

# MASTER 万事达

Specialized In Logistics Equipment

£ million

- Income
- PBT
- BGI/BlackRock deal costs

CAGR (04 – 08)  
Revenue 20%  
PBT 15%

H1 09 v H1 08  
Revenue 20%

Share of market activity

Changes in the activity of the active and passive market is uncertain. Established positive trends in various market segments.



四向穿梭车密集存储系统  
FOUR-WAY SHUTTLE INTENSIVE STORAGE SYSTEM

天津万事达物流装备有限公司  
Tianjin Master Logistics Equipment Co., Ltd.

# Four-way Shuttle Intensive Storage System

## 四向穿梭车密集存储系统



货架系统  
Racking system



四向车  
Four-way shuttle



输送系统  
Conveying system



提升机系统  
Elevator lift



**WMS**  
库房管理系统



**WCS**  
设备控制系统

该系统是智能密集存储领域的另一主要形式。

系统由四向穿梭车、水平输送系统、提升机、货架系统及 WMS 管理系统和 WCS 控制系统组成。

具有具有存储密度大，出入库效率高，系统运行稳定、安全、冗余度高、拓展性强的特点。四向穿梭车可以在纵向存储巷道及横向转移通道进行自动 90 度方向切换，更加适用于复杂建筑环境下的仓库存储。

广泛地适应于食品、饮料、乳品、医药、烟草、精细化工、冷链物流等行业。

This system is another major form of intelligent intensive storage industry.

The system consists of a four-way shuttle, a horizontal conveying system, an elevator lift, a rack system, a WMS management system and a WCS control system.

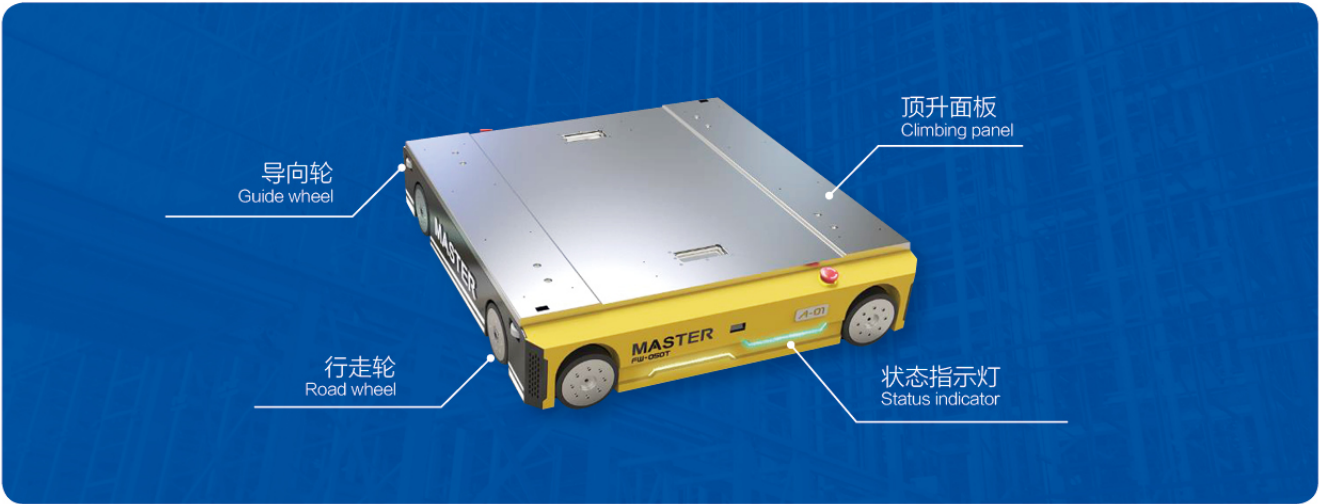
It has the characteristics of large storage density, high out-put and in-input of warehouse efficiency, stable system operation, security, high redundancy, and strong expandability. The four-way shuttle can switch automatically in 90-degree directions in vertical storage lanes and horizontal transfer channels, so that it is more suitable for warehouse storage in complex building environments.

