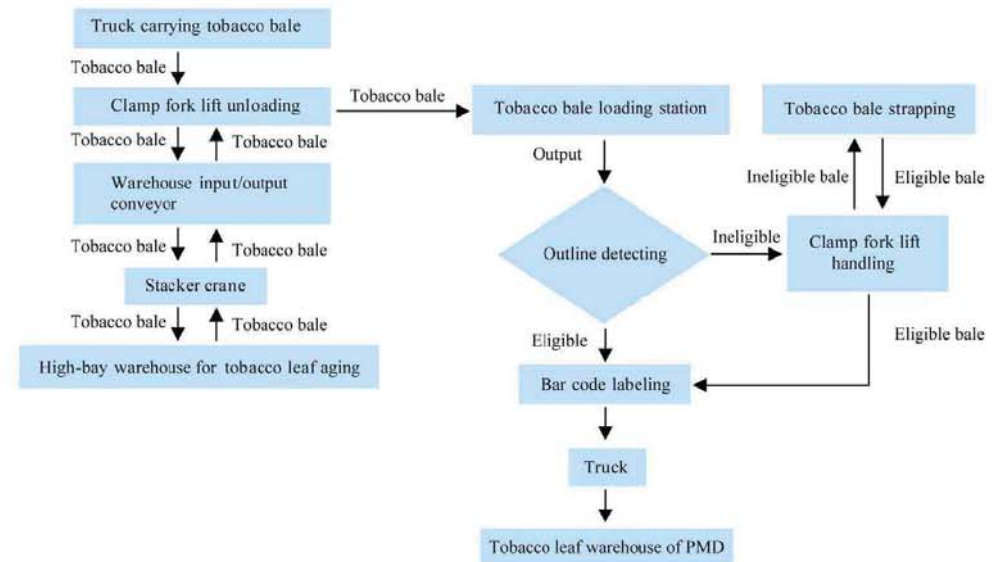


Two bales stored in the cell of rack. 5 faces of tobacco bale are disposed to outside. The stacker crane can store or retrieve 2 bales at one time.



Four bales stored in the cell of rack. 4 faces of tobacco bale are disposed to outside. The stacker crane can store or retrieve 4 bales at one time for high operating efficiency.

System process flow



System composition



Stacker crane



Linear stacker crane transferring carrier



Isolating door of warehousing area and conveying equipment

Automatic logistics system for raw material blending warehouse

System description

Raw material blending automatic logistics system is set as a bridge between the tobacco aging warehouse and the primary warehouse. It changes traditional extensive producing mode to intensive producing mode with various functions such as accurate blending, batch management, ordinal feeding, even mixing, batch quality control, eliminating mildew tobacco and emergent material supplementary to meet the requirements of flexible blending of primary processing.



System features

- Fit for multiple brands, multiple grades and smaller scale blending requirement.
- Improve the production response and support individuation producing.
- Single kind of tobacco input, output as per order of batch's formula blend.
- Accurate warehouse management, less labor and fewer mistakes.

Tobacco bale and pallet



■ C48 tobacco bale on pallet



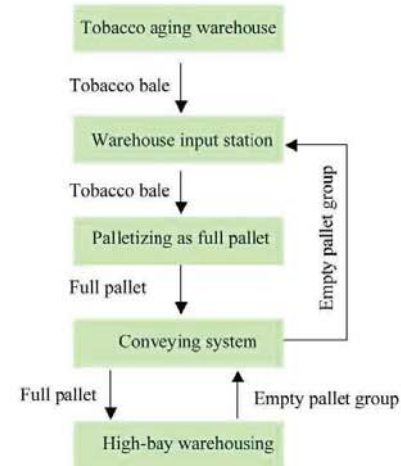
■ Polywood clamped tobacco bale on pallet



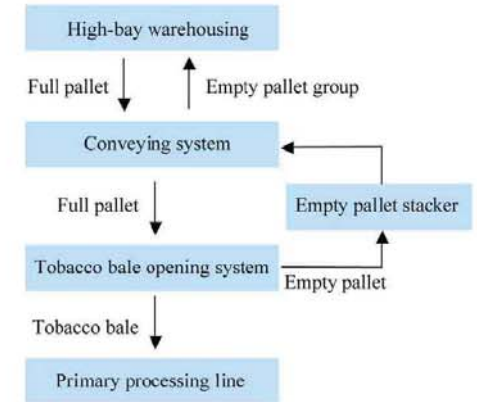
■ Oriental tobacco bale on pallet

Working flow

Input flow

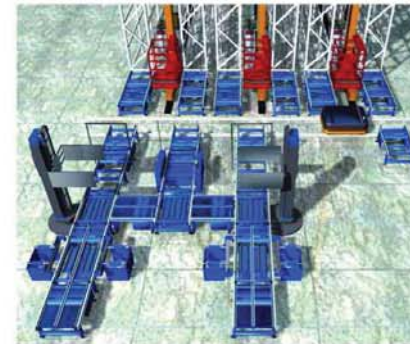


Output flow

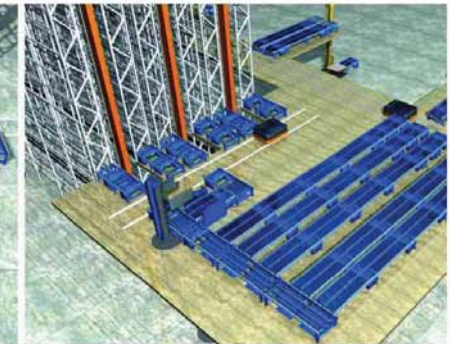


System composition

It consists of palletizing system, warehouse input system, automatic storage/retrieval system, warehouse output system, depalletizing system, tobacco bale opening system, electric control and computer management system.



■ Input station

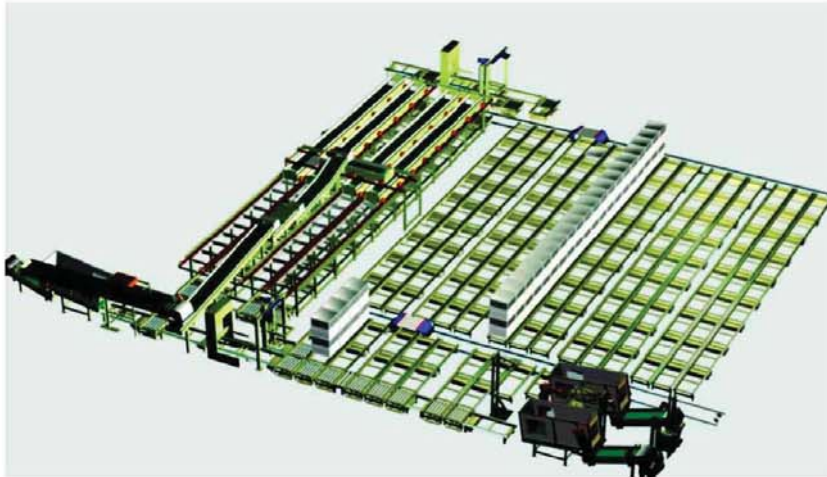


■ Output station

Automatic logistics system for cut-filler bin storage warehouse

System description

Storing the cut-fillers in bin as a new trend in tobacco industry is becoming popular. It can be used for storage of finished cut-fillers and semi finished cut-fillers.



System features

- Optimizing storage space utilization.
- Expanding the blend availability for fine and module production.
- Simplifying the process flow, making the organizing of production simple, meeting the requirement of multi-module production.
- Cut-fillers are stored in bins with lid to avoid flavor and taste loss and mix, less requirement on temperature and humidity.

System composition

- Automatic bin filling system
- Automatic storage/retrieval system
- Automatic conveying system
- Automatic bin tipping & feeding system



- The bin is made of food grade material. The inner and outer faces of bin are overlaid by film to ensure its smooth contact with cut-filler. The surface of bin is antistatic. The edge of box is protected by stainless steel angle. RFID can be embedded in the bin as cut-filler's electronic identification.



- Cut-fillers stored in bin are transported to warehousing area and inlet of cut-filler feeder by AGV.

- The bin tipping machine discharges cut-fillers into feeder.

- Cut-fillers stored in bin are stored in high-bay warehouse. The storage/retrieval of cut-filler bin is executed by stacker crane.



- Cut-fillers are automatically filled in the bin.

- Cut-fillers stored in bin are stacked in 2 high and stored flat warehouse.

