VECTUS
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An introduction...

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VECTUS is one of the world's most advanced fully automated, fully networkable, intermediate public transit technologies. Systems are delivered to customer's individual requirements on a turnkey basis.

VECTUS Ltd was incorporated in 2005 and now maintains fully staffed offices in Seoul, Sweden and the UK. The company is owned by the South Korean steel giant POSCO.

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The VECTUS technology has been developed by an international team of expert designers, and specialist suppliers drawn from the railway, automotive and rapid transit industries.

A full scale test track demonstrating all the elements of a commercial application has been in operation in Sweden since 2007. It is fully certified and approved by the Swedish Rail Agency and to date over 2,000 visitors have ridden the system.

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The VECTUS concept is based on small, driverless vehicles efficiently navigating a network of interconnecting tracks. Off-line stations, on-demand operation, point-to-point travel and 'taxi' style comfort and convenience are all features of the system.

The use of smaller vehicles allows for less expensive infrastructure which is also elevated to reduce ground take and obviate the need to relocate in-ground services. The guideways can be easily overlaid on existing streetscapes.

From deserts to ski resorts, VECTUS can operate in a very wide range of climatic conditions.

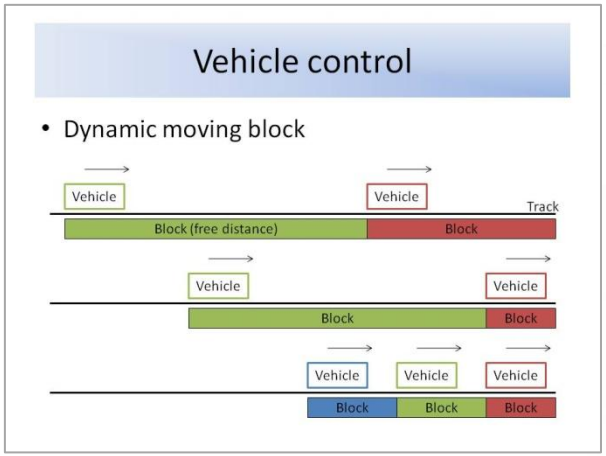
VECTUS vehicles offer high transport capacity, despite their small size, because they can run with short headways down to 3 seconds.

The VECTUS drive technology (*such as in-track LIMs, or direct drive to the wheels*) and method of current collection is optimally selected according to project-specific requirements such as network complexity, overall track length, gradients and environmental conditions.

VECTUS can typically halve the travel time for passengers compared to bus and light rail services with similar line capacity, and at a lower operating cost.

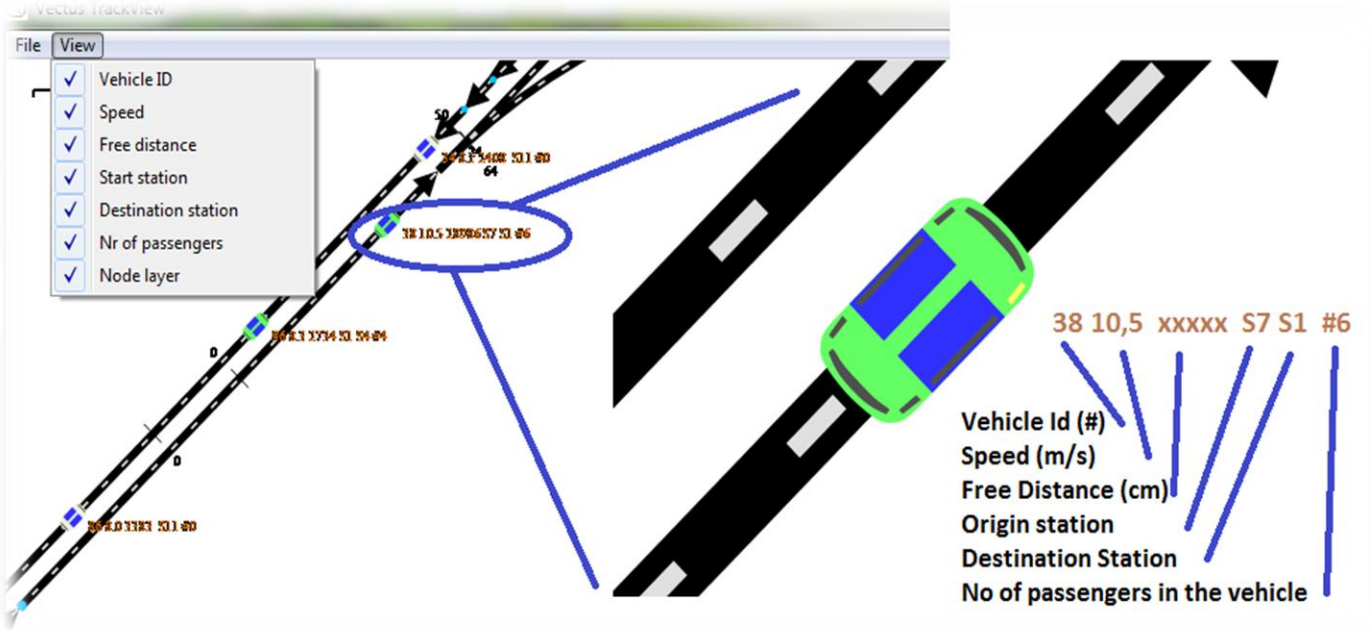
VECTUS is an excellent choice as both a feeder into existing transit modes or providing stand alone systems within city centres, at airports, attractions, campuses, parks and hospitals etc.