The system is widely used in various industries including food, beverage, dairy, pharmaceutical, tobacco, fine chemical, cold chain logistics and so on.



# Four-way Shuttle

## 四向穿梭车



### 四向穿梭车负责横纵两个方向上的物料搬运

举升和换向全部采取机械结构设计，相比液压结构更加稳定、可靠。

WIFI 接收系统采用国际知名西门子品牌，具有信号稳定、速率快、信号覆盖范围广等特点。

电机采用进口伺服电机，具有更宽泛的动力输出、更精准的速度及制动控制、更迅捷的信息通讯，可靠性高、故障率低。

### FOUR-WAY SHUTTLE IS USED FOR MATERIAL HANDLING IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS

Lifting and reversing adopt mechanical structure design, which is more stable and reliable than hydraulic structure.

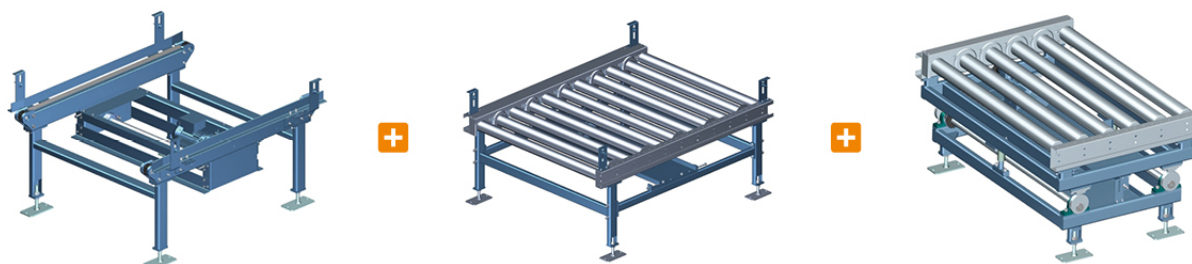
The WIFI receiving system adopts the internationally renowned Siemens brand, which has the characteristics of stable signal, fast speed, and wide signal coverage.

The motor adopts imported servo motor, which has wider power output, more accurate speed and brake control, faster information communication, high reliability and low failure rate.

序号 Number	名称 Name	参数 Parameter
1	额定承载 Rated load	1200 KG
2	空载速度 No-load speed	1.2-2 米 / 秒 1.2-2 m/s
3	重载速度 Overload speed	1-1.5 米 / 秒 1-1.5 m/s
5	空载加速度 No-load acceleration	$0.4 \leq 1\text{m/s}^2$
6	重载加速度 Overload acceleration	$0.2 \leq 0.5\text{m/s}^2$
7	充电时间 Charging time	2 小时 2 hours
8	电池容量 Battery capacity	48V/50AH
9	供电方式 Power supply	锂电池 Lithium battery
10	顶升、换向时间 Jacking and reversing time	3-4 秒 3-4 s
11	光电系统 Photoelectric system	倍加福或同等品牌 Pepperl Fuchs or equivalent brands
12	PLC	西门子 Siemens
13	控制方式 Control mode	联机自动 / 单机手动 Online automatic / stand-alone manual
14	通讯方式 Communication methods	无线 WIFI Wireless WIFI