Automatic logistics system for auxiliary material warehouse

System description

The system is used for effectively proceeding the storage, handling, conveying & information tracking of various auxiliary material for secondary workshop in cigarette factory.



System composition

- Warehousing system (high-bay warehouse or normal warehouse)
- Conveying system (conveyor system and automatic guided vehicle system)
- Auxiliary material arranging on pallet (manually arranging/automatically arranging)

Pallet arranging type



■ Making and assembling material



■ Packing material pallet



■ Folded carton board pallet



■ Pallet of commercial filter rods

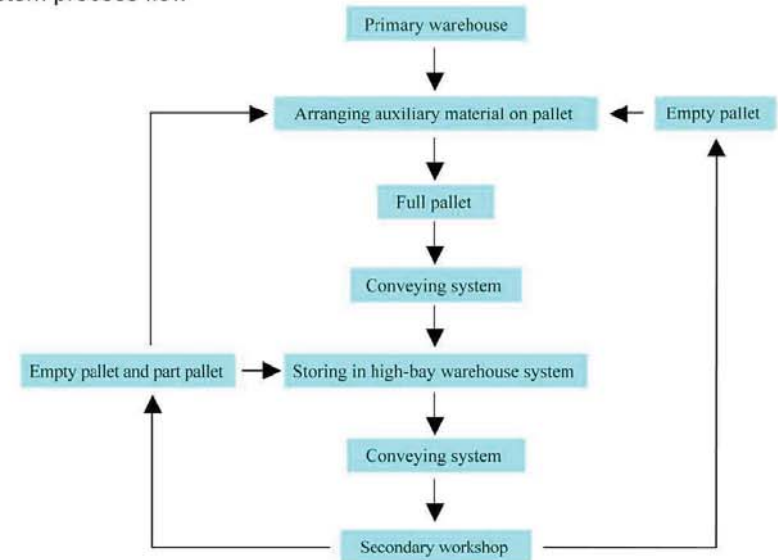


■ Bobbin pallet for shape forming



■ Tow pallet

System process flow



■ Aisle stacker crane for automatic retrieval and storage in high-bay warehouse



■ AGV is transporting the required pallet to the cigarette maker and packer

Automatic logistics system for filter rod storage warehouse

System description

The system is used between the filter rod making machine and the cigarette making combination. It takes filter tray group as storage unit and automatically stores those produced filter rods. The system has functions such as automatic conveying, empty tray loading, storage/retrieval operating and computer management and dispatching.



Main features

- Optimizing space utilization.
- Flexible dispatching.
- More storage time to ensure filter rod hardness, less unwanted favor detention in filter rod
- Balance the production capacity between filter maker and cigarette maker

System composition



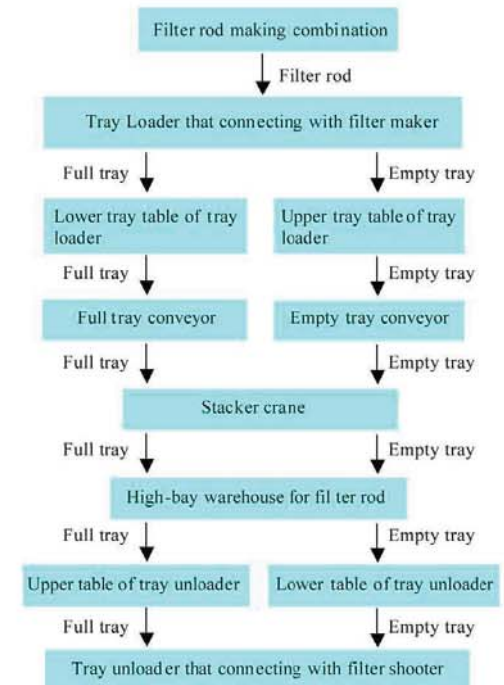
Stacker crane



Empty tray/full tray conveyor that cooperating with tray loader

Empty tray lifting and shifting machine

System process flow



Automatic logistics system for finished cigarette case warehouse

System description

Automatic warehouse for finished cigarette case is a central link that connecting the end of production line and delivery of cigarette case. It is a logistics system integrating the processes such as automatic palletizing, storage, retrieval, delivery, quality tracking as well as intelligent management.



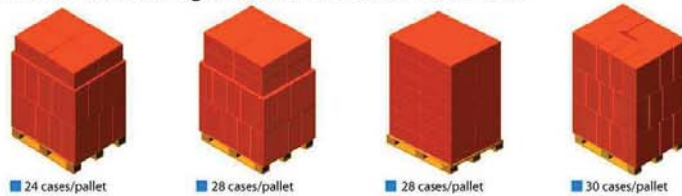
Main function

- Automatic storage and management.
- Support small batch, large scale and flexible production.
- Flexible dispatching.
- Random inspection and automatic inventory checking.

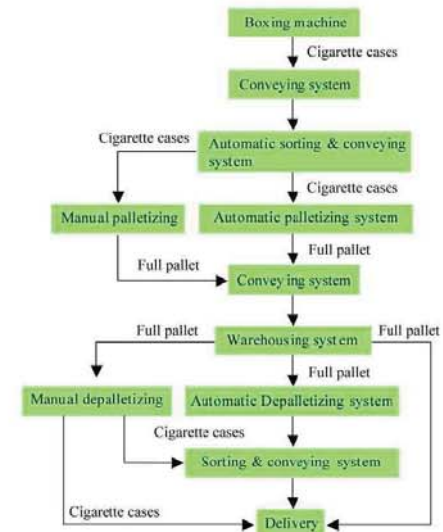
System composition

- Warehousing system (high-bay warehouse, high density storage system)
- Product palletizing/depalletizing system (Robot palletizing/depalletizing system)
- Warehouse input/output system
- Automatic sorting and distributing system

Palletized finished cigarette case in different modes



System process flow



Automatic cigarette case sorting and distributing system



Automatic warehousing & conveying system



Automatically loading into lorry



Supervising & control system

Automatic logistics system for spare part warehouse

System description

The spare parts warehouse is a key link of production guarantee system and an important section of supply chain link management. In the automatic logistics system, different kinds of spare parts are designed to be stored in corresponded system:

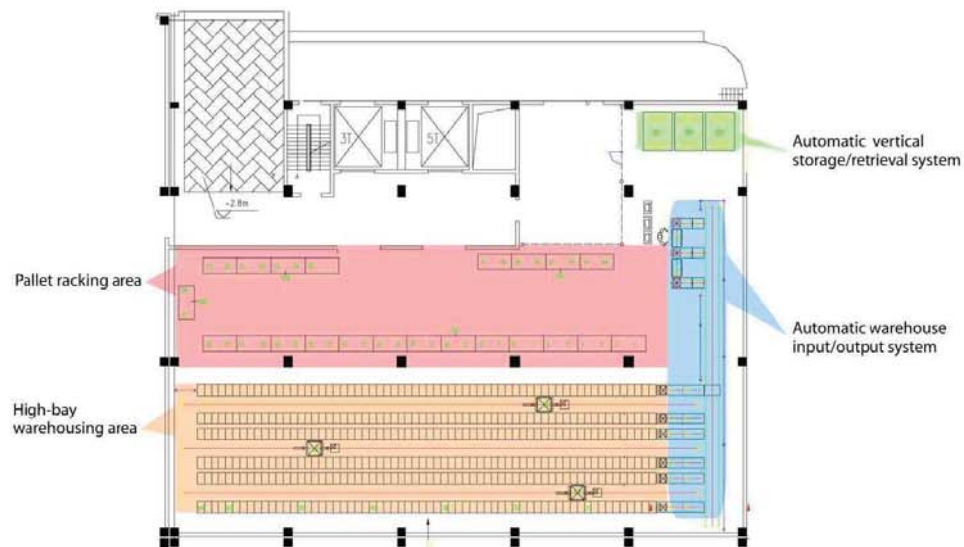
- 1) Most of small spare parts are stored in high-bay warehouse.
- 2) Some valuable small spare parts that require pretty good environment are put into automatic vertical storage/retrieval system.
- 3) Some medium size and large size spare parts as well as soft belt materials are put into the normal racking area.

Above three systems can be integrated to form an automatic logistics system for spare parts with comprehensive information, smoothly operating and convenient management.

Main features

- Quick response on spare parts requirement.
- Optimize space utilization.
- Easy operating & maintenance.
- High stock amount.

System composition



- In the high-bay warehouse, spare parts are stored in unit container with separating board. The containers holding spare parts are stored/retrieved by a stacker crane in the racking system.

