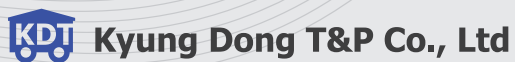


CAR PARKING SYSTEM

PRODUCTS RANGE



in cooperation with



INTRODUCITON

We, Kyung Dong T&P Co., Ltd., are one of the leading manufacturers and exporter specialized in Automated Car Parking Systems and Steel Structure Fabrication in Korea. We have a variety of experience for design, manufacturing and installation about Automated car parking system in the local projects and overseas projects.

From new designs to functions there is always something new that comes out in the market for the customers more conveniently. We are always providing parking system with newest and most advanced technical solutions based on flexibility and new ideas.

Since these systems are modular, they can be adapted to many different spaces. Automated car parking system uses height, width and depth more efficiently than conventional garages.

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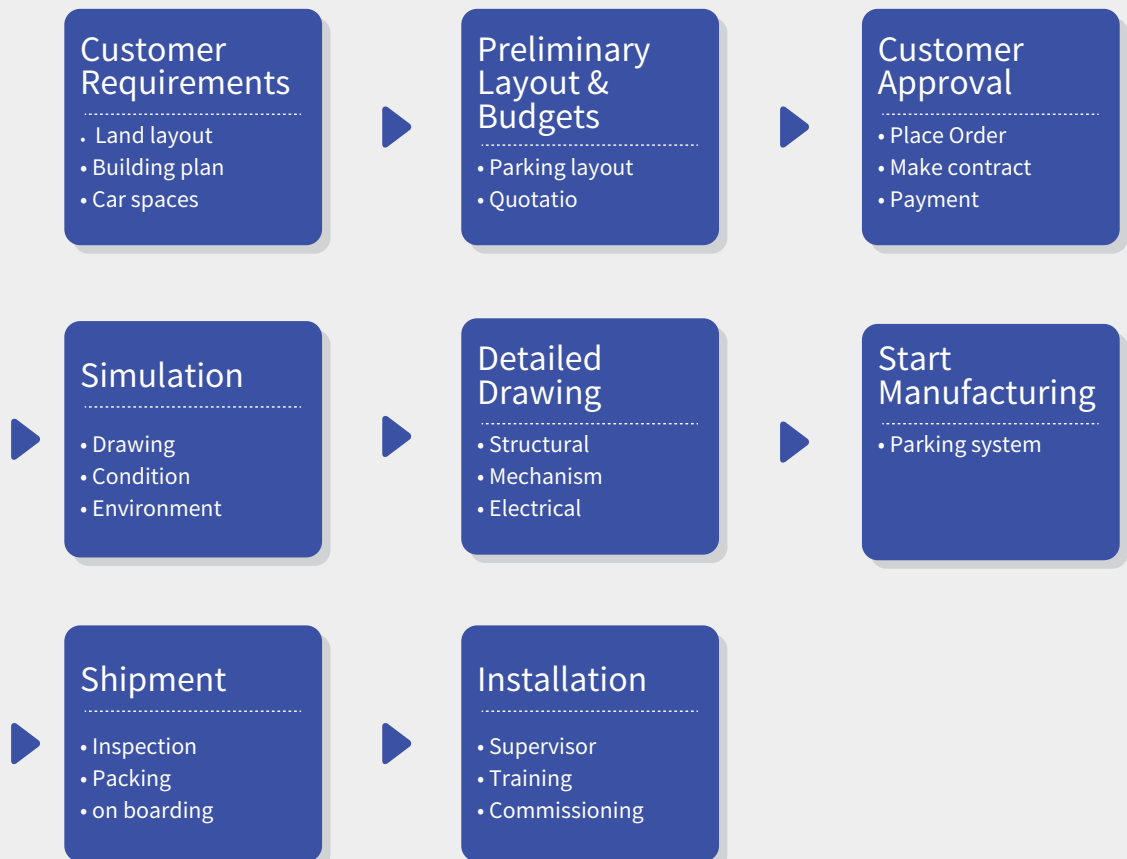
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02. | Features of Automated car parking system
03. | Business Process
04. | Cost comparison by type of Parking Garages
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 - Cart Parking System
 - Square Parking System
 - Puzzle Parking System
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Features of Automated car parking system

- Park More Cars in Less Space
- Keep Costs Down for the Facility
- Design Flexibility for Parking System
- Custom Design for Parking System
- Reduced Damage of Car
- No Stairs and No Ramps
- Reduced Pollution- Less Carbon Emission
- Enhanced Safety and Security for Car
- No HVAC - No need to be Heated, Ventilated and Air-Conditioned

Business Process



04

Cost comparison by type of Parking Garages

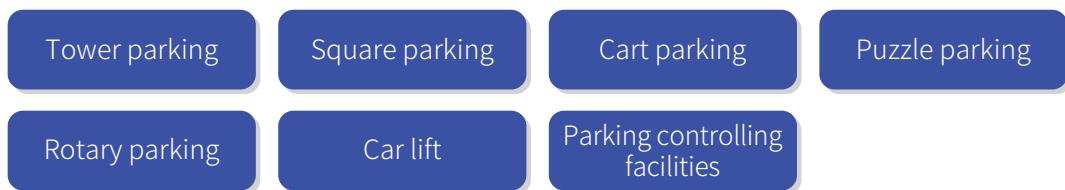
(Based on 200 car spaces)

