

VAUGHAN METROPOLITAN CENTRE SUB-COMMITTEE - NOVEMBER 13, 2013**TECHNOLOGIES AND SOLUTIONS FOR PROVISION OF PARKING****Recommendation**

The Director of Economic Development, in consultation with the Executive Director, Office of the City Manager recommends:

1. THAT the presentation: *"From Macro to Micro: An Overview of the Automated Vehicle Storage Characteristics"* by Unitronics Parking Solutions Inc. be received.

Contribution to Sustainability

Green Directions Vaughan embraces a *Sustainability First* principle and states that sustainability means we make decisions and take actions that ensure a healthy environment, vibrant communities and economic vitality for current and future generations. Under this definition, activities related to economic development contribute to the sustainability of the City.

Economic Impact

There are no costs associated with the approval of this report.

Communications Plan

The presentation materials will be available in hard copy format and distributed to Mayor, Members of Council and Senior Management. Additional "hard" copies will be available upon request. Copies of the presentation will be provided to the landowners and developers of the Vaughan Metropolitan Centre, as well as Planning, Urban Design and Engineering staff.

Purpose

To provide the members of the VMC Sub-Committee with an insight into alternative parking solutions available to landowners and developers. The presentation will increase awareness of technologies which can serve to provide more efficient parking solutions to meet the needs of building the VMC. The automated parking systems developed by Unitronics, serves as great example of innovation and forward-thinking in addressing urban challenges faced by municipalities. These systems have multiple benefits for building owners, and property management groups, and they can assist municipalities to achieve sustainability and economic development objectives.

Background - Analysis and Options

The City of Vaughan's new downtown, the Vaughan Metropolitan Centre (VMC) is an urban growth centre, a regional mobility hub, and a higher order employment centre, where head offices, the technology sector, and emerging creative and knowledge economy can thrive. It is envisioned that the VMC will be a 'complete' downtown, where a variety of uses are accommodated in a highly urbanized setting, that is also pedestrian-friendly and transit-supportive. The VMC Secondary Plan policies entertains transit-supportive parking standards that include exemptions to in-force parking standards, shared public parking arrangements, as well as modified parking arrangements – more underground and parking structures, and fewer surface parking spaces.

During the City of Vaughan's 2013 Business Mission to Israel, City Staff met with Unitronics Parking Solutions Inc., a leader in process automation systems for diverse industrial sectors, based in Jerusalem. A market leader in providing Automated Parking Solutions, Unitronics is a publicly traded company listed on the European Euronext Stock Exchange (1999) and the Tel Aviv Stock Exchange (2004). With more than 20 years of operation, they have established an operational and sales network of 140 integrators/distributors in approximately 50 countries.

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Unitronics' Automated Parking Solutions division designs and develops automation systems for the efficient storage of motor vehicles. Unitronics can provide building developers and owners with turnkey solutions that include: traffic and parking surveys, conceptual solutions and design, detailed engineering, construction, installation, implementation, operation and maintenance. GREEN solutions and LEED certification are major factors in Unitronics' Automated Parking Solutions designs.

Automated parking systems may accommodate dozens of parking spaces. Particular advantage is gained when a typical ramp-access garage will not provide adequate parking capacity due to height or depth limitations. The total required volume (footprint and height or depth) of an automated parking system is about 30 percent to 50 percent of a conventional self-park garage with the same capacity - that means two to three times more parking spaces in the same volume. Among the main benefits:

- **Increased Capacity:** an automated parking system can accommodate two to three times the amount of parking spaces within the same volume as a conventional self-park, ramp access garage. This results mainly from:
 - **Reduced Space Width** – automated parking systems utilize narrower space than self-park garages due to the precision of the computer-controlled automated vehicle conveyor
 - **Lower Ceiling Height** – ceiling height does not have to take pedestrians into consideration, saving 30-50% in height requirements
 - **Dense Parking** – density is increased by storing the cars door-to-door and bumper-to-bumper, keeping a minimal clearance between them.
- **Minimal Ventilation** – Since the storage area is not accessed by the public and cars are stored with their engines stopped, there is no need for heat or air-conditioning, saving utility costs. Minimal ventilation is required.
- **No Public Stairs or Elevators** – Since the storage area is not accessed by the public, stairs or elevators are not required and only emergency and maintenance access is provided for authorized personnel.
- **Reduced Lighting** – Lighting is required only for emergency or maintenance purposes, thus saving utility cost.
- **GREEN Parking Solution** – Reduced car emissions, reduced fuel consumption and low power consumption contribute toward a GREEN parking solution.
- **Enhanced User Experience** – Comparable to a high quality valet parking operation, replacing valet runners with efficient automated machinery.
- **Enhanced Safety and Security** – Drivers are not required to park, reducing the risk of collision and damage to vehicles. The storage area is not accessed by the public and therefore it is totally secure.