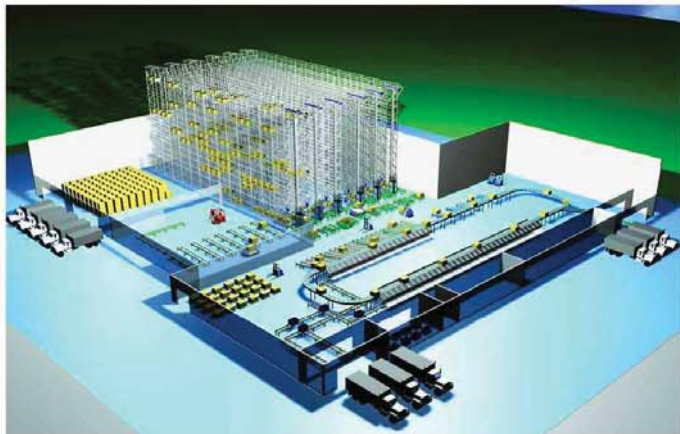


- Small and valuable spare parts that need good keeping environment are stored in automatic vertical storage/retrieval system

Automatic logistics system for commercial distribution center

System description

The tobacco commercial distribution center plays the role of management on the cigarette retailers and cigarette sales in its covering area. The automatic logistics system for tobacco commercial distribution center is applied to realize functions like cigarette warehousing management, automatic cigarette carton sorting and distribution as per client's order. It greatly reduces labor intensity and sorting error.



System composition



High-bay warehousing system



Product collecting system

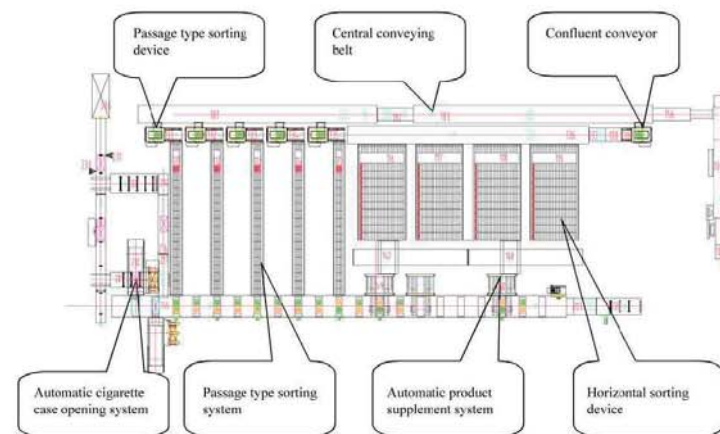


Automatic sorting system



Shipping ready system

Automatic sorting system composition



Main equipments



Passage type sorting device



Confluent conveyor



Automatic cigarette case opening device



Side chain conveyor

Automatic logistics system for commercial distribution center

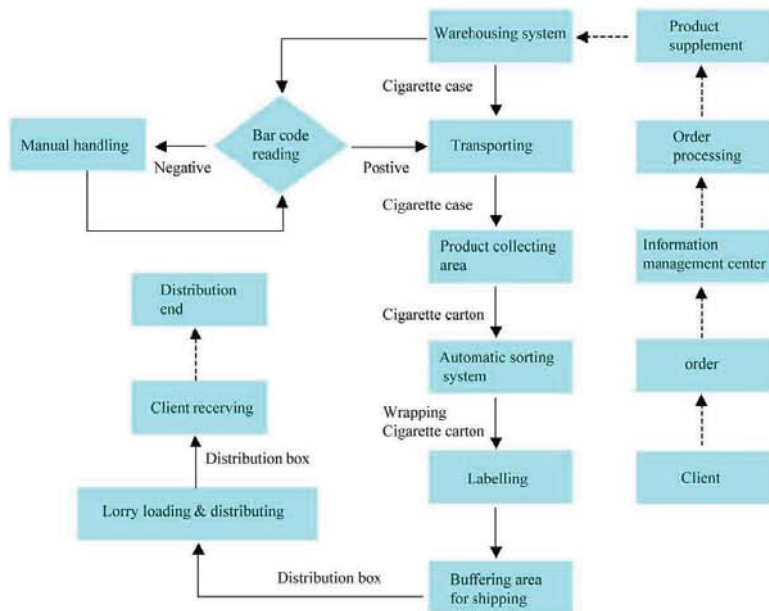


■ Product supplement shuttle vehicle



■ Vertical sorting device

Working flow



Aisle Stacker Crane

DQ111 Aisle Stacker Crane

DQ111 aisle stacker crane is applied in automatic high-bay warehouse for storage/retrieval of palletized materials. Its basic type is single mast, single pallet location and single deep. The gear motor for horizontal traveling drive is directly coupled with the traveling wheel.

■ Technical specification

Rated load capacity: 150~1000kg
 Whole height: 6~24m
 Maximum traveling speed: 200m/min;
 Maximum traveling acceleration: 0.5m/s^2
 Maximum lifting speed: 60/40 m/min (free load/full load)
 Maximum lifting acceleration: 0.4m/s^2



DQ511 Aisle Stacker Crane

It is of double mast, single pallet location, single deep aisle stacker crane for storage/retrieval of material stored in boxes or on pallets

■ Technical Specification

Rated load capacity: 150~1000kg
 Whole height: 3~24m
 Maximum traveling speed: 200m/min;
 Maximum traveling acceleration: 0.5m/s^2
 Maximum lifting speed: 60/40 m/min (free load/full load)
 Maximum lifting acceleration: 0.4m/s^2

Aisle Stacker Crane

DU111 aisle changeable stacker crane

It is a kind of single mast, single pallet location, single deep stacker crane. Its turning device enables it to travel into other aisle, then less aisle stacker cranes are required in the whole warehouse. It can be applied in the large volume but relatively low storing/retrieving frequency warehousing system.



■ Technical Specification

Rated load: $\leq 6000\text{kg}$
Whole height: 3~24m
Maximum traveling speed: 160m/min
Maximum traveling acceleration: 0.5m/s^2
Maximum lifting speed: 60/40 m/min (free load/full load)
Maximum lifting acceleration: 0.4m/s^2
Turning Radius: 1m

BZ647 Shuttle carrier for stacker crane aisle transferring

It is applied in automatic high-bay warehouse for transferring the aisle stacker crane from one aisle to another. It is of double rail, reciprocating straight traveling device for stacker crane's aisle transferring. It can be applied in the large volume but relatively low storing/retrieving frequency warehousing system.



■ Technical Specification

Rated load: 10,000kg
Traveling speed: 60m/min
Outline dimension (L × B × H): 3950 × 4066 × 8505 mm

Automatic Guided Vehicle system (AGVs)

Application

Automatic guided Vehicle system has single vehicle programming and system control & management function. The vehicle can move along the planned path to the specified location for achieving series of jobs as demanded under control of computers. It can be organically combined with external automatic logistics system, production management system or information automation system to achieve network information flow and real-time management supervision. By means of application technologies such as navigation and positioning, vehicular servo drive and control, vehicle drive, safety protection, material loading & unloading, ground computer control and management, system simulation, wireless communication, infrared or microwave communication, information collection and processing, intelligent and quick battery recharging, etc., the system can achieve expected functions of each AGV like reasonable assignment and dispatching, best route selection, traffic safety management, real-time graphic monitoring and control, etc.. AGV is an important equipment for automatic logistics system, automatic warehouse system, flexible manufacturing system(FMS), and flexible assembly system (FAS).

Various guiding mode

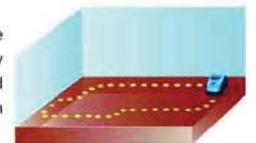
Electromagnetic guiding

It is a traditional guiding mode but still used in many automatic material handling systems. A metal line is buried on the traveling route of AGV. The guiding frequency is loaded on the metal line, and the AGV is guided through identifying the guiding frequency. The guiding mode features with hidden guiding line, no pollution on environment and anti-damage, simple and reliable guiding principle, easy control and communication, without audible and light interference to other devices, and low investment cost as well.



Inertia guiding

An inertia gyroscope is installed in AGV, and positioning blocks are installed on the ground of AGV traveling route. AGV can locate its position and direction by calculating the gyroscope deviation signal and collecting the signal from ground positioning block so as to accomplish the automatic guiding. It features with high positioning accuracy, flexibility, easy to be grouped and good compatibility.