# Horizontal Conveying System

## 水平输送系统



该系统主要由链式输送线、滚筒输送线、顶升移栽机组成。

其功能是：根据控制系统的指令驱动输送线上的电机正转、反转、顶升和直角转向，用于托盘类货物的水平输送以及与其它设备的货物交接。

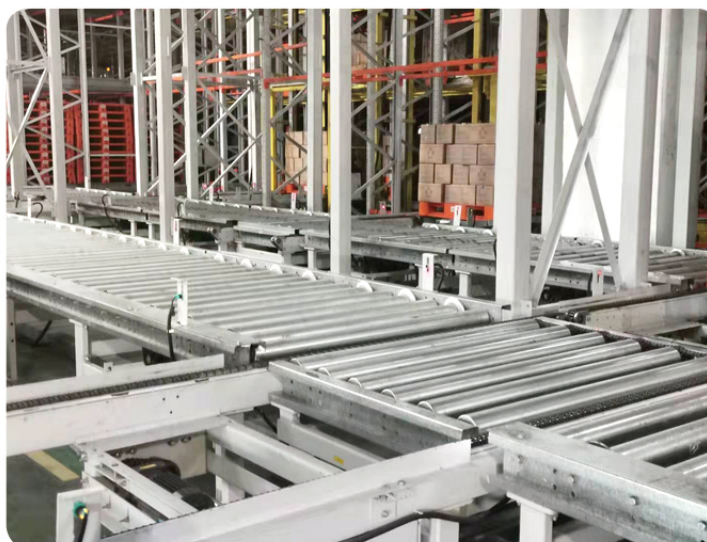
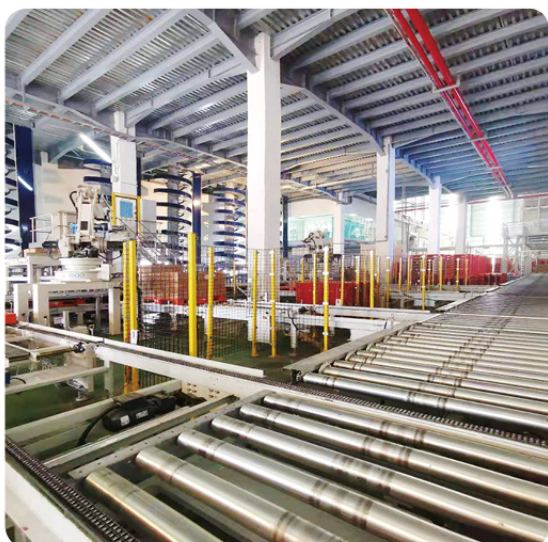
具有结构简单，可靠性高，使用维护方便等特点。

The system mainly consists of a chain conveying line, a roller conveying line, and a jacking transferring machine.

Its function is: according to the commands issued by the control system, the motor of the conveying line can drive to rotate forward, reverse, jack up and turn at right angles. It is used for horizontal conveyance of pallets and transfer of goods with other equipment.

It has the characteristics of simple structure, high reliability, convenient use and easy maintenance.

序号 Number	名称 Name	参数 Parameter
1	额定载荷 Rated load	1200 KG
2	输送速度 Conveying speed	16m/min 符合设计和环境噪声控制标准要求 16m / min, meeting design and environmental noise control standards
3	机架材质 Frame structure material	碳钢 Carbon steel
4	电机品牌 Motor brand	西门子或同等品牌 Siemens or equivalent brands
5	供电功率 Power supply	0.75 kw
6	设备涂装 Equipment painting	环氧树脂粉末静电喷涂，推荐灰色，厚度 60 ~ 80 μm Epoxy resin powder electrostatic spraying, gray recommended, thickness 60 ~ 80 μm
7	控制方式 Control mode	手动、单机自动及联机自动控制方式 Manual, stand-alone automatic and online automatic control methods