Classification	Surface Parking	Conventional Parking	Automatic car parking
Type of Parking Garage	Ground Parking	Ferro-concrete type, 4 floor	50 car spaces x 4 Towers
Parking Area Required (m ²)	4,800 m ²	6,400 m ²	4,400 m ²
Height for Parking structure (m)	2.5 m	12 m	50 m
Land dimension for Parking Garage (Width x Length)	80 m x 60 m	40 m x 40 m	12 m x 30 m
Land area for Parking Garage (m ²)	4,800 m ²	1,600 m ²	360 m ²
Land Cost (Based on US3,000\$/m ²)	US14,400,000\$	US4,800,000\$	US1,080,000\$
Construction Cost	None	US6,500,000\$	US3,000,000\$
Total Cost	US14,400,000\$	US11,300,000\$	US4,080,000\$
Average Cost per car spaces	US72,000\$	US56,500\$	US20,400\$

05

Handling Products

Automated Parking system



Free Parking Garage (Steel Frame works)

Construction method by Steel structures and Floor Deck

Steel Structure Fabrication





06

Classification of Automated car Parking System



Tower Parking System

The Tower Parking system is designed to automatically move the vehicles on a pallet vertically on the Car Lift, then it is moved horizontally left or right for storage. Very fast retrieval time is accomplished in less than two minutes. This system is suitable for medium or large scale buildings. It can also be used as a stand alone tower for a parking garage business. Since it is controlled by an integrated computer system, the overall operation can be viewed with touch screen

Key Advantages

- Tower Parking System for parking of vehicles up to 50 levels height
- It requires a small land foot print, 7m (width) x 7m (length) x 50m (Height) to accommodate 50 car spaces
- Completely equipped with multiple sensors and multiple safety devices.
- A self malfunction diagnostic control provides you with an excellent level of safety
- Change the direction of car by built-in turntable automatically so that the driver can retrieve the car to forward movement.
- Easy maintenance

Standard Specification

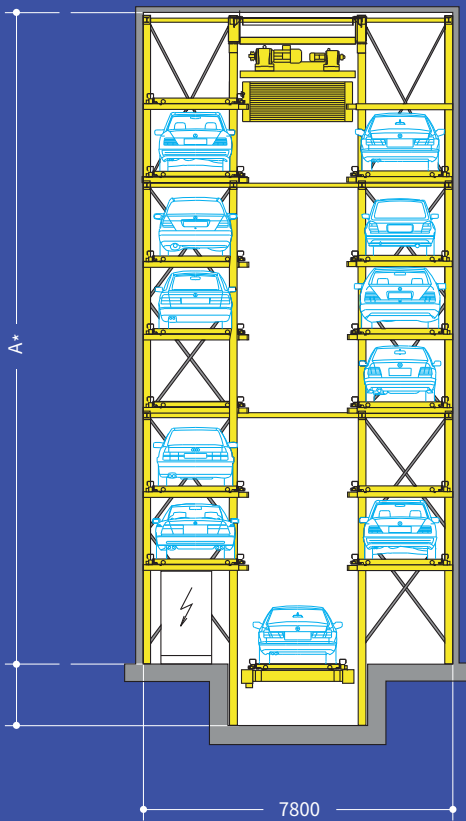
Category		Specification
Capacity		50~ 20 car spaces
Allowable car and parking zone States	Length(mm)	5,200
	Width(mm)	2,150
	Height(mm)	Sedan 1,600/ SUV 1,900
	Weight(Kg)	2,200
Lift Driving	Motor	30Kw
	Transmission	Wire Rope
	Speed	60 m/min
Slide Driving	Motor	1.5kw
	Transmission	Chain
	Speed	30m/min
Turntable	Motor	1.5kw
	Transmission	Gear
	Speed	1.5 RPM
Operation and Control		Touch Screen, PLC Control and AC Inverter
Safety Devices		Guide Lamp for Entry, Photo Sensors & Limit switches for Safety, Magnetic Sensors, Emergency Stop Switch
Entrance Door		Up Sliding Door

06

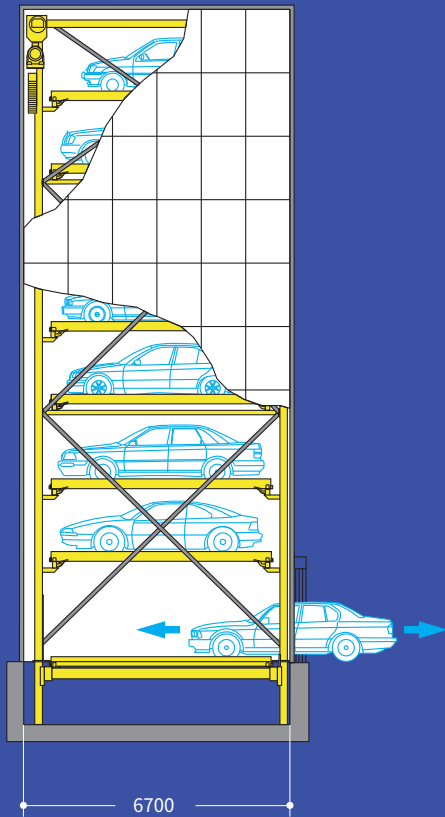
Classification of Automated car Parking System