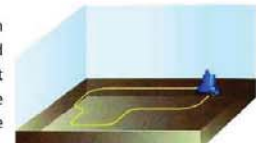
Laser guiding

Laser reflective plates are precisely installed in the surrounding of AGV traveling route. The AGV sends out laser beams and collects returned laser beams simultaneously. Through geometric triangle calculation, the AGV can get its current position and direction so as to achieve automatic guidance. It features with precise positioning, no need any positioning devices on the ground, flexible traveling route, fit for various material transporting conditions.



Magnetic tape guiding

Its principle is similar to that of the electromagnetic guiding mode. The main difference is that the magnetic tape is stucked on the ground instead of being buried underground. The AGV is guided through detecting the magnetic induction signal. It is suitable for good surrounding condition that without metal interference on the ground. It features with high flexibility, simple magnetic tape sticking, easy to change or extend the traveling route,



Security protection

AGV is traveling automatically without human interference. Security of AGV running is seriously considered in our AGV system. Following precaution facilities are applied:

1. Multiple area contactless laser detecting plus pull-string switch fences in the front of vehicle.
2. Contactless photocells detecting plus pull-string switch fences at the rear of vehicle
3. Contactless photocells detecting at both sides of vehicle

Automatic Guided Vehicle system (AGVs)

WW511 Laser Guided Vehicle (single telescopic fork and push-pull type)

Its telescopic fork can lift up and down, as well as telescoping forward and backward so as to achieve catching and disengage of the palletized material. Its speed on goods pulling and pushing is adjustable. It can be applied for automatic conveyance and loading and unloading of palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s
Maximum outline size (L \times L \times H): 1860 \times 1120 \times 1877mm

WW512 Laser Guided Vehicle (double telescopic fork and push-pull type)

Its double telescopic forks can lift up and down, as well as telescoping forward and backward so as to achieve catching and disengage of the palletized material. Its speed on goods pulling and pushing is adjustable. It can be used for automatic conveyance and loading and unloading of palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s
Stroke of load transferring device: 40mm (up and down stroke), 1200mm (left and right stroke)
Maximum outline size (L \times L \times H): 1920 \times 1140 \times 1977 mm

BJ311 Laser Guided Vehicle (rear fork type)

The fork for loading is set at the rear section of vehicle. It can be used for goods loading/unloading of drive in racking system, as well as for automatic transporting, loading and unloading the palletized material among various stations and racking whose height is falling in the maximum stroke of fork.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s (elevating speed of the fork is adjustable)
Maximum stroke of load transferring device: 2.4 m
Maximum outline size (L \times L \times H): 2454 \times 870 \times 2007 mm
Self weight (including battery): <600kg

WW551 Laser Guided Vehicle (single pallet location & roller transferring type)

The roller is adopted as transferring device. It can be used for automatic conveying, loading and unloading the palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s
Maximum outline size (L \times L \times H): 1905 \times 1140 \times 1877 mm

WW552 Laser Guided Vehicle (double pallet locations & roller transferring type)

The roller is adopted as transferring device with two pallet locations. It can be used for automatic conveying, loading and unloading the palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s, the rotating speed of roller is adjustable
Maximum outline size (L \times L \times H): 2880 \times 1340 \times 2757 mm

WW561 Laser Guided Vehicle (towing type)

It adopts towing mode for transportation, loading and unloading of materials loaded in box.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s
Stroke of load transferring device: 40mm (fork's up and down stroke)
Maximum outline size (L \times L \times H): 1810 \times 1140 \times 1877 mm

Automatic Guided Vehicle system (AGVs)

BJ212 Laser Guided Vehicle (roller transferring type)

It adopts roller as its load transferring device, mainly used for automatic transport, loading and unloading of those heavy parts on pallet between powered stations with equal height during assembly.



■ Technical specification

Rated load capacity: 2000kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s
Maximum outline size (L \times L \times H): 2765 \times 1645 \times 1927 mm

BJ623 Laser Guided Vehicle (chain transferring with double pallet locations type)

It adopts chain conveyor as its load transferring device with two pallet locations. It can simultaneously load and unload material on the two pallet locations. It can be applied for automatic transporting, loading and unloading of palletized material among powered stations with equal height.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Maximum outline size (L \times L \times H): 3214 \times 1400 \times 780 mm

BJ612 Laser Guided Vehicle (chain transferring type)

It adopts chain conveyor as its load transferring device, and can drive along its side direction. It can be applied for automatic transporting, loading and unloading of palletized material between powered stations in various working condition.



■ Technical specification

Rated load capacity: 600kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1500mm/s
Load transferring speed: 0.2m/s (the speed of chain transferring is adjustable)
Maximum outline size (L \times L \times H): 1500 \times 1150 \times 2100 mm

BC713 Electric-magnetic Guided Vehicle (jack-up type)

It can be applied for automatic conveying, loading and unloading the palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 650kg
Positioning accuracy: $\pm 10\text{mm}$
Maximum traveling speed: 900mm/s
Maximum lifting stroke of working table: 1200mm
Lifting speed: $\leq 200\text{mm/s}$ (adjustable)
Maximum outline size (L \times L \times H): 2650 \times 1275 \times 670 mm

BT143 Magnetic Tape Guided Vehicle (push-pull type with double pallet locations)

It adopts the push-pull loading mode with double pallet locations for automatic palletized material transportation between powered stations with equal height.



■ Technical specification

Rated load capacity: 2 \times 50kg
Positioning accuracy: $\pm 5\text{mm}$
Maximum traveling speed: 1000mm/s
Maximum push-pull stroke of telescopic fork: 800mm
Maximum elevating stroke of telescopic fork: 40mm
Maximum outline size (L \times L \times H): 2065 \times 900 \times 1010 mm

BC221 Electric-magnetic Guided Vehicle (roller transferring type)

The roller is adopted as transferring device. It can be applied for automatic conveying, loading and unloading the palletized material between unpowered stations with equal height.



■ Technical specification

Rated load capacity: 35kg
Positioning accuracy: $\pm 10\text{mm}$
Maximum traveling speed: 500mm/s
Roller transferring speed: 200mm/s
Maximum outline size (L \times L \times H): 1100 \times 700 \times 700 mm

Shuttle vehicle

BH121 Circulating shuttle vehicle

It is applied for high speed curve transportation of the unit palletized material and boxing materials. It adopts close-loop control technology and features accurate control on traveling position, fast speed and good material handling ability.



■ Technical specification

Traveling speed: 120~160m/min
Position accuracy: $\pm 5\text{mm}$
Load transferring speed: 12~16m/min
Turning radius: $R_{\min}=800\text{mm}$
Maximum load: 1000kg

BZ341 Linear shuttle vehicle

It is mainly used for automatic conveying of unit material in way of high speed and efficiency. This type of shuttle vehicle adopts the latest contactless energy transfer technology. The power supply is transferred without friction touch to the traveling vehicle with features of emission-free and resistant to contamination from external sources and can be used in wet and damp environments.



■ Technical specification

Traveling speed: 160m/min
Positioning accuracy: $\pm 5\text{mm}$
Load transferring speed: 12m/min
Maximum load: 600kg

BZ125 Linear shuttle vehicle

It is mainly applied for high speed linear transportation of unit palletized materials and boxing materials



■ Technical specification

Traveling speed: 120~160m/min
Positioning accuracy: $\pm 5\text{mm}$
Load transferring speed: 12~16m/min
Maximum load: 1000kg

BZ155 Linear shuttle vehicle with double working position

It is mainly applied for high speed linear transportation of unit palletized materials and boxing materials with two pallet locations on it. It can transport two pallets at one time.



■ Technical specification

Traveling speed: 120~160m/min
Positioning accuracy: $\pm 5\text{mm}$
Load transferring speed: 12~16m/min
Maximum Load: 2000kg

Sorting equipment

GF21 Passage type distributor

It is mainly applied for cigarette carton distribution. It can perform functions like conveying, buffering and automatic supplementary of cigarette carton stack. The cigarette cartons are distributed layer by layer. It features high distribution efficiency and less damage on the wrapping film.



■ Technical specification

Working positions at buffering area: 16 cigarette carton stacks, 25 cigarette cartons/stack
Rated sorting capacity: 12,000 cartons/hour

GF31 Vertical type sorter

It is applied for sorting of cigarette carton as per preset material flow. It features the stable cigarette carton shape after being sorted and less damage on products.