The Context of the VMC

The first development projects in the VMC have provided some valuable insights on the physical site limitations that impact the development of underground structures. The high groundwater table beneath certain subject lands in the VMC creates some challenges, limiting the depth and cost-effectiveness of subsurface parking and increases costs for every subsequent level of parking below grade. City Staff is working with the development industry to explore a myriad of approaches to address the parking needs of VMC residents, office and retail tenants while protecting green spaces and developable lands, and thus making more efficient uses of resources.

The Automated Parking Solutions developed by Unitronics can serve as examples of innovative solutions to parking challenges faced by developers and builders in meeting municipal standards. In addition to the benefits for building owners and operators, the technologies can help municipalities achieve sustainability goals, while providing economic development benefits.

While there is no question about the value of underground and structured parking, there are significant costs to its provision. As the City competes to attract office and retail tenants, parking makes up a significant portion of the total project costs, and therefore, rents. Utilizing a solution, such as Unitronics can help to close the rent gap in the VMC.

Relationship to Vaughan Vision 2020/Strategic Plan

This report is consistent with the Vaughan Vision 20|20 Strategic Plan – Goal 1: Plan and Manage Growth and Economic Vitality. The Study is also consistent with Goal 4: of the Economic Development Strategy that states “Grow Vaughan’s dynamic quality of place and creative economy”.

Regional Implications

Not applicable.

Conclusion

The development of the VMC is of critical importance to the City of Vaughan. Efficient provision of parking does have an influence on its development as a vibrant people place and employment centre, and it supports the large public investment that has gone into public transit infrastructure.

However, the physical limitations of the VMC site does present some challenges in providing underground parking, both from an Engineering standpoint as well as capital cost. To lower these and other barriers to development, and to improve the competitiveness of the VMC with other office nodes, the Economic Development Department has been proactively seeking alternate solutions and best practices. The innovative system developed by Unitronics is one such example. With a proven track record of accommodating two to three times the parking capacity, within the same volume of space as conventional self-park lots, Unitronics’ Advanced Parking Solution has the potential to address the interim parking needs of current building sites and to facilitate adjustments as future development occurs in the VMC.

These and other innovations in building development and operations will set the VMC apart. Economic Development staff will continue to work with landowners and developers to facilitate information sharing and business introductions with Unitronics and other groups.

Attachments

1. From Macro to Micro: An Overview of the Automated Vehicle Storage Characteristics Presentation
2. More Parking In Less Space, Unitronics Automated Parking Solutions Brochure

Report prepared by:

Jennifer Ladouceur, Director of Economic Development
Tim Simmonds, Executive Director, Office of the City Manager

Respectfully submitted,



Jennifer Ladouceur
Director of Economic Development

Attachment 1

From Macro to Micro: An Overview of the Automated Vehicle Storage Characteristics

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Yair Goldberg, CEO
Unitronics Systems Inc.



UNITRONICS™
PARKING SOLUTIONS

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- 1884 Earliest related patent
- 1905, Paris
- Late 1920s – 3 Dimension movements
- 1950s Portland's parking-lot mania
- 1980s Computerized, fully automated systems
- 1999 Washington, DC
- Today- About 2.5 Millions automated spaces globally



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Automated Vehicle Storage and Retrieval: Storage



Automated Vehicle Storage and Retrieval: Retrieval

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Crane

- Open aisle
- Simultaneous vertical and horizontal movement
- Pallet/Pallet less
- Redundancy challenge
- Throughput