Dimension

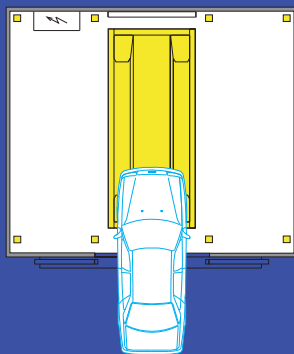
Front Plan



Section Plan



Entrance Plan



unit: mm

Capacity(SUV)	20 cars	30 cars	36 cars	40 cars	50 cars
Height (A*)	27,000	37,500	43,800	48,000	58,500
Capacity(sedan)	20 cars	30 cars	36 cars	40 cars	50 cars
Height (A*)	22,300	30,550	35,500	38,800	47,050



06

Classification of Automated car Parking System



Cart Parking System

The Cart type Auto Parking System has been designed to automatically move the vehicle by Car Lift vertically which then transfers it to a waiting Cart Device on one of the multi-levels. Then the CART DEVICE is travelled with taking vehicle horizontally and place the vehicle in its appropriate place in the Parking Slot. Cart Lifts and Cart Devices can operate simultaneously, resulting in short wait times. And should demand increase, it is also easy to expand on existing parking lots and rows.

Key Advantages

- Because the Car Lift and each of Cart Device are operated independently on each level, the parking and retrieval time is very fast
- Completely equipped with multiple sensors and multiple safety devices. A self malfunction diagnostic control provides you with an excellent level of safety and reliability
- Space of installation can select on the ground or under the ground
- It is an efficient system with minimum electricity cost as it's utilized an inverter power system
- Operation is simple and accurate.
- This system reduces the cost per unit as it maximizes the usage of allowable parking lot space.

Standard Specification

Category		Specification
Capacity		500~ 20 car spaces
Allowable car and parking zone States	Length(mm)	5,200
	Width(mm)	2,150
	Height(mm)	Sedan 1,600/ SUV 1,900
	Weight(Kg)	2,200
Lift	Motor	30~ 22Kw
	Transmission	Wire Rope
	Speed	60 m/min
Driving	Motor	1.5kw
	Speed	60m/min
Shifting	Motor	1.5kw
	Speed	45m/min
Operation and Control		Touch Screen, PLC Control and AC Inverter
Safety Devices		Guide Lamp for Entry, Photo Sensors & Limit switches for Safety, Magnetic Sensors, Emergency Stop Switch
Entrance Door		Up Sliding Door

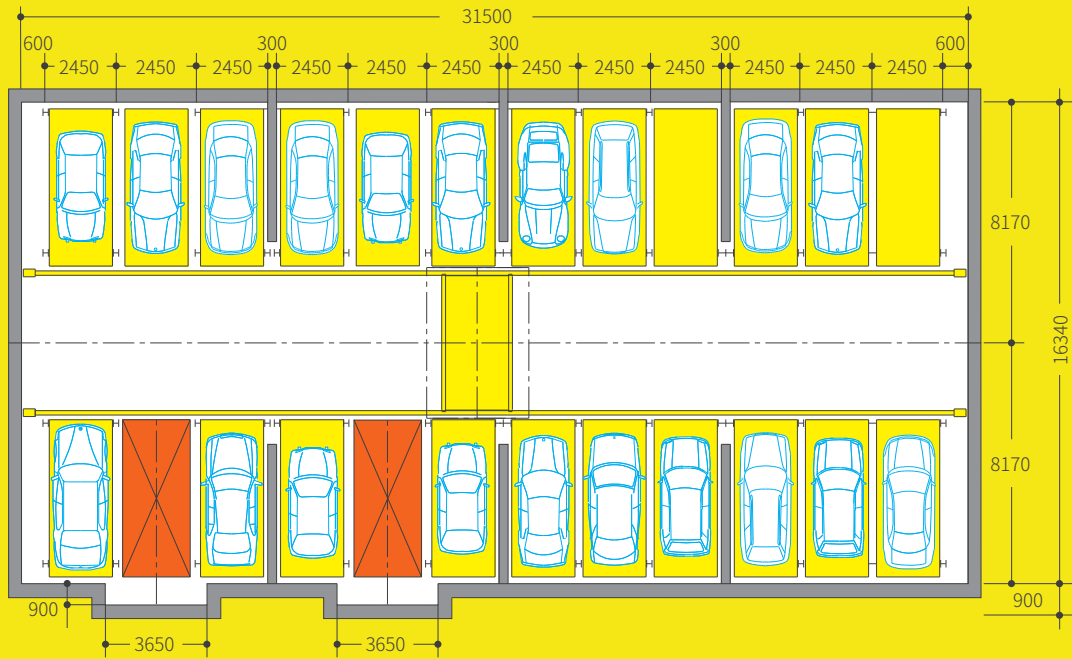
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Classification of Automated car Parking System