# Elevator Lift

## 提升机

### 提升机负责垂直方向上的物料搬运及车辆换层

链式提升：提升机用链条代替钢丝绳，避免了传统提升机经常碰到的钢丝绳断股或变形量大等问题，保证了提升机的安全稳定性。



限速器  
Speed limiter

双重制动：一为二维码系统，二为电机上的编码器，保证了制动信息的可靠性，实现提升平台的稳定运行，避免冲顶及触底事故。

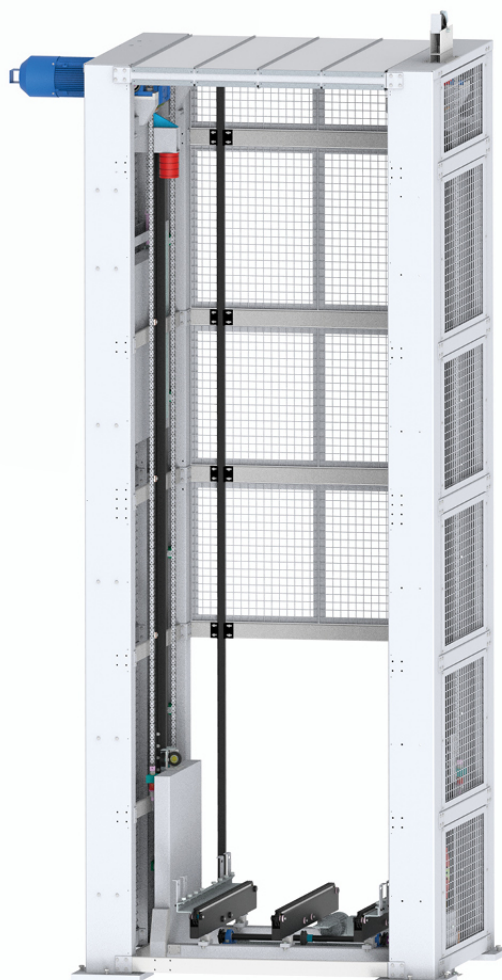
提升机前端设计有缓存机构，既可以进行货物的输送也可以作为四向车进出提升的运行通道，并且可以提高效率。

### THE ELEVATOR LIFT IS USED FOR VERTICAL MATERIAL HANDLING AND VEHICLE LAYER CHANGE IN THE VERTICAL DIRECTION

Chain lifting: The elevator lift uses a chain instead of a wire rope to avoid problems such as broken strands or large deformation of the wire rope which are often encountered in traditional elevators, thus ensuring the safety and stability of the elevator.

Dual braking: one is a QR code system, and the other one is an encoder on the motor, which ensures the reliability of the braking information, improves the stable operation of the platform, and avoids top and bottom accidents.

The front end of the elevator lift is designed with a buffer mechanism, which can not only transport the goods, but also serve as a running channel for the four-way shuttle to enter and exit, and can improve efficiency.



