



TOP 10 MOST FREQUENTLY ASKED QUESTIONS ABOUT ROBOTIC PARKING SYSTEMS

As cities become denser, and land cost rises, architects and developers are more often looking to Robotic Parking to save space and reduce overall development costs. Many of the same questions arise, so we've compiled for you a list of the top 10 most frequently asked questions and their answers.

1. How much does a Robotic Parking System cost per parking space and how does this compare with a conventional concrete ramp style garage?

The cost per space of the Robotic Parking System depends on three factors: a) the size and the layout of the property, b) the total number of parking spaces needed and c) the required speed of the system. These three variables are of equal importance in the equation when estimating project costs.

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Overall development cost, not construction cost, is the most important factor. A Robotic Parking System will ALWAYS result in lower development cost / capital expenditure and generate a higher return on investment as compared to a conventional parking garage in any urban setting.* This cost comparison is covered in more detail in [ParkSmart – Issue 27](#).

Recent turnkey prices have ranged from an average of \$15,000 to \$30,000 per space for a mid-size garage.

There is a very large difference between pricing for a fully turnkey robotic garage as compared to pricing for just the automated system. You should make sure you understand exactly what is included in any price quotes you receive.

Taking the average turnkey construction cost of a Robotic Parking System of \$22,000 per space and factoring into the equation the reduced cost of land (or alternately the floor area gained), the adjusted actual construction cost can be as low as \$10,000 to \$16,000 per space depending on the value of the land and/or floor area.

* Urban setting is defined as anywhere the land price is above \$80 USD / SF. (Source: Professor Dr. D. Sollohub of Rutgers University)

2. How much space can I save by using a Robotic Parking System?

Robotic Parking Systems use an average of 50% less land area for the same amount of parking as compared to conventional concrete ramp style garages.

The compact Robotic Parking System allows increased use of land to maximize revenues. And, if space is at a premium, a project can even become viable by using automated parking to gain a higher density of parking on less land.

3. How long does it take to retrieve a car from the automated parking garage?

The time it takes drivers to retrieve their car depends upon where the car is parked inside the system; however, the minimum time needed is 1 minute, and the maximum time is 3 minutes. But, this is not the most important factor.



Photo Gallery

[Click to see photos of projects, machinery and equipment, shipments and more.](#)

Security and Safety

These photos from a Robotic Parking System show an example of the well lit Entry / Exit terminals during the day as well as at night. It's easy to see that the terminal is free of intruders before you get out of your car. The system eliminates the need to wander through rows of vehicles or levels of parking decks.





Much more important is the peak traffic capacity (or throughput) of the system. This means how many cars can be processed in a given time frame, let's say in 30 minutes. If 10 customers retrieve their car at the same time, how long does customer number 10 have to wait until he gets his car? This is the critical point in designing an automated parking system and in the daily operation of the facility. Robotic Parking Systems custom designs each facility to match the peak traffic capacity needed based on the project use and the requirements of the owner. The traffic flow designed ensures that there are no queues of cars waiting to park or people waiting to retrieve their cars.

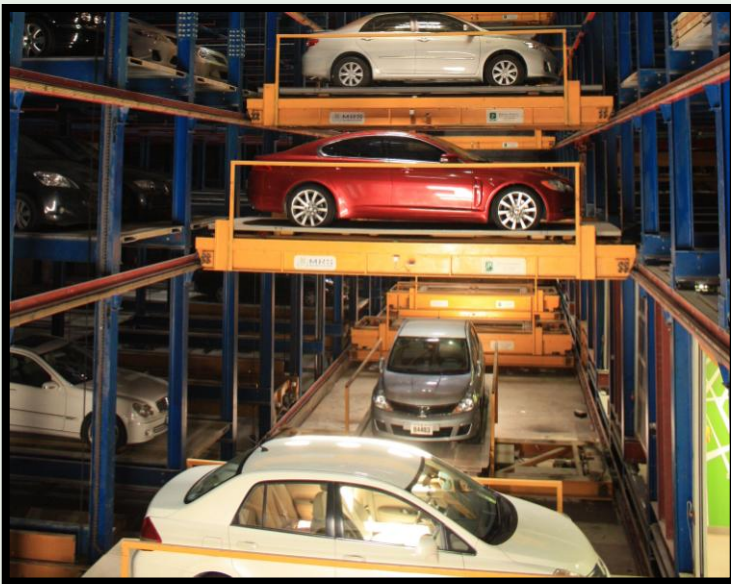
4. How long does it take to build a Robotic Parking System?

The time it takes to build a turnkey Robotic Parking System depends on the size of the project; however, it can typically be completed between 10 to 14 months.

5. What happens if the electrical power to the garage goes down?

Robotic Parking Systems are equipped with a stand-by generator with sufficient capacity to store and retrieve cars if or when the electrical power is down. An automatic transfer switch ensure a seamless transition to stand-by power within 6 seconds.

6. How reliable is a Robotic Parking System? Can a car get stuck?



Robotic Parking Systems Inc. has more than 15 years of experience designing, building and operating our Robotic Parking garages. The entire system was designed from the very beginning to overcome any possible machine failure so that cars can be retrieved no matter what. This design point is represented in the system architecture, its redundancies and flexibilities.