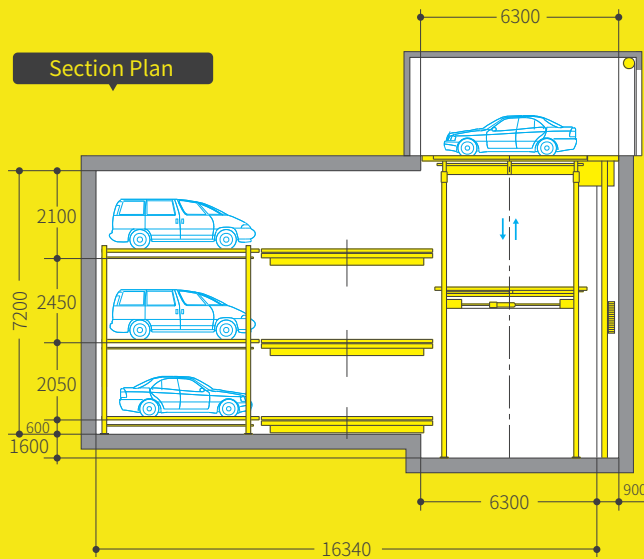
Longitudinal Type

Dimension

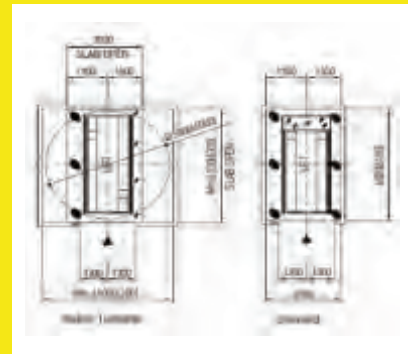
Typical Floor Plan



Section Plan



Entrance Plan



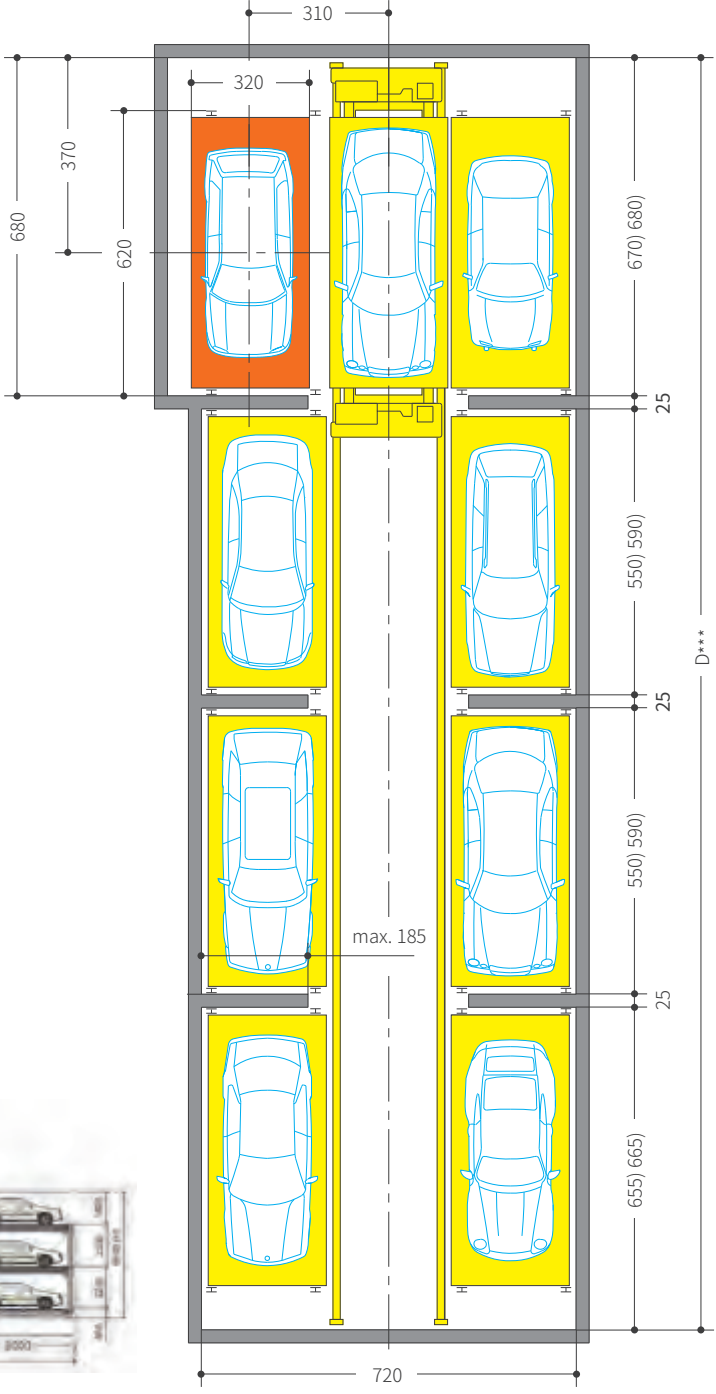
06

Classification of Automated car Parking System



Traversal Type

Typical Floor Plan



Section Plan



06

Classification of Automated car Parking System



Square Parking System

The Square Parking system has been designed to automatically move the vehicles by elevating pallets vertically with lifters on both sides and circulating pallets continuous horizontally after entering of vehicle into parking lot.