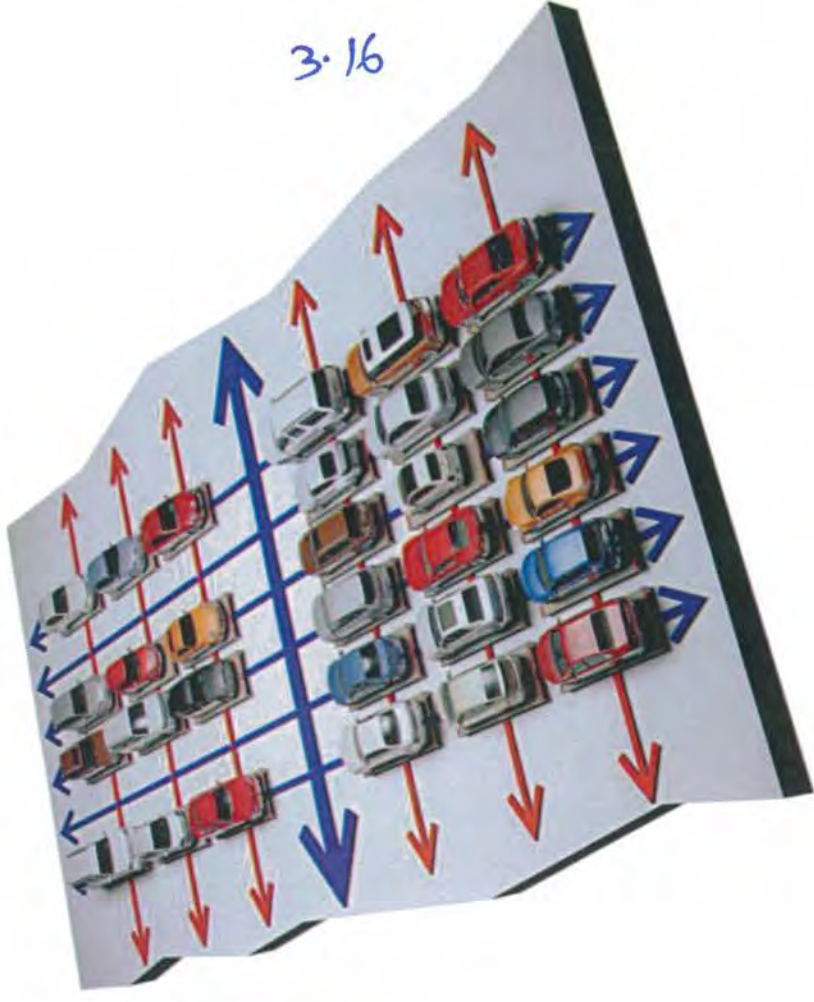
Rack and Rail

- Open/ closed aisle
- Vertical/ horizontal movement separated
- Pallet/Pallet less
- Steel/Concrete



Autonomous Guided Vehicle (AGV)

- Embedded wire technology
- Lateral movement
- Vertical movement
- Super Flat Slab
- Pallet
- No commercial implementation as of today

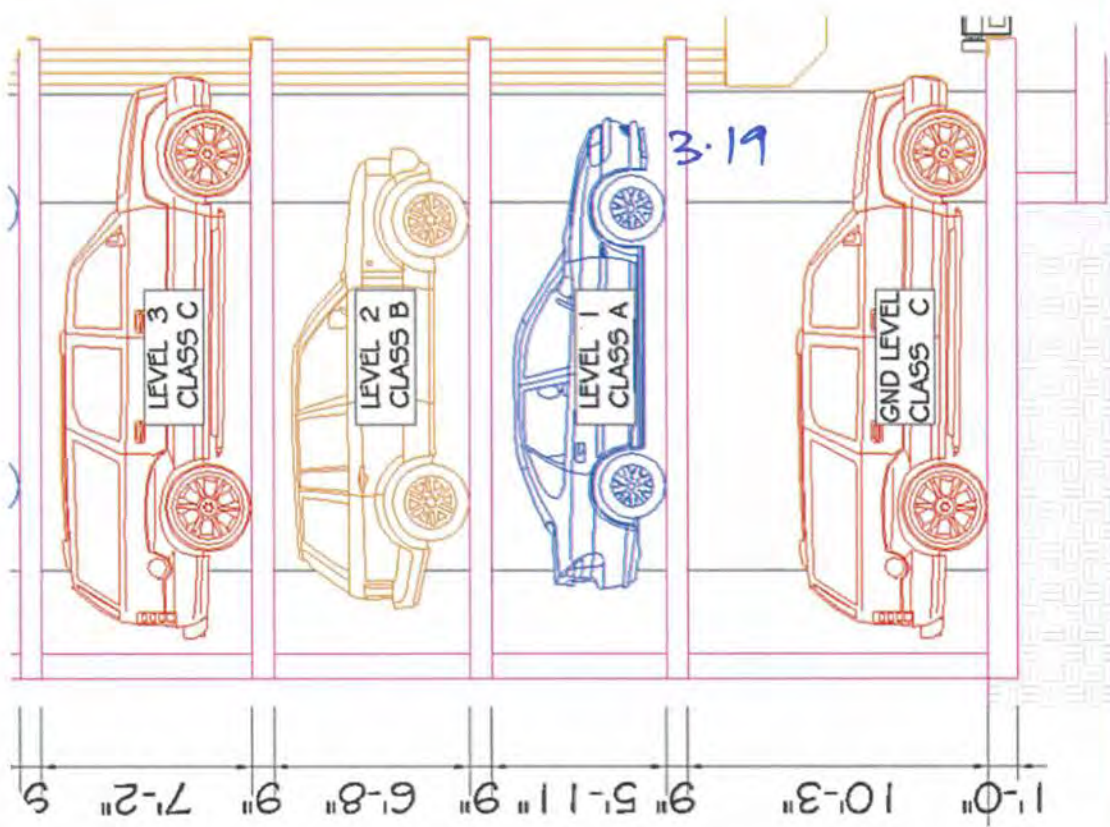


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Dense Parking - Vehicle classes

Dimensions	Class A	Class B	Class C
Length	197"	212"	228"
Width	86"	86"	86"
Height	63"	72"	78"
Weight (lbs.)	6,600	6,600	6,600