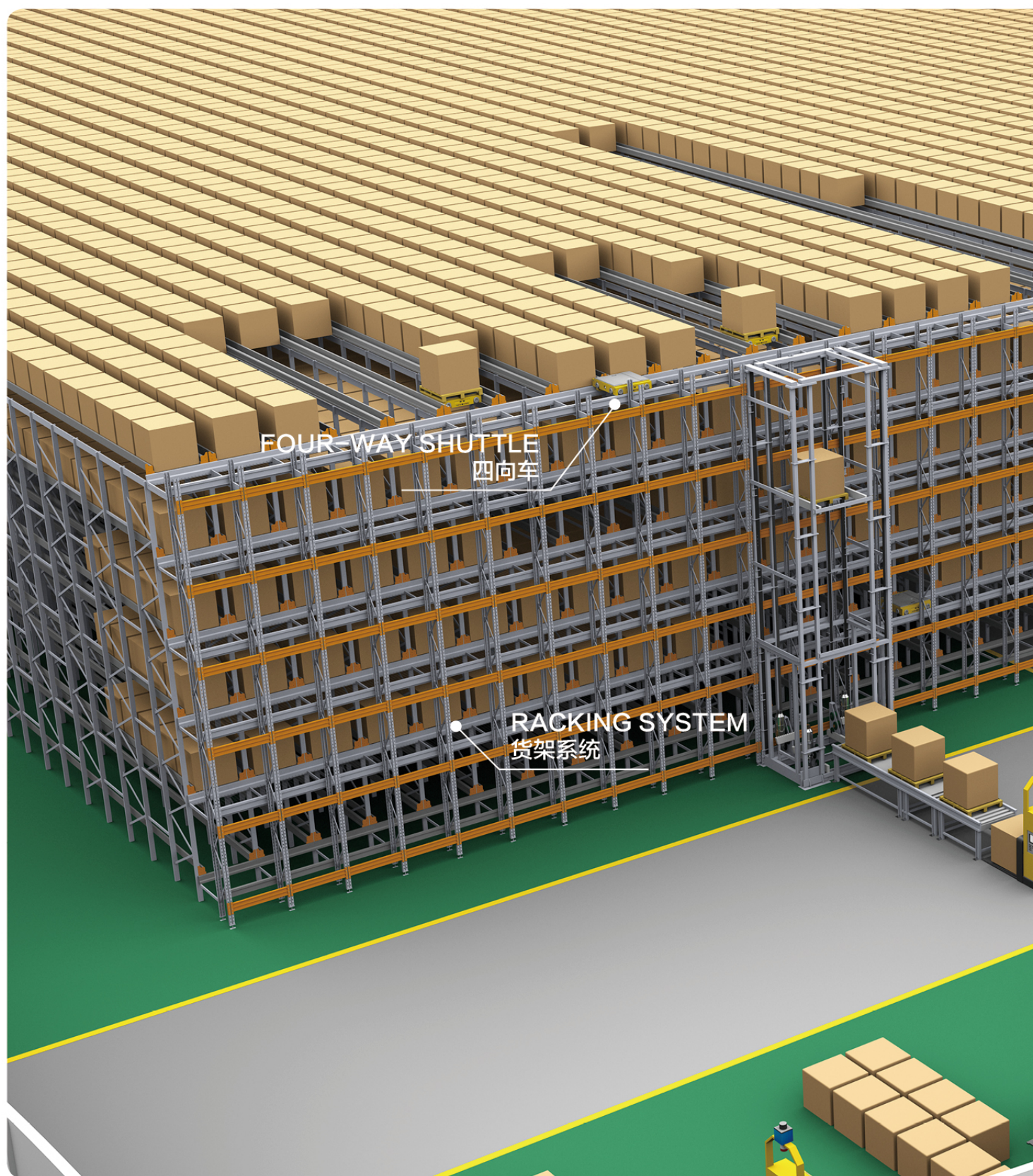
序号 Number	名称 Name	参数 Parameter
1	额定承载 Rated load	1200 KG
2	光电系统 Photoelectric system	倍加福或同等品牌 Pepperl Fuchs or equivalent brands
3	PLC	西门子 Siemens
4	控制方式 Control mode	具有联机自动 / 单机手动功能 With online automatic / stand-alone manual function
5	高度 Height	根据项目确定 According to project
6	电机 Motor	西门子 Siemens
7	电机功率 Motor Power	7.5 kw
8	适用温度 Suitable temperature	-20℃ ~ 50℃
9	速度 Speed	0.5 - 1.0 米 / 秒 0.5 - 1.0 m/s
10	传动系统 Transmission system	链条式 (变形量小、精度高、寿命长) Chain type (small deformation, high accuracy, long service life)
11	精度控制 Precision control	条码精定位定位误差 ± 2mm Bar code accurate positioning error ± 2mm
12	沉降补偿 Settlement compensation	提升系统中有沉降 Settlement in lifting system



# Four-way Shuttle Intensive Storage System

四向穿梭车密集存储系统鸟瞰图

Tianjin Master Logistics Equipment Co., Ltd.