Key Advantages

- This parking system is provided higher efficiency to be suitable for small and medium scaled building's underground area
- Entry and exit is very quick and convenient. We incorporate a built in turntable on lifter
- Completely equipped with multiple sensors and multiple safety devices
- A self malfunction diagnostic control provides you with an excellent level of safety and reliability
- According to the position of entrance and exit, it can be divided 'Top Drive-in, Direct Drivein and Built-in Turntable' type

Standard Specification

Category		Specification
Capacity		50~ 20 car spaces
Allowable car and parking zone States	Length(mm)	5,200
	Width(mm)	2,150
	Height(mm)	Sedan 1,600/ SUV 1,900
	Weight(Kg)	2,200
Lift	Motor	15Kw
	Transmission	Chain
	Speed	20 m/min
Horizontal	Motor	3.7kw
	Speed	20m/min
Operation and Control		Touch Screen, PLC Control and AC Inverter
Safety Devices		Guide Lamp for Entry, Photo Sensors & Limit switches for Safety, Magnetic Sensors, Emergency Stop Switch
Entrance Door		Up Sliding Door

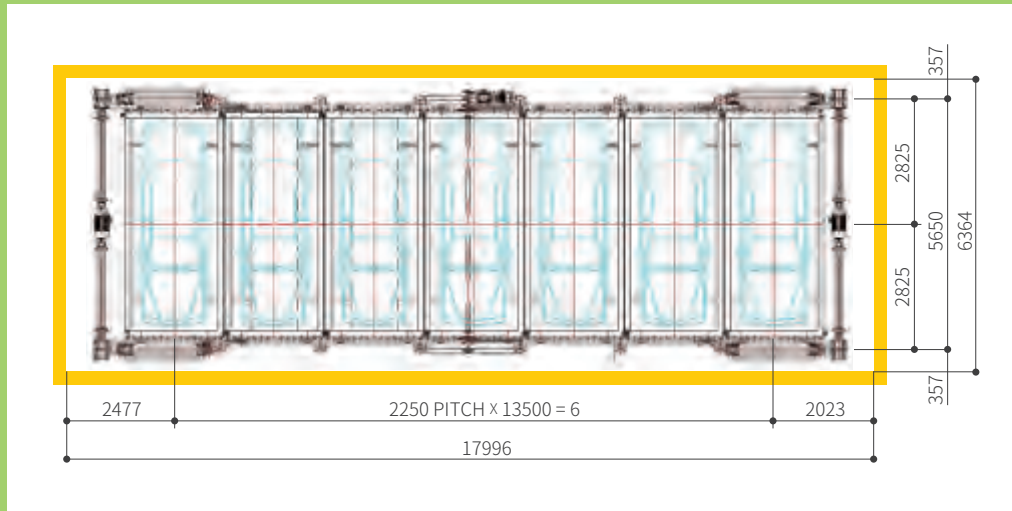
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Classification of Automated car Parking System