■ Technical Specification

Rated sorting capacity per passage: 12,000 cartons/hour
Sorting passages: up to 22 passages
Buffering capacity of each passage: 30 cartons/passage

GF22 Horizontal type sorter

It is applied for sorting of cigarette carton as per preset material flow. It features high buffering volume, automatic supplementary and unpowered transportation.



■ Technical specification

Rated sorting capacity per passage: 7,200 cartons/hour
Sorting passages: up to 20 passages
Buffering volume of each single passage: 50 cartons/passage

GJ113 Sliding-shoe type sorter

It is mainly applied for automatic sorting, delivery and warehouse entry and output of non-fragile products packed in box. There can be many outlets while one inlet for feeding. It is equipped with bypass outlet for rejecting unqualified materials or those materials no need for sorting.



■ Technical specification

Rated sorting weight: 20kg
Rated sorting capacity: 4800 boxes/hour
Rated conveying speed: 80m/min

GJ222 Carpet type sorter

It is applied for inspecting, conveying and diverting of materials. The feeding material from one inlet can be diverted output from 3 different outlets.



■ Technical specification

Rated sorting weight: 20kg
Rated sorting capacity: 4800 boxes/hour
Rated conveying load: 80m/min
Sorted material type: boxing material

GD24 Confluence conveyor

It is applied for merging products from various conveying lines to one conveying line. It features short confluence period and high accuracy.



■ Technical Specification

Conveying speed: 72m/min
Confluent period: $\leq 0.8s$
Conveying width: $\leq 330mm$

Automatic vertical storage & retrieval system

CT130 Automatic vertical storage & retrieval system

It can work with computer network to achieve intelligent management of storage goods and utilize the vertical storage space and optimize the storage to its most. And it can be connected with external automatic storage/retrieval equipment to form a small automatic warehousing system with high efficiency and convenience.



■ Technical specification

Maximum contained tray quantity: 44
Maximum load on each tray: 210kg
Maximum height of goods loaded in each tray: 500 mm
Inner dimension of tray (L × B × H):
1650 × 825 × 66 mm
Outline dimension of equipment (L × B × H):
2674 × 2020 × 4500 mm



Conveyor

GL12 Consecutive elevating conveyor

It is applied for continuously vertical transportation of unit between two floors.



■ Technical specification

Transportation speed: 12, 24, 36m/min
Outline size of unit product (L × B × H): 1200 × 1200 × 1900, 800 × 600 × 300, 580 × 470 × 270 mm
Weight of unit product: ≤600 kg

GN254 Elevating conveyor

It is applied for transporting the product from low position to high position with long transportation journey.



■ Technical Specification

Rated load: 400~1000 kg
Maximum size of loading product (L × B × H): 1200 × 1100 × 1350 mm
Elevating speed: 30 m/min
Elevating positioning accuracy: ±3 mm

GN267 Reciprocating elevating conveyor

It is of single-mast, telescopic fork, steel wire elevating structure, applied for transportation between different levels.



■ Technical Specification

Rated load: 30~1000kg
Whole height: 3~24m
Box size (L × B × H): 800 × 600 × 300, 600 × 400 × 130 mm
Pallet size (L × B × H): 1200 × 800 × 150, 1200 × 1000 × 150,
1100 × 1100 × 150 mm

Conveyor

SL141 Chain conveyor

It is mainly applied for transportation of palletized materials.



■ Technical specification

Conveying speed: 12 m/min, 14 m/min
Maximum conveying load: 1000 kg

SL323 Side chain type conveyor

For one side chain conveyor, there can be many inlets and outlets at the same time.



■ Technical Specification

Rated conveying weight: 20kg/stack
Rated operating capacity: 20,000cartons/hour
Rated conveying speed: 36m/min

GZ333 Swing belt conveyor

It is applied for the flow diverting and conveying of cigarette cartons through up and down swing as per the order .



■ Technical specification

Conveying speed: 48 m/min
Swing period: ≤ 2s

SD131 Belt conveyor

It is mainly applied for linear transportation of unit material such as finished cigarette case and plastic box.



■ Technical Specification

Conveying speed: 24, 35, 48m/min
Maximum conveying load: 25 kg/m
Whole length: ≤20m

GE131 Telescopic apron conveyor

It is mainly applied for loading and unloading of unit material. Its conveying length is flexible.



■ Technical specification

Conveying speed: 24m/min
Maximum conveying load: 25 kg/m

SG22 Roller conveyor

It is used for conveying material in box or carton.



■ Technical specification

Unit material weight: 10~80kg
Conveying speed: 24~48m/min

Conveyor

GZ211 Turn-swing conveyor

It is used for turning transportation at vertical angle.



■ Technical Specification

Conveying speed: 12 m/min, 14 m/min
Swing angle: 5°
Lifting period: 4s

GN32 Spring wheel conveyor

It is a kind of conveyor for diverting material in box or carton and mainly used in flexible sorting system.



■ Technical specification

Conveying speed: 48m/min
Distribution angle: 30°, 45°

GA25 Accumulating roller conveyor

It is a kind of conveyor for conveying and accumulating, temporarily storing of material with equal distance.



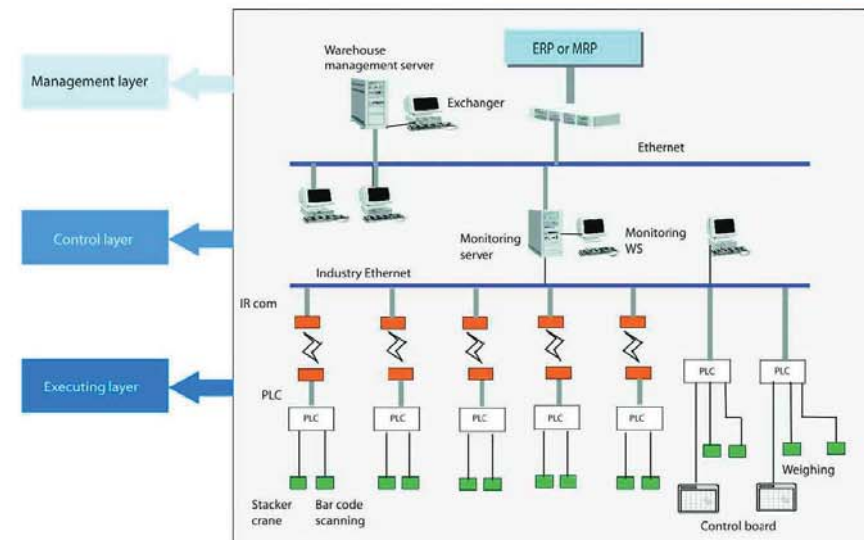
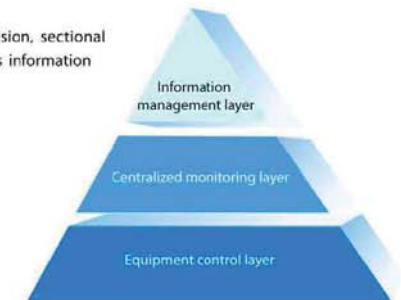
■ Technical Specification

Conveying speed: 24, 36, 48m/min

Electric control system

The electric control system involves the whole procedure of automatic logistics system, which plays the role of connection and linking between the preceding and the subsequent procedure. It can perform various procedure controls like start/stop and malfunction alarm of production equipment in logistics system. Through on-site operator terminal, it can achieve switch between single machine manual control and automatic control, and can perform functions of manual operation and status indication of equipment. By means of upper level supervision system, it can monitor and control running status of all equipments, location of the goods and data in the whole automatic logistics system. By means of absorption of the most advanced field-bus technologies like Profibus, ControlNet, DeviceNet, Interbus etc., and combination with decades of development and research experiences of KSEC in logistics system to meet the integrated control and management requirement of the customer.

Basing on the 'Centralized management, synthesis supervision, sectional control' design concepts, the system forms different levels as information management - centralized monitoring - equipment control.



Electric control system



Control center

Main Features of the Electric Control System

- Advanced, reliable, and stable field-bus solutions.
- Simple and practical modular design.
- Complete functions of safety protection and malfunction diagnosis.
- Control function of Manual/Auto/Online.
- Human-machine interface easy to operate and maintain.
- Screen monitoring and control with vivid image.
- Adopting IEC 1131-3 international standard PLC programming language.
- Supporting remote after sale service through internet.