Fast ROI

Low operating costs

Low Insurance costs

Reduced labor

Reduced power consumption

Economic benefits

Increased income

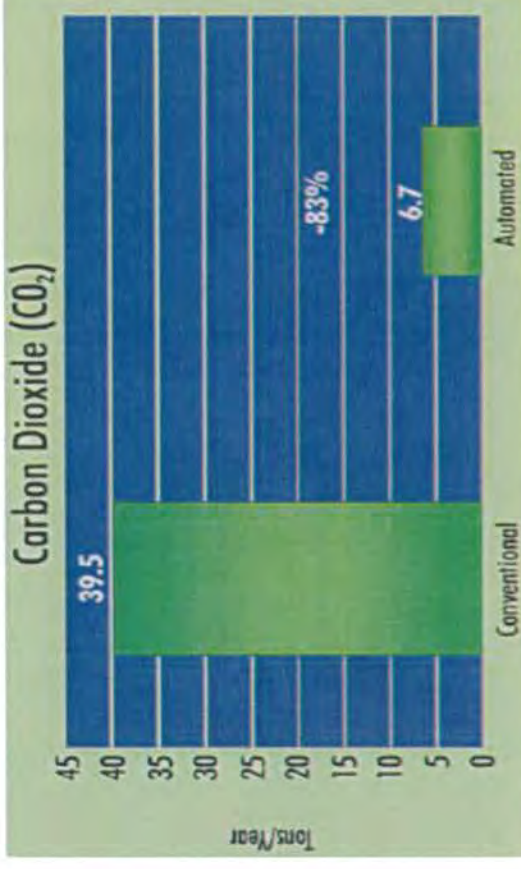
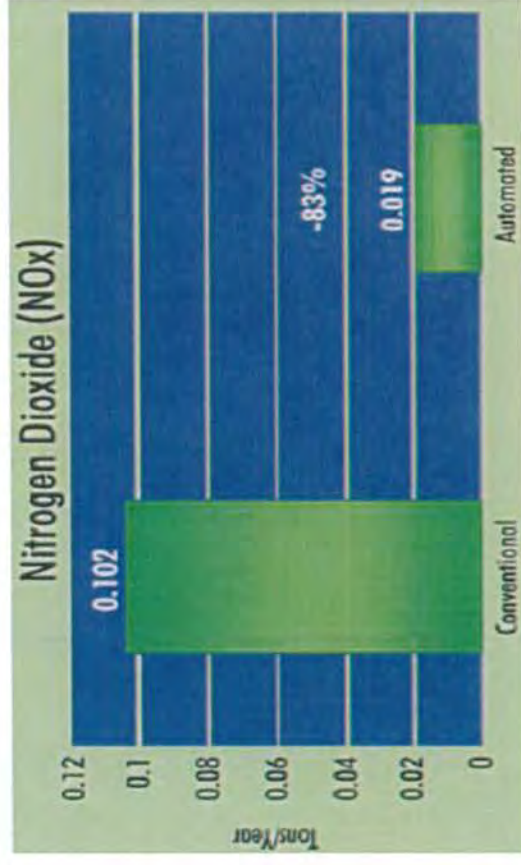
Control and accountability



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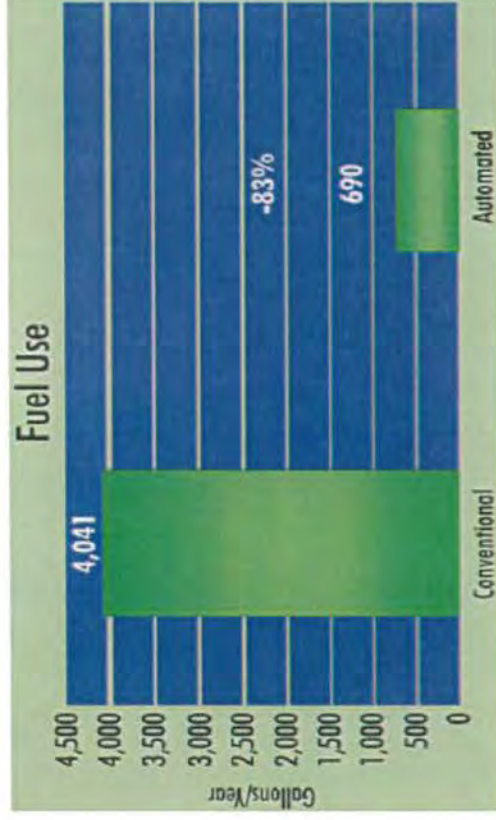


Green Solution – reduced car emissions



Data source: National Parking Association PARKING magazine, vol. 48, *The Garage of the Future Must be Green*, Samuel I. Schwatz, P.E.

Energy Efficient - Reduced fuel consumption



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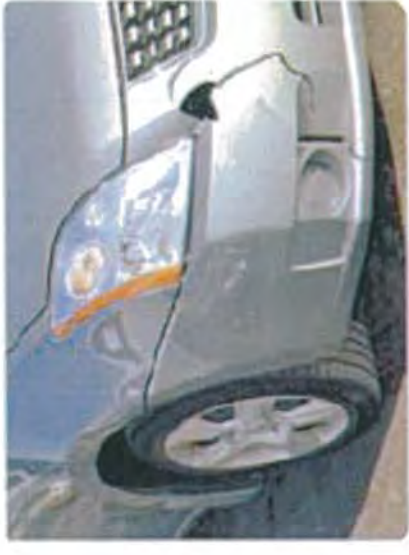


Data source: National Parking Association PARKING magazine, vol. 48, *The Garage of the Future Must be Green*, Samuel I.Schwartz, P.E.