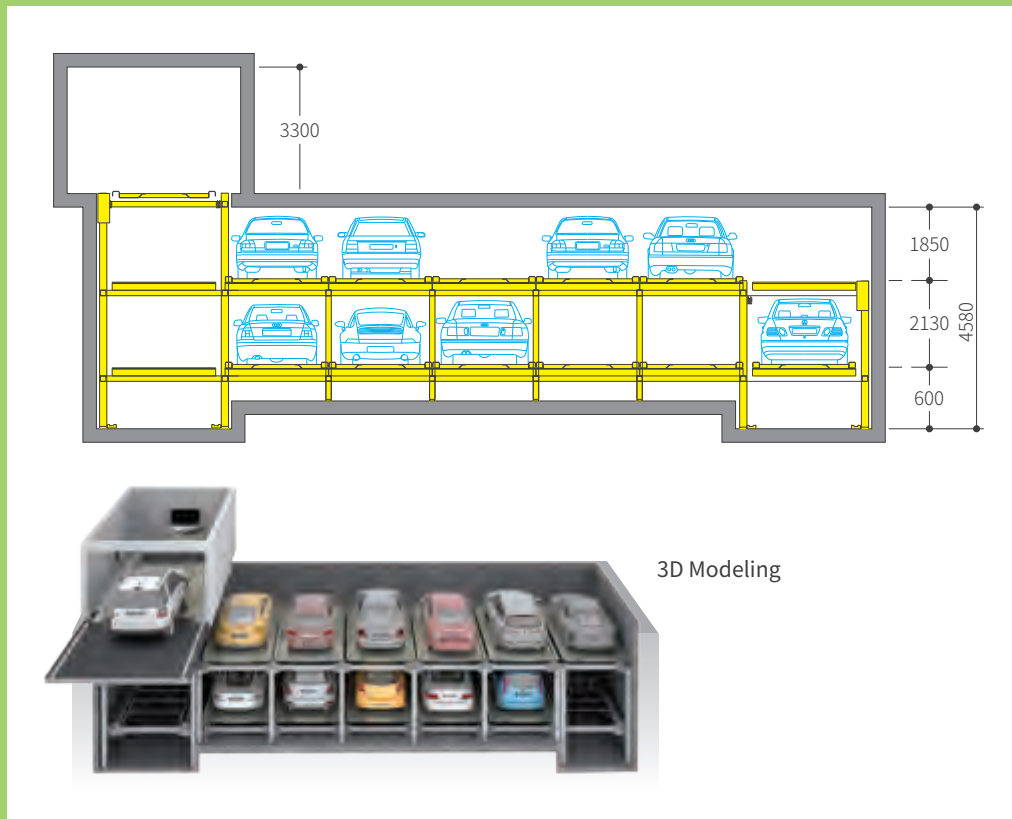


Dimension

Typical Floor Plan



Section Plan



06

Classification of Automated car Parking System



Puzzle Parking System

Puzzle Parking System is independent parking and its features is quick installation, easy operation and maintenance. Entrance level pallets move sideways and upper level pallets move vertically, with always one pallet less at the entrance and middle levels.

To collect a car parked on the upper level, the pallets at the entrance level will first move to one side to provide an empty space into which the required Pallet is lowered or raised. Max time to retrieve cars is 60 second with 3 & 2 high systems and 90 second with 5 & 4 High systems.

Key Advantages

- This system is suitable for use for parking within buildings at both above and below ground level
- Office, Residential, Commercial Parking, Park and Ride and other such like facilities in both above and below ground applications use Multi-Stage Automated Parking Systems
- The space required per vehicle is minimized as no ramps are required
- The system is designed to meet the space available and maximize the parking capacity
- The Multi-Stage system is tried, tested, well proven and very reliable with a large number of reference sites available.

Standard Specification

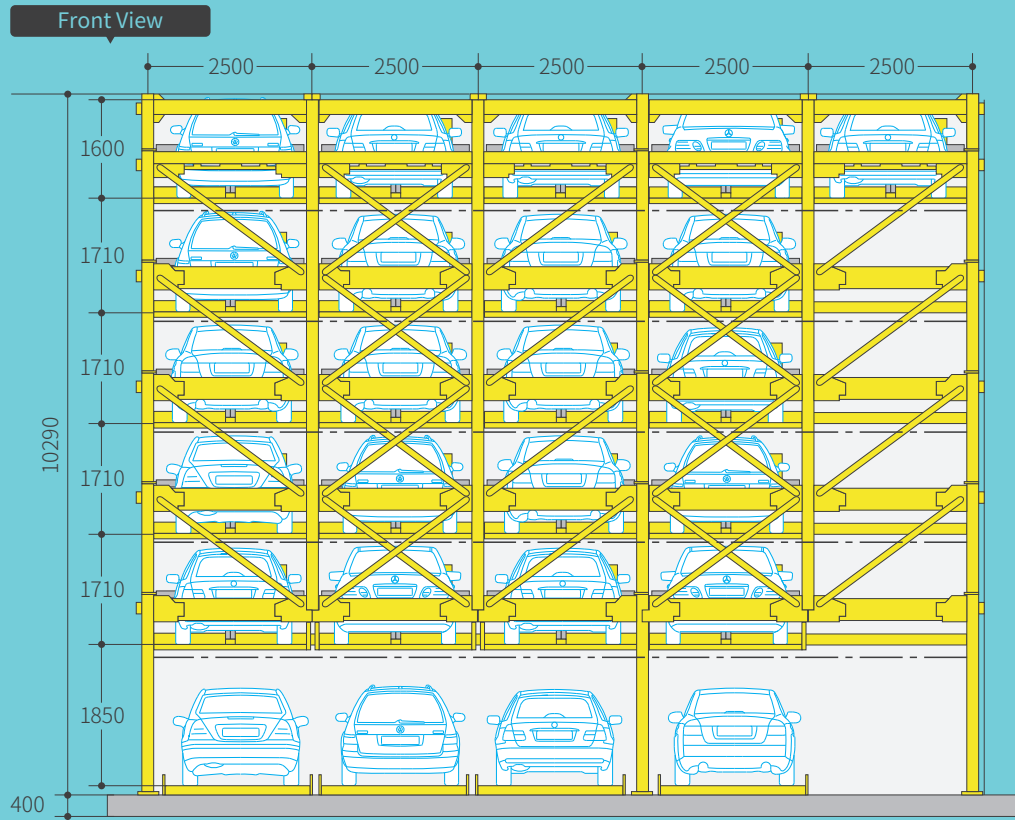
Category		Specification
Capacity		50~ 3 car spaces
Allowable car and parking zone States	Length(mm)	5,200
	Width(mm)	2,150
	Height(mm)	Sedan 1,600/ SUV 1,900
	Weight(Kg)	2,200
Lift (5~ 2 Level)	Motor	3.7Kw
	Transmission	Wire Rope
	Speed	6.5 m/min
Horizontal(4~1Level)	Motor	0.4kw
	Speed	8m/min
Operation and Control		Touch Screen, PLC Control
Safety Devices		Guide Lamp for Entry, Photo Sensors & Limit switches for Safety, Magnetic Sensors, Emergency Stop Switch