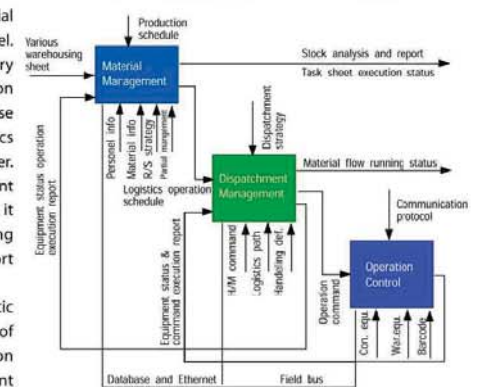
Computer management system

System description

Automatic logistics system of production is on-line material management system taking manufacturing service as its kernel. It connects up to the EIMS and down to real time industry control system, and is integrated with logistics production guarantee management, material management and warehouse management. The computer system is the core of logistics system control and information processing and storage center. It coordinates all business links to achieve material's efficient and orderly flow and scientific management. Meanwhile, it provides logistics data and assistant decision making information needed by enterprise decision making support system.

According to the function analysis and orientation of automatic logistics system, the management and control structure of system can be divided into 3 layers, i.e. information management layer, dispatching control layer, equipment executing layer.

System function model is as follows:



Information management layer

It achieves system's management function. Meanwhile, it is an interface layer between the automatic logistics system and enterprise information management system

Complete function

- Real-time inquiry on inventory, location information, ongoing execution information, etc.
- User authorization management.
- Totally support bar code technology to achieve batch management and whole procedure tracking.
- Support multiple warehouse business management
- Dynamically control and dispatch transporting unit.
- Real-time detect, monitor and control, manage equipments.
- Provide material absent, over storage, overstock report.
- Provide cataloged statistics report of logistics task.
- Provide integrated information query, such information as operation, equipment status, inventory, storage position, material property, plan, warehouse input and output.
- Provide detailed operation log.

Dispatching control layer

Complete function

- Integrate control equipment interface of logistics system.
- Execute logistics command and deliver it to executing layer equipments.
- Detect and display equipment running status.
- Report and record equipment trouble, communication trouble and executing equipment trouble.
- Monitor and display the status and position of material flow in real time.

Computer management system

Equipment executing layer

It is a special control system or industrial control net integrated with various executing equipment. The integrated automatic logistics system consists of conveyance control system, AGV dispatching system, stacker crane system, robot system, etc.

TIMMS (Totally Integrated Material Management System)

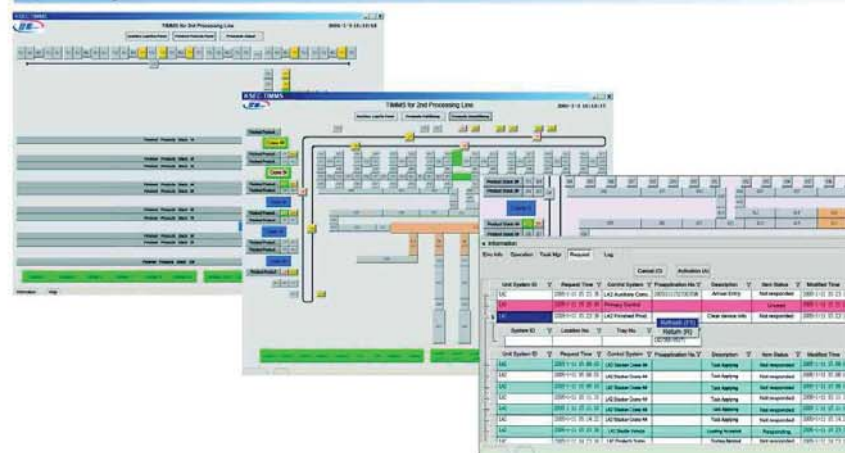
TIMMS is a logistics software package developed independently for automatic logistics system by KSEC basing on uniform data structure. It adopts the multi-module system combined by C/S and B/S.

TIMMS is constructed on industry control net, running in the network system and database environment. On base of integration technology, the system can make the material command be quickly & accurately executed as well as the material flow information being collected, processed, transmitted, saved and analyzed, to help making correct decision for coordinating all business links to ensure the material flow in order and with high efficiency. Meanwhile, the system can provide necessary logistics data and auxiliary decision information to the support system of enterprise information decision through analyzing the material consumption, storage situation and getting the production situation in real time. Taking the production scheduling as its core, the system integrates material handling equipment, dispatching & monitoring sub-system, material flow management sub-system to tracking the material flow and information flow so as to ensure the supply chain of whole enterprise be run in mode of transparency and straightway.

TIMMS mainly consists of 3 function modules: material management module, scheduling management module and operation control module. The material management module supports warehousing management on various kind of warehousing business, and accessing basic material information from relevant management systems. The production scheduling module can provide comprehensive information analyzing and inquiring, dispatch and control all material handling equipments, supervise the logistics command executing condition. The operation control module integrates various industrial control network or special control systems for all executing equipments.

TIMMS can dispatch all equipments with different functions in system to ensure the seamless connecting between system and equipments with friendly and simple operating interface for easy operating.

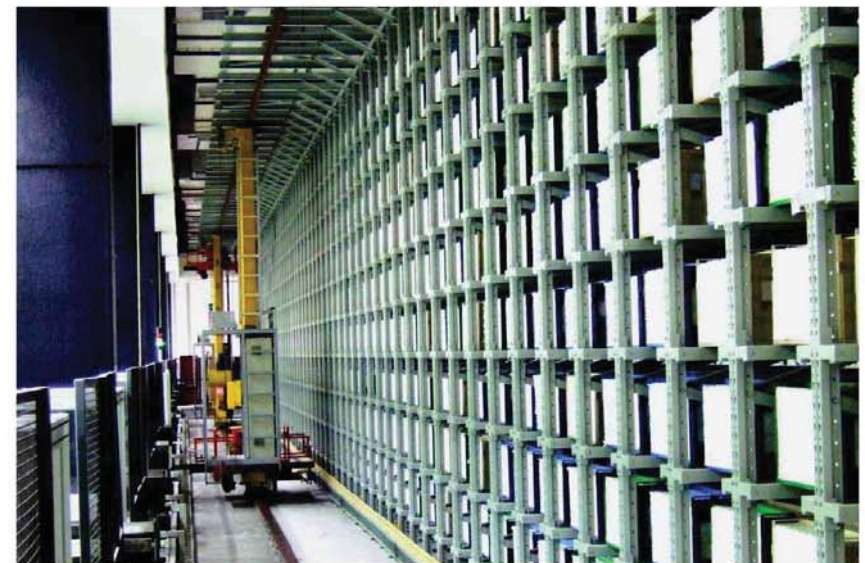
Operating interface



Application case

For tobacco industry (filter rod warehouse)

The filters come out from the filter maker and are loaded in the filter tray. Each tray can contain 4200~4500 filter rods. There are totally 558 compartments in the racking system. Each compartment can store 14 trays. The filter rod tray will be automatically transported and stored in the high-bay warehouse for 8 hours for hardness process. When the filter rods are required, the full filter trays are automatically transported to the location of tray unloader. The filter rods are discharged from the tray unloader and sent to the specified inlet of cigarette maker via filter shooter. The empty tray is taken back for filter rod loading or storing in the racking system. Main equipments of the system are: tray loaders, empty & full tray conveyors, tray unloaders, empty tray lifting & shifting device, tray feeding device, stacker crane and racking system.



Application case

For tobacco industry (cut-filler storage in bin warehouse)

There are totally 3,600 bins locations in the warehousing system. The system can simultaneously feed 8 blends of cut-fillers. Comparing this kind of cut-filler storage in bin with the traditional storage mode, it has good flexibility on dispatching to meet the demand of module and fine production of cigarette industry. Under this mode, it will greatly reduce the risk of flavor and taste mixing between different brands and make the temperature and moisture easy control as well as very convenient storage.



■ The automatic bin filling system can fill the cut-filler continuously into the cut-filler bin to ensure less leakage and degradation during bin filling procedure.



■ Non-contact IC card is embedded in the cut-filler bin as the unique label for cut-filler, and is used as identification for warehouse input/output registration, inventory statistic, output validation and brand name identifying. Automatic guided vehicle is used for transporting the cut-filler bin between the filling station and the storage area, and between storage area and cut-filler feeding port.