Safe

Eliminate collision & damage risks

Pedestrians separated from moving cars



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Secure

Eliminate theft

Car retrieved from secure lobby





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Project	Location	No. of Stalls
916 Garden St. (2007)	Hoboken, NJ	314
Prado Norte (2013)	Mexico City	234
Park Place (2015)	Hoboken, NJ	374
900 Monroe (2015)	Hoboken, NJ	150
City Hall Garage (2015)	West Hollywood, CA	204
Palisades of Towson	Towson, MD	409
1706 Rittenhouse Square	Philadelphia, PA	64
Juniper Street Garage	Philadelphia, PA	224
16 th St. (2012)	Santa Monica, CA	250
Summit Grand Park (2002)	Washington, DC	74
148 E. 24 th Street	New York, NY	53
123 Baxter St.	New York, NY	67
One York Condominiums	New York, NY	40

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Case Study: West Hollywood, Ca



Drawing and Data by Don Monahan, Walker Parking Consultants

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Drawing and Data by Don Monahan, Walker Parking Consultants

Automated parking garage site plan



Architectural design by LPA, Inc. www.lpainc.com

Automated vehicle and storage system designed by Unitronics Inc.

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WEHO

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Above Grade, Standalone

Automated Garage

\$45	X	205	=	\$9,225	+	\$14,000	=	\$23,225
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100

Under Building, Above Grade

Automated Garage	\$65	X	225	=	\$14,625	+	\$14,000	=	\$28,625
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Under Building, Below Grade

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Project Stages

Phase	Stages	Duration	Notes
Design	Schematic Design Design Development Construction Documents	Variable	Unitronics is part of the design team, lead by the architect
Manufacturing	Manufacturing Shipping	9-10 Months	
Installation	Mechanical Electrical Control Software	6-8 Months	Varies according to the number of system components
ATP	Acceptance tests Commissioning	2-4 weeks	3.36
Service and Maintenance	On going service		Long term Insurance option

Unitronics – Quick Facts

➤ Proven Record, Public Company with International Presence more than 20 years (1989) in the automation market

➤ Established operational and sales Network 140 integrators/distributors in about 50 countries Fully owned subsidiaries in North America

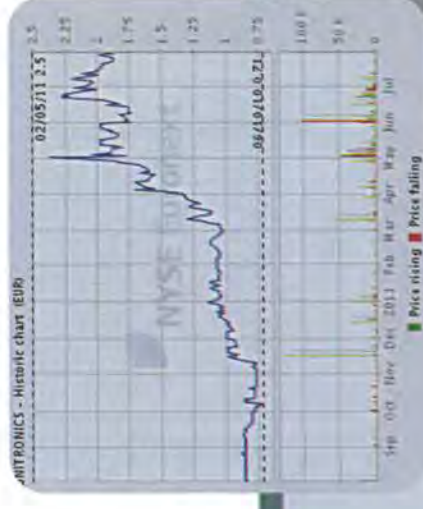


➤ Verified Development Capabilities Dozens of successful product lines (mainly PLCs) Hundreds of thousands of working products, worldwide

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➤ Market leader in providing Automation Solutions Automation products, Automated Material Handling and Automated Parking solutions

➤ A solid player, professionally and financially A financially established company, traded in NYSE EuroNext (Europe) and TASE (Israel)



One Stop Shop

All disciplines in-house

- Research & Development
- manufacturing
- mechanical
- electrical
- control
- software

Turn Key

- Schematic design and design development
- Construction documents
- Entitlement
- Installation
- Implementation
- Service and maintenance