The safety-approved control system has been specially developed by VECTUS and incorporates unique features such as *distributed, asynchronous and dynamic moving blocks*. The flexibility of this approach ensures high passenger throughput by condensing headways, reducing dwell times at stations and also allows for easy system expansion.

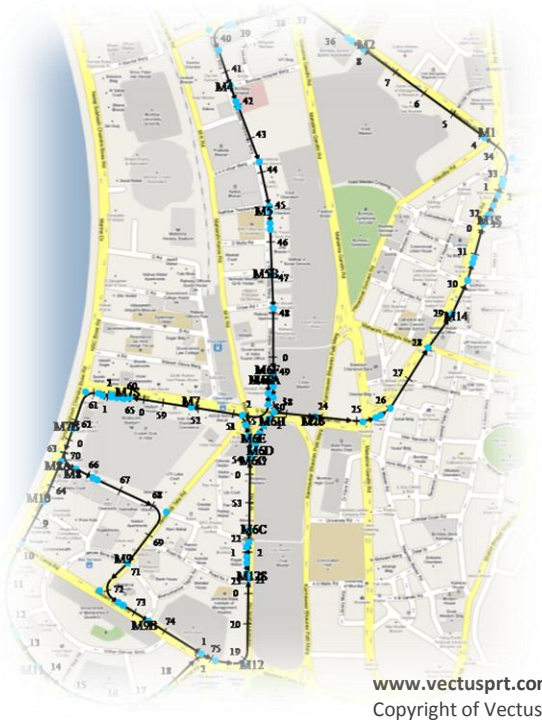


Capacity can be optimised using a mix of modular vehicle sizes ranging from six passenger (typical PRT style) up to fifty passenger (GRT style), potentially all operating within the same network.

Real time emulation can be undertaken for any potential application using specially developed software. This draws on actual performance data (not theoretical models) collected at the VECTUS test track.