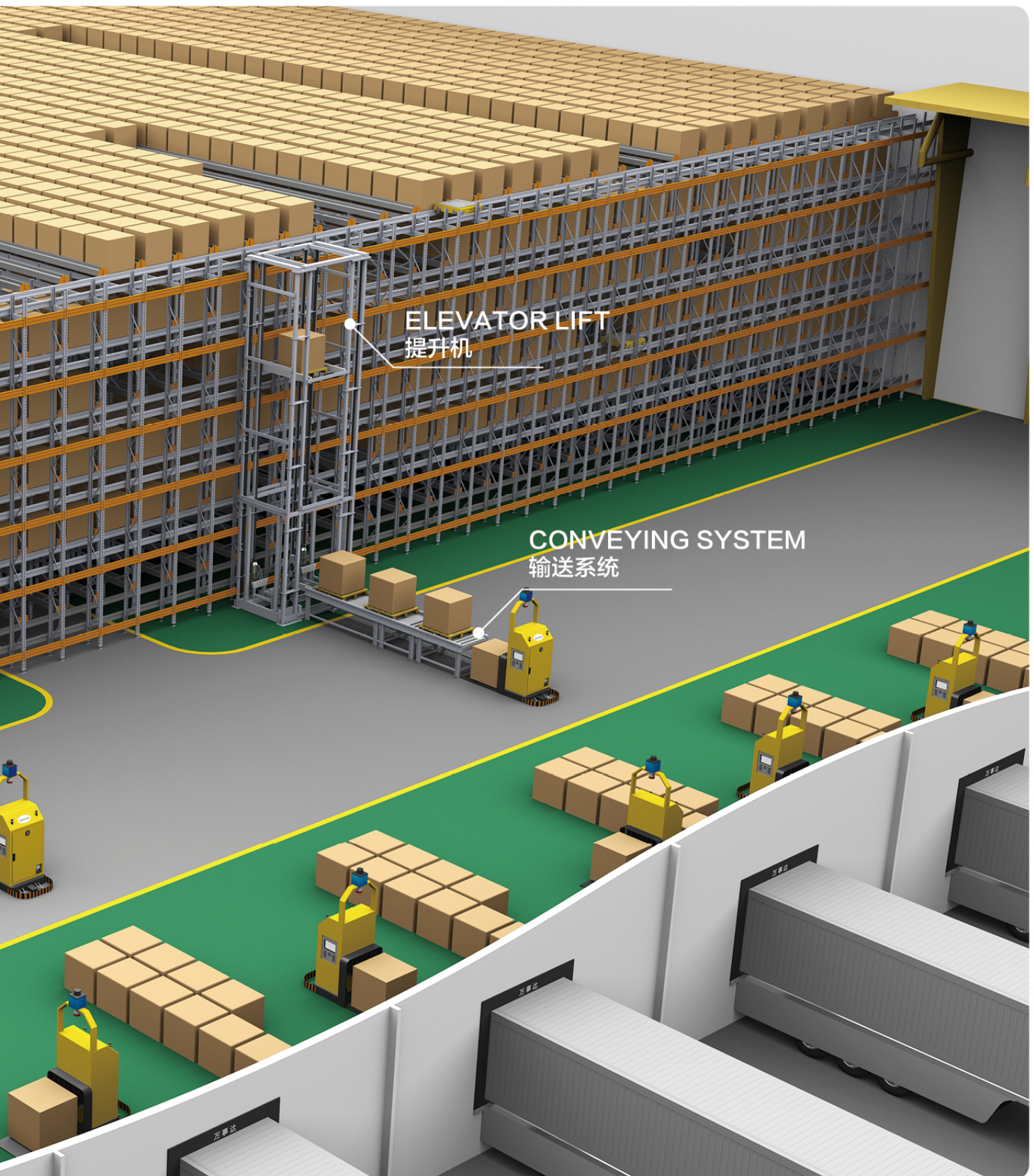
FOUR-WAY SHUTTLE  
四向车

RACKING SYSTEM  
货架系统



# System Aerial View

**MASTER 万事达**  
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MASTER SHUTTLE



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