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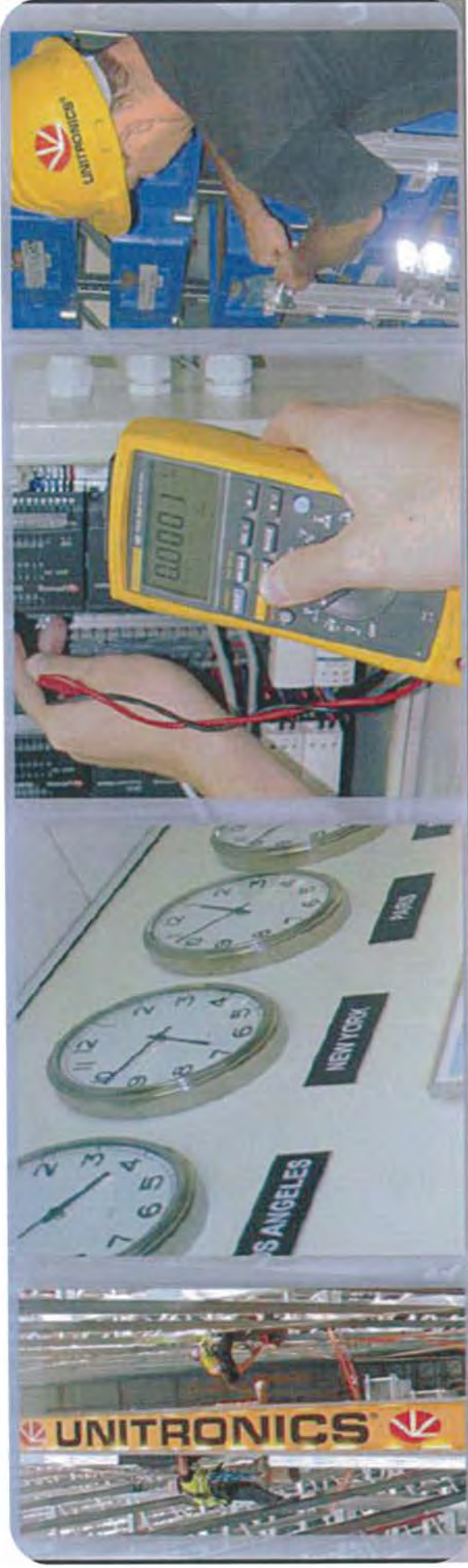


Service and Maintenance

- 24 X 7
- Local Service
- Three tier module
 - Call Center
 - Remote Access
 - On site service calls
- Preventive Maintenance
- Insurance program



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UNITRONICS

Thank you!

www.unitronics.com



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UNITRONICS™
Automated Parking Solutions

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What if you could **double or triple** your parking capacity using your current volume?



What if you could meet your parking requirements using only **30% to 50%** of your current volume?



This is all possible while also providing a **safe and secure** environment along with a **great customer experience** and a **GREEN** parking solution

Increased Parking Capacity 3.44

Unitronics' automated parking solutions accommodate up to 3 times the number of parking spaces in the same volume as a conventional, ramp-access garage.

Our automated parking solutions:

- Reduce parking space - no space is required for opening doors
- Reduce vertical height - footprint height is determined by vehicle height
- Increase density - vehicles are placed door to door and bumper to bumper
- Eliminate footprint for ramps and turning radius - the system handles the parking process

Parking capacity comparison tables

Length/Width		80'x100'		
Parking System		Automated Parking	Conventional Ramp	Ratio
Height or Depth	35'	165	63	2.6
	50'	236	98	2.4
	70'	342	138	2.5

Length/Width		100'x100'		
Parking System		Automated Parking	Conventional Ramp	Ratio
Height or Depth	35'	204	75	2.7
	50'	290	125	2.3
	70'	418	175	2.4

Length/Width		120'x100'		
Parking System		Automated Parking	Conventional Ramp	Ratio
Height or Depth	35'	269	88	3.0
	50'	368	150	2.5
	70'	532	210	2.5



Safe and Secure

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Unitronics' automated parking solutions provide the ultimate safe and secure parking experience. Using our systems, you can:

- **Eliminate collision & damage risks** - automated system eliminates the human error factor
- **Prevent theft of vehicles and personal belongings** - the storage vault is not accessible to the public
- **Provide personal security** - vehicles are retrieved from a safe and secure lobby
- **Keep pedestrians safe** - pedestrians do not enter the parking vault



Great Customer Experience

Unitronics' automated parking solutions offer a high-quality valet parking experience (without the valet), shorter retrieval period, and easy, worry-free parking experience.