06

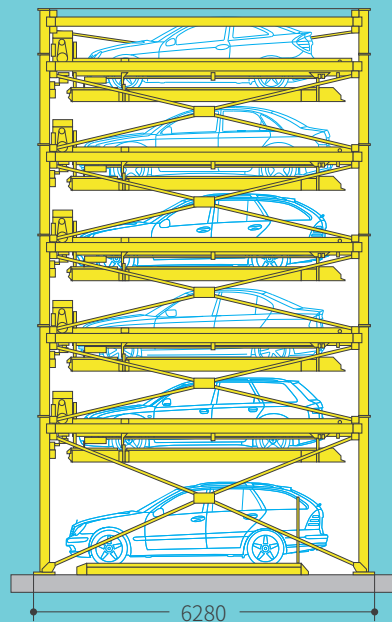
Classification of Automated car Parking System



Dimension



Side View



06

Classification of Automated car Parking System



Rotary Parking System

Rotary Parking System is designed to permit up to a maximum of 16 cars to be parked easily and safely, on the surface area required to park 2 cars.

Rotary Parking System circulates the pallets vertically in which the cars are taken up and down by big chain.

The system is provided with auto guidance system and multiple safety sensors.

■ Key Advantages

- Quick Automated Parking and retrieval of vehicles
- Up to 16 cars can be easily and safely parked
- Surface space required equivalent to just 2 surface car parking spaces
- It can be built-in turntable in the system
- Low maintenance levels required by the system
- This system is cost effective when extra land for surface parking is not available
- Safety is ensured by use of a parking safety zone and multiple safety sensors

■ Standard Specification

Category		Specification
Capacity		16~ 8 car spaces
Allowable car and parking zone States	Length(mm)	5,200
	Width(mm)	2,150
	Height(mm)	Sedan 1,600/ SUV 1,900
	Weight(Kg)	2,200
12 ~ 8 car spaces	Motor	7.5Kw
	Transmission	Chain
	Speed	4.5 m/min
16 ~ 14 car spaces	Motor	5.5kw x 2 sets
	Transmission	Chain
	Speed	4.5m/min
Operation and Control		Touch Screen, PLC Control
Safety Devices		Guide Lamp for Entry, Photo Sensors & Limit switches for Safety, Magnetic Sensors, Emergency Stop Switch

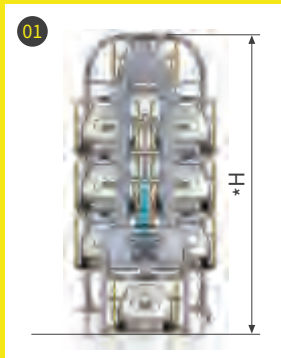
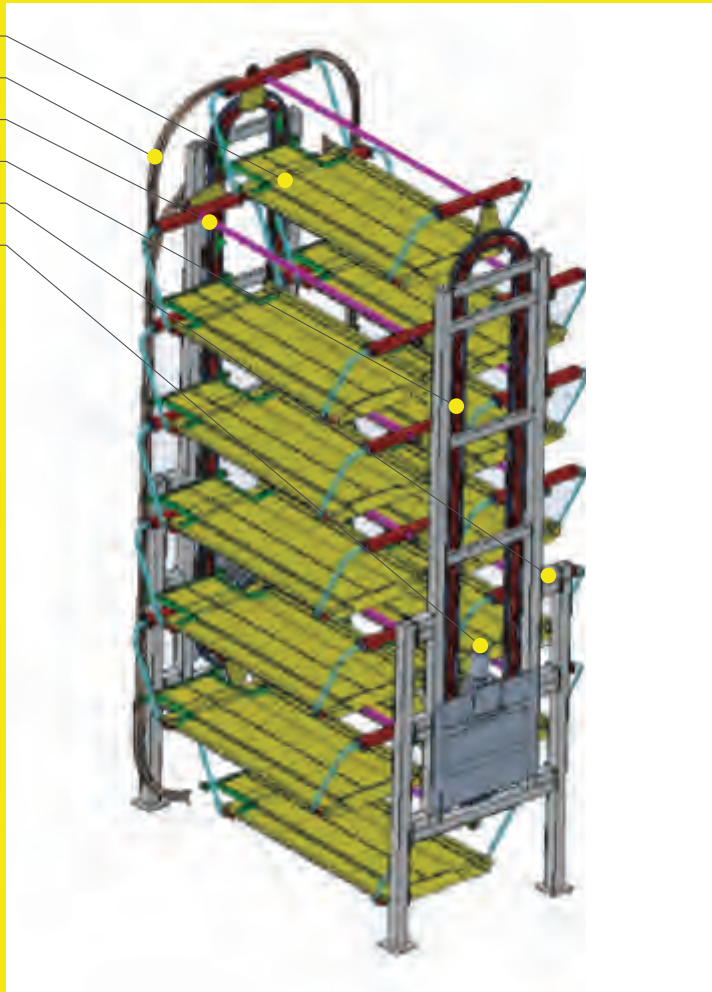
06