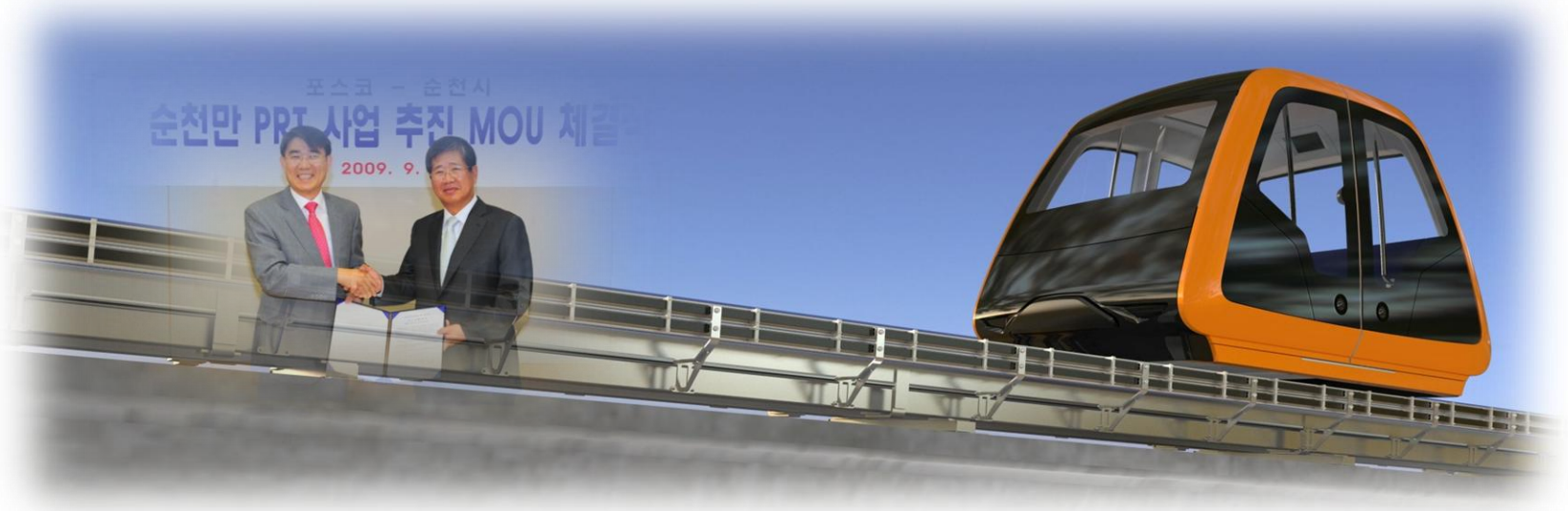


As an example: if 40 GRT vehicles operate around a 7km track in 2 loops at circa 30-40 second headways (and every second vehicle changes loop at the centre crossing), the waiting time for any vehicle to any destination is less than 1.5 minutes. Maximum travel time to any destination is 5 minutes and the system can move up to 10,000 passengers per hour.



VECTUS is currently constructing its first fully commercial transit system in Suncheon bay, South Korea. The Suncheon coastal wetlands are a world class attraction, famous for the migratory hooded crane.

The Suncheon Bay VECTUS transit is a privately funded design, build, operate and maintain project. It will provide quiet, comfortable and eco-friendly transport for the three million annual visitors to the reserve. Full passenger operation is due to commence in 2013.



40 vehicles will operate along 5kms of elevated, double tracked guideway. Because it is a region of seismic activity and typhoons, combined with poor ground conditions, extensive piling has been required.

Steel tracks are mounted on the concrete beams, providing optimum low-friction interface to the vehicles. The cars themselves are electrically powered via a 500 VDC current collection system for high performance and continuous operation throughout the day.

Architect designed stations feature in line berths, platform screen doors and touch screen passenger information/destination selection facilities.

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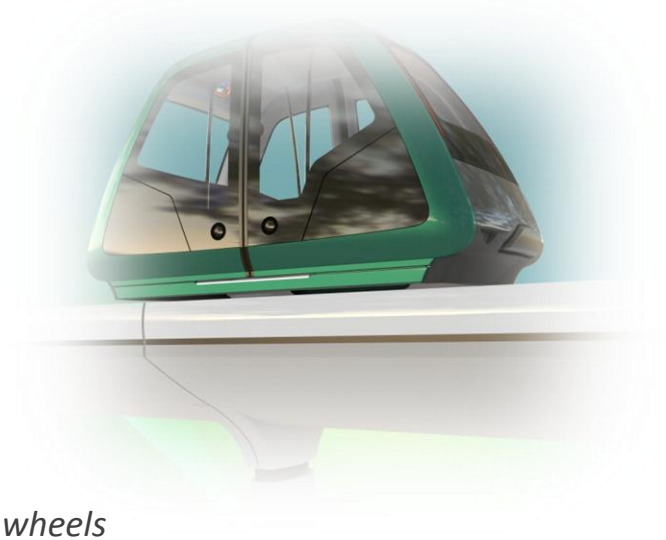

Suncheon vehicle performance

Method of propulsion	*linear induction & rotary motors*
Power transfer	*continuous current collection*
Guidance principle	*captive to steel track with switch wheels*
Emergency evacuation	*escape doors on both sides of vehicle*
Dimensions (mm)	*3740 long x 2100 wide x 2500 high*
Door opening	*900 wide x 1950 high*
Number of passengers	*nominal 6-8 seated + potential for 6 standing*
Wheelchair space	*RVAR compliant, all vehicles*
Laden weight	*2500 kg (with seated passengers)*
Speed	*< 70kph*
Max speed in curve	*R20m=16kph/R50=26kph/R100=36kph*
Acceleration/deceleration	*1.2m/s^2 typical*
Emergency deceleration	*5m/s^2 max*
Energy consumption	*0.24kWh/km @ 30kph (typical laden)*
Air conditioning	*full HVAC system on board*
Safety philosophy	*designed to international rail standards*

Generic infrastructure & control

Track construction	*steel rails on steel or concrete beam (at grade & elevated)*
Gradient	*< 10%*
Minimum radius	*5m at centre line*
Guideway width	*1400mm typical*
Platform gap	*< 30mm*
Berth concept at stations	*in-line*
Max throughput per berth/hour	*160-200 small vehicles*
Control concept	*asynchronous*
Control topography	*distributed*
Automatic vehicle protection	*radio based dynamic moving block*
Emergency recovery	*push/tow to nearest station*
Peak line capacity (PRT)	*< 7,200 passengers per hour (10,000 with standees)*
Headway	*3-4 seconds*
System certification	*Swedish Rail Agency (full safety case)*

Note: *PRT and GRT type vehicles utilise exactly the same track and infrastructure*

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VECTUS looks forward to discussing *your* transit requirements...

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