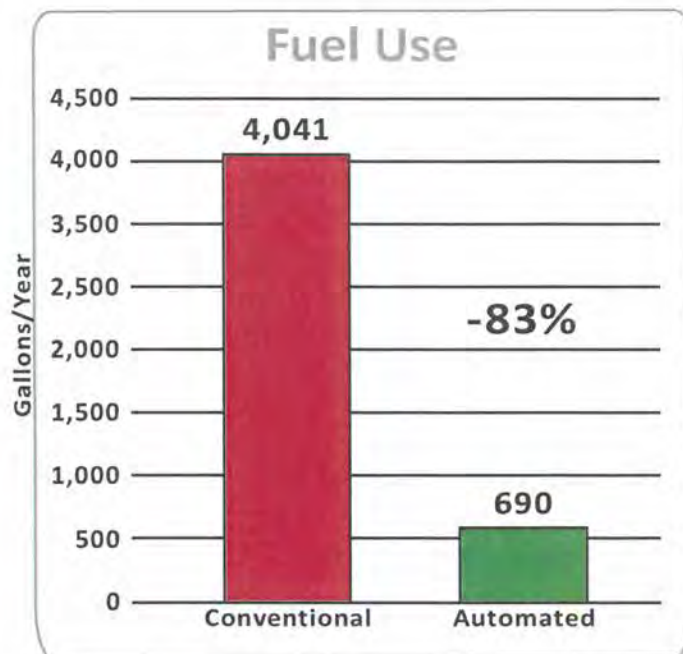
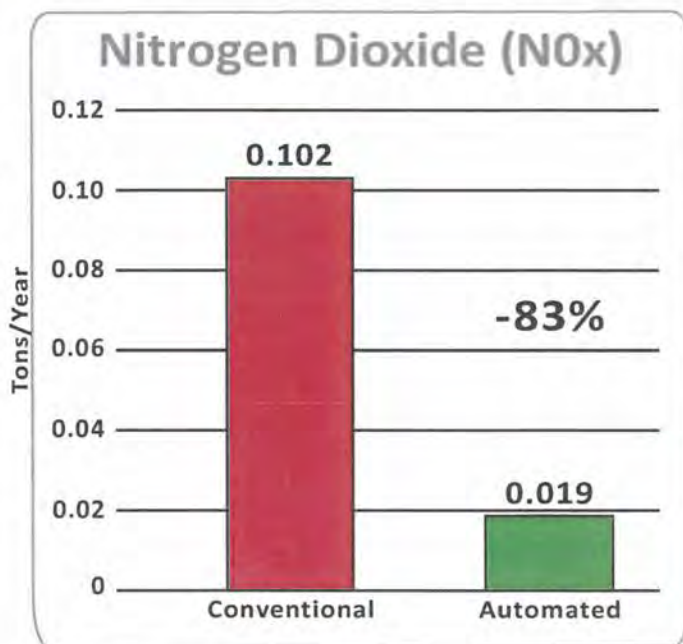
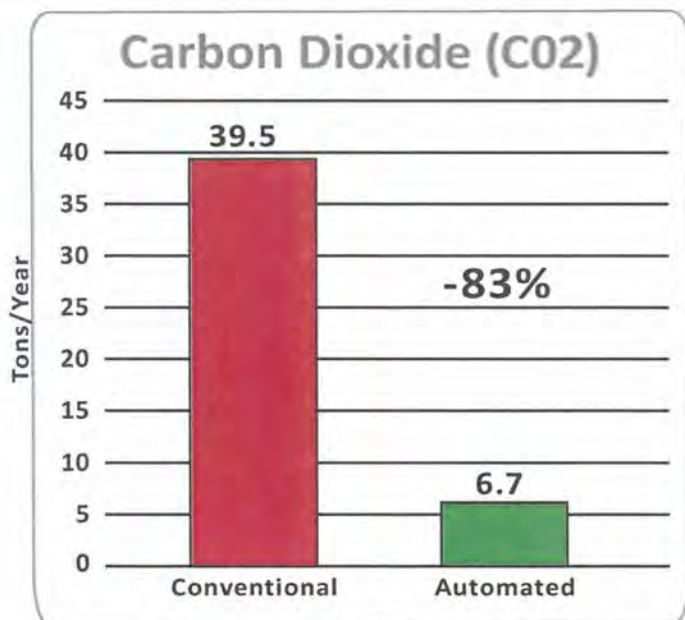
Green Solution

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Contribution towards LEED Credits*

Reduced pollution by more than 80%
in fuel use and vehicle emission

Minimize vehicle emissions



A Green Solution

- Minimal lighting required
- Minimal power consumed
- Minimal ventilation required

Energy Efficient

Reduce fuel consumption

Data source: National Parking Association PARKING magazine, vol. 48, The Garage of the Future Must be Green, Samuel I. Schwartz, P.E.

*For more information about the LEED certification system, visit <http://www.usgbc.org>

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Automated Parking - Key System Components

UniDrive™ - Vehicle Entry and Exit Bay

UniDrive™ is the driver's interface with the automated parking system:

- Guides the driver into position
- Verifies the vehicle's compatibility with the automated parking system
- Provides a safety buffer between the system's moving elements and pedestrians
- Complies with ADA regulations

UniDrive™ models are designed to maximize system efficiency and throughput, offering static or rotating bays and stationary or vertically transporting bays.



UniParker™ - Vehicle Conveyance Shuttle

UniParker's™ advanced motion control algorithms and field proven mechanical assembly work without interruption to provide safe, smooth, and fast horizontal movement.

- Horizontally conveys the vehicle between the UniDrive™ (Entry/Exit bay) and the parking position
- The vehicle is securely held at its four wheels, minimizing contact with the vehicle and minimizing handling time
- Automatically adjusts to the vehicle's wheel base

Equipped with advanced communication capabilities, UniParker™ is remotely controlled by the Automated Parking Management Software (APMS). The UniParker's™ on-board operator panel allows manual operation as part of Unitronics' multi-tier redundancy design.