Classification of Automated car Parking System



Dimension

- Pallet
- Pallet Guide
- Pallet Hanger
- Driving Chain
- Main Frame
- Driving Parts



Type	Height (*H)	Type	Height (*H)
Sedan8- cars	9,600	SUV8- cars	11,330
Sedan10- cars	11,380	SUV10- cars	13,460
Sedan12- cars	13,160	SUV12- cars	15,590
Sedan14- cars	14,950		
Sedan16- cars	16,730		

- 01 01 Front View
- 02 02 Section View
- 03 03 Entrance Top View

07

Parking Garage by Steel Structures



The steel bearing structure consists of vertical columns and horizontal beams, usually connected by bolt and nut. The horizontal forces due to wind and breaking of cars are transferred horizontally through the floor slabs to the vertical wind bracings or shear walls.

In multi-storey car parks, the outer columns are spaced at intervals corresponding to the width of one or more parking spaces (units of 2.30m to 2.50 m). Where the spacing between two columns exceeds 5 m, secondary beams are foreseen between the columns

Ideally, the distance between columns should correspond to the one of the main

girders in order to avoid secondary beams, thus optimizing the weight of the steel structure.

An optical delimitation of the parking spaces is obtained when the distance between columns coincides with the border width of each parking space.

Steel structures in car parks are flexible and allow to easily adapt the size of the building to new needs without generally disturbing the operations within. Provided an appropriate design, steel structures can also be dismantled after a given period of time for reconstruction at a new site.



Key Advantages

- Reduced weight of the structure
- Insensitivity to settlements
- Elastic deformation behavior
- Hinged simple supports
- Economical
- User-friendly
- High sense of security for users
- Short construction times
- 100 % recyclable
- Expandable
- Various uses
- Esthetical design
- Reusable

Result in simplified flat foundations. They also may make deep foundations unnecessary. In case very weak sub-soils require deep foundations for controlling the settlements, the design of lightweight steel structures leads to reduced pile lengths.

It is a good procedure to wait with the tender until the type of bearing structure is fixed in order to take full advantage of the reduced costs of foundations associated with light steel structures.

Optimized car park layout

- Parking lot width: 2.5 m
- Parking lot length: 5.3 m
- Drive way width: 6.5 m
- Ramp slope: 12 %
- Max. car weight: 2,500kg
- Min. clearance height: 2.10 m



07 Parking Garage by Steel Structures



■ Floor Deck Panel

01 Expendable Metal-Mesh Panel

The features are as follows

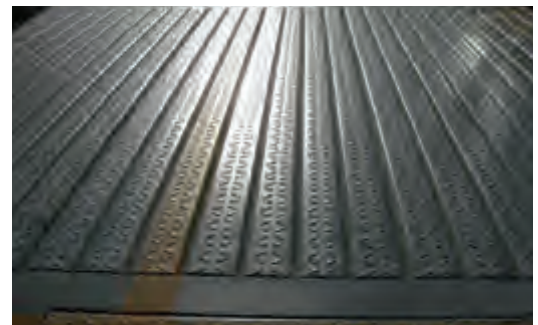
- 1 Non-Slip : The Car Tiers is non-slipped from the surface of metal panel because it is metal mesh even though it is rainy and have snow.
- 2 Pass the snow and rainwater: Even though it has snow and rainy, it is passed through the Metal mesh. Therefore, the snow or the rainwater is not covered on the floor.
- 3 Well-lighted materials: The sunlight is passed through the Metal mesh. The panel is welllighted and well- ventilated.
- 4 This panel use for Car Corridor (passage) and Ramp.



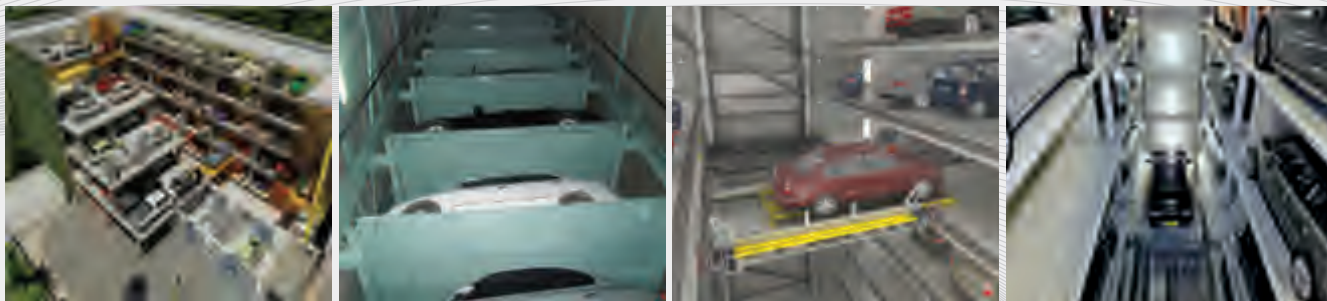
02 Galvanized-Steel Panel

Galvanized-Steel Panel

- 1 This panel is galvanized Steel plate.
- 2 The quality and the durability is very good
- 3 The surface of panel is been embossing for non-slip.
- 4 This panel use for Parking slot or pedestrian passageway.







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