Plus, our long track record in day-to-day operations of automated parking garages has given us more insight and experience than any other company in the US.

An expert technology auditor (as part of a due diligence investigation on the Robotic Parking System) had this to say about the system's reliability:

- Operational safety two fold on each logical level: software and hardware.
- Full redundancy by using at least two identical machines per geographical area.

- Hot swappable redundant servers supported by UPS and generators.
- Several manual operation stations available for different machines.
- Flexible definition of Entry / Exit Terminals indicated by traffic light that can be changed on the fly.
- Service plan based on threshold values for each component.
- System is very solidly designed with lots of redundancy.
- Highly redundant, cleverly designed system with good traceability.
- Best practice compliance.
- Mature, extensible system: over 15 years of experience with system design and operations

7. What happens if the computer that runs the garage crashes?

Robotic Parking Systems’ servers are not only equipped with UPS (Uninterruptable Power Supply), but also with a true hot swappable redundant server that has all information instantly available to continue operation on the fly.

GE recommended [Stratus ftServer systems](#) to Robotic Parking Systems as the ideal hardware platform to host their CIMPLICITY software. These servers support mission-critical applications around the world, delivering better than 99.999 percent uptime guaranteed in 24/7 operation. In 2010, for example, the average downtime of an ftServer unit across the entire installed base was just 62 seconds.

The stand-by generator installed with every Robotic Parking System acts as another layer of protection to ensure the smooth operation of the computer and software.

8. What fire codes apply to the Robotic Parking System? Is special fireproofing required?

Robotic Parking Systems Inc. fully complies with the codes outlined in the New 2011 Edition of NFPA 88A: Standard for Parking Structures. NFPA codes address fire fighting, fire alarms, standpipes, escape routes and ventilation requirements. Chapter 9 of this edition covers definitions and requirements for the new genre of parking structures termed “Automated Mechanical Type Parking Structures.”

We have detailed information on how Robotic Parking Systems complies with NFPA 88A in a 4-part series in our Park It Here blog. Just click on the links below for more information:

[Part 1](#) | [Part 2](#) | [Part 3](#) | [Part 4](#)

Flexible Façade

Here are examples of a few of the types of façades that can be attached to a Robotic Parking Systems’ structure.



The new NFPA codes along with the additional steps our company takes to fully extinguish any potential fires alleviate any possible concerns related to fire safety.

9. What makes a Robotic Parking System more “green” or environmentally friendly?

Robotic Parking Systems offers a more eco-friendly parking solution by:



- Using 50% less space to park the same number of cars as a conventional garage. The amount of land used affects sustainability issues such as development density and maximizing open space. Architects and developers can now use less space for parking and incorporate more green space and open areas to meet certification requirements.
- Reducing the traffic congestion and accompanying pollution. Studies* have reported that 30% to 50% of traffic congestion in city centers is generated by drivers searching for a parking space. The high-speed, efficient automated parking system ensures that even the largest parking design can be made smaller while still ensuring fast retrieval times for clients.

A report from IBM Global Business Services stated that congestion costs up to 4% of GDP. Additionally, the report went on to say, "In the US, congestion in urban areas results in annual costs of 4.2 billion hours of wasted time and US \$87 billion from wasted fuel and lost productivity."

* (1) Don H. Pickrell, Chief Economist at D.O.T, Volpe Institute, Cambridge, MIT [issued in the Spring Edition of ULI's "Smart Growth" program 1999], (2) included in studies by Boston College, MIT, Transportation Alternatives, (3) IBM Global Parking Survey September 2011, (4) IBM Global Business Services Executive Report.

- Reducing pollution inside the garage by using electromechanical automated parking machinery to move cars into parking spaces. No cars run inside the garage, and there is no driving up and down ramps and through aisles in search of a space. This significantly reduces the emissions of harmful gases, reduces the carbon footprint, increases carbon credits and ensures an environmentally clean parking facility.

Did you know that tire and brake dust pollutants are more toxic than all the exhaust related emissions? In a 750 space Robotic Parking System 37 tons of tire dust and 3.7 tons of brake dust pollutants are eliminated by using electro-mechanical machinery to move cars inside the garage.



A review of LEED for New Construction & Major Renovations indicates that a project which includes a Robotic Parking System could receive at least 10 points and as many as 17 points toward certification. Some of the areas that can earn points are:

- Innovation in design
- Maximize open space in site development
- Lighting
- Thermal comfort
- Chemical and pollutant
- Low emitting materials
- Air quality
- No A/C
- Optimize energy performance
- Atmosphere
- Light reduction
- Preferred 5% parking
- Shared vehicle storage
- Bike storage on pallets
- Energy consumption - gas saved

10. Does the façade and roof need to be self supporting or can they be connected to the Robotic Parking System structure?

The façade and roof can be attached to the Robotic Parking System steel or concrete supporting structure and do not need be free standing. However, special connection details must be followed.

Any type of façade can be used whether it's half-timbered, brick, aluminum, concrete or glass. This allows architects a free hand in designing the external appearance of the facility to fit the architectural detail of the project or area.

If you have additional questions, just [contact us](#). We would be happy to help.

[Learn more about Robotic Parking Systems.](#)



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Call us today for more information on how Robotic Parking Systems can help you create space for design, green space, or more revenue.

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