For tobacco industry (auxiliary materials and finished products)

This is for a cigarette factory whose annual output reaches 175 billions cigarettes. There are two warehouses separately for auxiliary materials and finished products. Computer management is used for whole procedure information tracking on input/output of auxiliary material and finished products to ensure the precise material handling and accurate information transmit. Innovative manual warehouse output process is introduced in the system to ensure quick supply of material in case of emergent status. The system is designed with feature of dedicated and multiple function, high system efficiency and reliability.

Main system equipment configuration:

Auxiliary material warehouse: 5,184 pallet locations.

Finished product warehouse: 6,080 pallet locations

Laser guided vehicle: 34 sets

Circulating shuttle vehicle: 24 sets

Reciprocating shuttle vehicle: 8 sets

Stacker crane: 16 sets (traveling speed reaches 200m/min)

Vertical elevating conveyor: 2 sets.



Application case

Cigarette commercial distribution center

The distribution center is taking the automatic high-bay warehousing and automatic cigarette carton sorting as its core and covering the cigarette sales distribution for 12 districts of city. Each day 6,000 orders will be handled and around 100 brands of cigarette will be distributed. The annual sale volume is 15.3 billion cigarettes.

High-bay warehouse for cigarette case storage: 6,480 compartments for storage of 12,960 cigarette cases, to meet the supply of type B and C cigarette to vertical sorting system.

High-bay warehouse for palletized cigarette case storage: 1,360 compartments for storage of 32,640 cigarette cases, to meet the supply of type A cigarette to channel type sorting system.

There are three cigarette carton sorting lines consists of 10 channel type sorter, 10 vertical sorters, converge conveyors, cigarette carton shaping devices, automatic code printers, film packers, consecutive cigarette case elevating conveyors, etc.



Channel type sorter



Converge conveyor



Horizontal sorter



Vertical sorter

For machinery & manufacturing industry

This automatic logistics system is used for automatically supplying parts to the continuous semi-product assembly line of factory. Meanwhile, it has functions of distributing those parts to other factories in different areas.

The stacker crane as the main material retrieving/storage equipment cooperating with other conveying equipments makes the operation such as warehouse input/output (whole box output or selective output), warehouse inventory, empty box input/supplement go smoothly.

In the system, the latest contactless energy transferring technology is adopted in the reciprocating shuttle vehicle to improve the material transporting efficiency. The electrical energy is transferred without contact from a fixed conductor to the vehicle power system. The power supply is transferred without friction touch to the traveling vehicle with features of emission-free, maintenance free and resistant to contamination from external sources.

KSEC latest version of logistics system management software TIMMS.NET is perfectly and seamlessly connected with the SAP system of factory to achieve smooth communication between enterprise ERP and logistics information system.

The system greatly improves the working efficiency of semi-product management of factory.

Main system equipment configuration:

Aisle stacker crane: 2 sets

Reciprocating shuttle vehicle: 1 set (adopting latest contactless energy transferring technology)

Chain conveyor: 12 sets

Automatic vertical storage & retrieval system: 1 set

Aisle stacker crane



Reciprocating shuttle vehicle



Application case

For household appliance manufacturing company

Following system is used in an household appliance manufacturing company for achieving automatic material handling and warehousing of raw material and finished products. The system consists of two high-bay warehouses for raw material and finished product separately. The whole system consists of 18,056 pallet locations, 10 stacker cranes,



Flexible transporting - AGV

10 laser guided vehicles (double pallet locations type), 3 circulating shuttle vehicles, 1 industrial robot, 1 camera and supervision system and 1 computer control system.



Overview of whole warehouse

Patent reference list

Item	Patent Description	Registration No.
1	The method and device for density storage warehousing	120529.3
2	The push-pull type laser guided vehicle	97246542.1
3	A kind of heavy duty chain conveyor	97246546.4
4	A kind of automatic mechanical material handling device	97246545.6
5	A kind of roller conveyor	97246544.8
6	A Material eliminating mechanism for belt conveyor	98214008.8
7	A kind of laser guided type of material transporting and palletizing device	97246543.X
8	A kind of chain-sprocket transmission device	98213686.2
9	A kind of fixing component	98213687
10	A kind of towing type laser guided vehicle	99241729.5
11	A kind of roller type laser guided vehicle	99241728.7
12	Automatic carousel storage & retrieval system with weighing function	98214482.2
13	A kind of guard of slat without obstructing inner turning of conveying chain	244519
14	A kind of elevating conveyor	223248
15	A kind of carton bale opener	223297.9
16	A kind of profiled material for fixing	223393.2
17	A new type chain conveyor	223395.9
18	A kind of suspended weighing platform	244881.5
19	Dual-purpose carton and plywood bale opener	244673.1
20	Material stopping mechanism on roller conveyor 00	244870.X
21	Telescopic belt conveyor	262535
22	A kind of dual-lever weighing platform	244926.9
23	Material conveyor	268406.3
24	Material stopping mechanism of chain conveyor	244990
25	Bidirectional tension mechanism	262534.2
26	Fork type elevator	1265046.3
27	Control device of material intermittent conveyance	1220835.3
28	Remote controlled rail AGV	244815.7
29	Double-track linear shuttle vehicle	1220988
30	Consecutive elevating conveyor	262823.6
31	Reverse consecutive conveyor	1230377.1
32	Through shape bracket	1233228.3
33	Dual purpose laser guided vehicle	1233226.7
34	Box tipping and material dumping device	1263943.5
35	Combined type electronic belt weighing conveyor	1264596.6

Patent reference list

Item	Patent Description	Registration No.
36	Reciprocating elevating conveyor	1264050.6
37	Automatic pallet retrieval and deliver device	1233784.6
38	A kind of belt transmission device of roller conveyor	1263936.2
39	Ground fork type laser guided vehicle	01263784.X
40	Easy dismantling material bracket	1230717.3
41	Clamping type elevator	1265047.1
42	Pallet palletizer/depalletizer	01264594.X
43	Mechanical reciprocating device on the storage and retrieval table	2204242.3
44	Multifunction overturning device	1263782.3
45	A kind of material rear baffle that can move synchronously with the conveying belt	02251628.X
46	Monorail circulating shuttle vehicle	2204476
47	Automatic flexible folding rack system	2234333.4
48	Ratchet wheel clutching device between the drive wheel and the conveying roller	2242978.6
49	Elevating device for horizontal conveying equipment	2254711.8
50	A kind of automatic storage & sorting device	2244558.7
51	A kind of conveying device for automatic high-bay warehouse	2244557.9
52	Profiled material (I)	2308995.4
53	Profiled material (II)	2308996.2
54	Profiled material (III)	2308997
55	Fingerprint identification optical-electronic mouse	2275980.8
56	Fingerprint collecting module	2275982.4
57	Fingerprint identification mouse	244601.4
58	Fingerprint identification keyboard	260000.5
59	Open device of the sliding-tunnel	99232101.8
60	Steel cycling-use container	01228579.X
61	Quick battery recharging method and device of AGV	120561.7
62	Cigarette carton automatic sorting & distributing method and equipments	3135265
63	Circulating belt type distribution device	3207277.5
64	Conveying roller of conveyor	3207995.8
65	A continuous flow detecting method for loosen material by means of UHF resonance chamber	2125071.5
66	Microwave missing parts detecting device	3281097
67	Robot depalletizing system for part pallet	310110923.4
68	The pallet conveying device for small part robot palletizer/depalletizer system	
69	A kind of material guidance device	0310110922.X

Reference list

For Tobacco Industry

Yuxi Cigarette Factory of Hongta Group

Automatic logistics system for auxiliary material warehouse
Automatic logistics system for finished product warehouse

Honghe Cigarette Factory of Honghe Group

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for auxiliary material warehouse
Automatic logistics system for finished product warehouse
Automatic logistics system for spare parts warehouse
Automatic logistics system for acetate tow and casing material warehouse
Automatic logistics system for cigarette case cardboard warehouse
High density storage warehouse for finished product

Xinjiang Cigarette Factory of Honghe Group

Automatic logistics system for auxiliary material warehouse
Automatic logistics system for spare parts warehouse

Zhaotong Cigarette Factory of Honghe group

Automatic logistics system for raw material warehouse
Automatic logistics system for auxiliary material warehouse
Automatic logistics system for finished product warehouse

Shanghai Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for auxiliary material warehouse
Automatic storage system for finished cut-tobacco storage in bin

Beijing Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic storage system for finished cut-tobacco warehouse