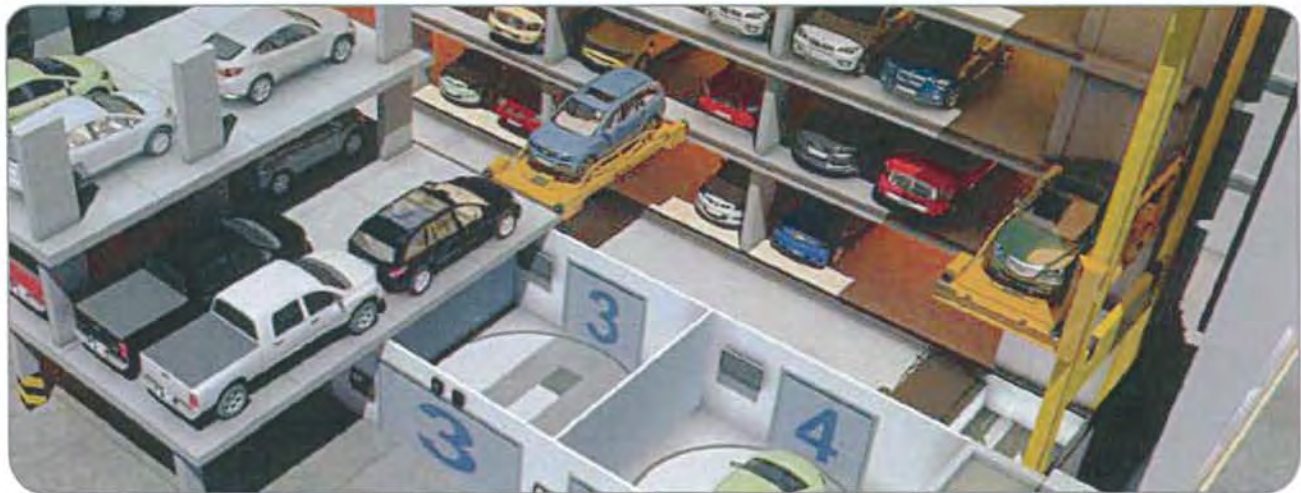
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Automated Parking - Key System Components

UniVator™ - Multi Level Vertical Lift

- Conveys the **UniParker™** shuttles vertically between the parking levels
- Operates above and below grade

UniVator's high speed vertical movement increases the system's throughput by serving multiple storage and retrieval cycles simultaneously.



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Automated Parking Management Software (APMS)

APMS modules provide you with advanced features, including:

- Remote site monitoring and management
- Multi-site network management
- Support for all available identification technologies, including RF tags, biometric systems and license plate recognition
- Interface to revenue control systems
- Mobile technologies support
- Extensive reporting and statistical capabilities, such as occupancy, car history, peak times

Unitronics Automated Parking Management Software (APMS) is field-proven software that incorporates two decades of experience, using modern technologies and industrial grade control systems.



Service & Support: One point-of-contact ^{3.51}

Service, maintenance, and support greatly enhance the long-term success of your automated parking system. Unitronics and its local service agents maintain the highest level of customer support.

Responsibility for:

- Mechanical components
- Control and electrical systems
- Software systems
- 24 X 7 hotline, 365 days a year
- Permanent availability
- Secured remote access
- Optional online video monitoring
- On-site, on-call visits
- Preventive and periodic maintenance
- Production support and training
- Documentation
- Spare parts



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Case Study

West Hollywood, California

- **Location:** 8300 Santa Monica Boulevard, West Hollywood, CA
- **Development:** Parking garage
- **Footprint:** 150'x80'
- **Height:** 52'
- **Owner:** City of West Hollywood



The challenge:

The City of West Hollywood required 200 spaces on a 150'x80' footprint with a high vehicle throughput for patrons. Access points and stairwells for the Fire Department were also requirements for the facility. Unitronics offered a unique design solution in accordance with the West Hollywood GREEN building ordinance:

The solution:

Unitronics' diligent engineering and project management teams designed a five level automated parking system consisting of UniDrive™ Entry/Exit rotating bays, UniVator™ elevating lifts, and UniParker™ conveyance shuttles.

- From a patron's initial interface with the automated ticketing kiosk to vehicle receipt in the UniDrive™ bay, Unitronics provides a faster-than-valet parking experience
- Reduced CO² emissions are equivalent to removing 92 vehicles from the road each year, or to planting 67,000 trees

Unitronics, with its expertise and international success, offered a green and economical parking alternative for West Hollywood residents and visitors.



Unitronics allows you to maximize parking revenue by providing excellent automated parking solutions in a turn-key approach, from system design and engineering through installation and integration, to continuous maintenance and service.

Our experienced automated parking professionals work with you to develop a solution customized to your needs and specifications.

Unitronics incorporates the knowledge and expertise drawn from two decades of experience providing reliable and efficient automated warehousing and automated logistic solutions to leading international companies, such as Intel, Teva and Coca-Cola.

Unitronics advanced technology and unique design provides high throughput and reliable automated parking solutions, incorporating advanced and robust management software and control systems.

Unitronics is committed to excellence.

By partnering with Unitronics, you gain the confidence of a solution that meets the highest standards of excellence in every regard.

WWW.UNITRONICS.COM

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