Qingdao Cigarette Factory

Automatic storage system for finished cut-tobacco warehouse
Automatic logistics system for auxiliary material warehouse
Automatic logistics system for finished product warehouse
Automatic logistics system for filter rod warehouse
Automatic storage system for finished cut-tobacco storage in bin

Changsha Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for cigarette making and packing production line

Jinan Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for finished product warehouse
Automatic logistics system for cut-tobacco blending system
Automatic logistics system for tobacco aging warehouse
Automatic logistics system for filter rod warehouse



Reference list

For Tobacco Industry

Changde Cigarette Factory

Automatic logistics system for tobacco leaf warehouse
Automatic logistics system for auxiliary material warehouse
Automatic logistics system for graded lamina warehouse
Automatic logistics system for filter rod warehouse

Qujing Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for auxiliary material warehouse
Automatic tobacco bale opening system

Nanjing Cigarette Factory

Automatic logistics system for finished product warehouse
Automatic logistics system for auxiliary material warehouse
Automatic logistics system for spare parts warehouse

Huaiyin Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for finished product warehouse
Automatic logistics system for auxiliary material warehouse

Kunming Cigarette Factory

Automatic logistics system for auxiliary material warehouse

Ningbo Cigarette Factory

Integrated control system on automated storage & retrieval system of high-bay warehouse
Laser guided vehicle system for auxiliary material transportation

Baoji Cigarette Factory

Automatic logistics system for filter rod warehouse

Guanxi Cigarette Factory

High-bay warehouse for tobacco leaf aging

Chengdu Cigarette Factory

Automatic logistics system for finished product warehouse
Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for auxiliary material warehouse

Qingzhou Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for auxiliary material warehouse

Longyan Cigarette Factory

Automatic logistics system for tobacco leaf formula blending warehouse
Automatic logistics system for finished product warehouse
Automatic logistics system for auxiliary material warehouse

Xinjiang Cigarette Factory of Shandong General Tobacco Group

Automatic logistics system for tobacco leaf aging and formula blending warehouse

For Commercial Distributing Business

Guangdong Provincial Tobacco company

Cigarette handling and distributing center for Guangzhou branch
Cigarette handling and distributing center for Chaozhou branch
Cigarette handling and distributing center for Chenghai branch
Cigarette handling and distributing center for Foshan branch
Cigarette handling and distributing center for Heyuan branch
Cigarette handling and distributing center for Huizhou branch
Cigarette handling and distributing center for Jiangmen branch
Cigarette handling and distributing center for Jieyang branch
Cigarette handling and distributing center for Kaiping branch
Cigarette handling and distributing center for Puning branch
Cigarette handling and distributing center for Qingyuan branch
Cigarette handling and distributing center for Shantou branch
Cigarette handling and distributing center for Shanwei branch
Cigarette handling and distributing center for Shaoguan branch
Cigarette handling and distributing center for Yangjiang branch
Cigarette handling and distributing center for Yunfu branch
Cigarette handling and distributing center for Zhanjiang branch
Cigarette handling and distributing center for Zhaoqing branch
Cigarette handling and distributing center for Zhuhai branch
Cigarette handling and distributing center for Dongguan branch
Cigarette handling and distributing center for Shunde branch

Yunnan Provincial Tobacco Company

Cigarette handling and distributing center for Honghe branch
Cigarette handling and distributing center for Kunming branch
Cigarette handling and distributing center for Lijiang branch
Cigarette handling and distributing center for Puer branch
Cigarette handling and distributing center for Yuxi branch
Cigarette handling and distributing center for Wenshan branch
Cigarette storage and sorting system for Qujing branch

Shenzhen Tobacco Company

Automatic logistics and distributing center

Guangxi Provincial Tobacco Company

Automatic logistics and distributing center for Nanning branch
Logistics center of Tobacco Science & Technology Park for Nanning branch

Zhejiang Provincial Tobacco

Cigarette handling and distributing center for

Beijing Tobacco logistics and distributing center

Automatic logistics storage and retrieval system for cigarette

Reference list

For Commercial Distributing Business

Heilongjiang Provincial Tobacco Company

Cigarette handling and distributing center for Daqing branch
Cigarette handling and distributing center for Hegang branch
Cigarette handling and distributing center for Mudanjiang branch
Cigarette handling and distributing center for Suihua branch
Automatic cigarette carton sorting system for Jixi branch

Heilongjiang Provincial Tobacco Company

Cigarette handling and distributing center for Daqing branch
Cigarette handling and distributing center for Hegang branch
Cigarette handling and distributing center for Mudanjiang branch
Cigarette handling and distributing center for Suihua branch
Automatic cigarette carton sorting system for Jixi branch

Jilin Provincial Tobacco Company

Digital warehouse system for Changchun branch
Automatic storage and sorting system for Changchun branch

Shandong Provincial Tobacco Company

Cigarette handling and distributing center for Weihai branch
Cigarette handling and distributing center for Qingdao branch

Henan Provincial Tobacco Company

Cigarette handling and distributing center for Zhengzhou branch

Jiangxi Provincial Tobacco Company

Automatic cigarette carton sorting system for Jian branch

Anhui Provincial Tobacco Company

Cigarette handling and distributing center for Hefei branch

Liaoning Provincial Tobacco Company

Cigarette handling and distributing center for Dalian branch

Hunan Baisha Logistics Company

Automatic logistics system for cigarette storage and distribution

For Financial business

Shanghai Mint

Automatic Guided Vehicle transporting system

Shenyang Mint

Automatic guided vehicle transporting system

People's National Bank of China

Automatic storage system for high-bay warehouse for Guangzhou branch

Bank of China

Automatic storage system for high-bay warehouse for Guangzhou branch

For Machinery & Manufacturing Industry

Jiangxi Hongdu Aviation Industry Group

Automatic logistics system for mould warehouse

Changsha Railway Engineering & Maintenance Department

Automatic high-bay warehousing system

Dalian Marine Valve factory

Automatic high-bay warehousing system

Guangdong Zhuhai Acetate fiber Co., Ltd.

Automatic conveying system for acetate bale.

Shanghai Tobacco Machinery Co., Ltd.

Automatic carousel storage & retrieval system

Chongqing Loncin General Purpose Engine Co., Ltd

Integrated parts conveying and distributing system for production line

SEW-Eurodrive (Tianjin) Co., Ltd.

Integrated parts warehouse

For Food Industry

Inner Mongolia Mengniu Dairy Industry (Group) Co., Ltd.

Automatic high-bay warehousing system for Bameng branch
Automatic high-bay warehousing system for Beijing branch

Inner Mongolia Yili Dairy Industry (Group) Co., Ltd.

Warehouse management system

Kweichow Moutai Co., Ltd

Automatic warehouse for package material of Moutai alcohol.

For Pharmacy Industry

Kunming Pharmaceutical Corp.

Integrated high-bay warehousing system

Tianjin Zhongxin Pharmaceuticals Corp.

Automatic logistics system for pharmacy supermarket

Changsha Shuanghe Pharmaceutical Co., Ltd.

Storage system for distributing center

Shenwei Pharmaceuticals Co., Ltd.

Automatic storage system for logistics center



Reference list

For Automobile Industry

Hangzhou Automobile Engine Manufacturing Factory

Automatic guided vehicle conveying system for engine

FAW-Hongta Yunnan Automobile Co., Ltd.

Automatic guided vehicle conveying system

Yulin Diesel Engine Machinery Co., Ltd.

Automatic logistics system for heavy engine

Changzhou Diesel Engine Co., Ltd.

Automatic guided vehicle conveying system for engine

For education system

Beijing Materials University

Logistics system technology laboratory

Shuttle vehicle system

Hunan University

Logistics information and simulation technology laboratory

Beijing Area Logistics System & Technology Laboratory

Automatic logistics system

Shanghai labor bureau training center

Automatic logistics system

For other industry

Haier Co., Ltd.

International logistics center

China Eastern Airline Food Co., Ltd

High-bay warehouse in Pudong airport

Guangzhou Post & Telecom Equipment Co., Ltd.

Automatic logistics system

Jiangsu Nanjing Power Supply Company

Automatic warehousing system for metering center

Jiangsu Wuxi Power Supply Company

Intelligent warehousing management system

China customs protective tariff zone of Shuzhou industry park

Automatic warehousing equipment

Sichuan Xinhua Publishing Group

Logistics and distributing center system for

Xinhua Bookstore Beijing

Logistics and distributing center for publication



Innovative logistics technology
makes the material flow
at the correct time
in correct way...