

Overview Presentation



VECTUS is one of the world's most advanced fully automated, fully networkable, intermediate public transit technologies.



VECTUS Ltd was incorporated in 2005 and now maintains fully staffed offices in Seoul, Sweden and the UK. The company is a subsidiary to POSCO ICT, South Korea.



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.



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.



VECTUS vehicles offer high transport capacity, despite their small size, because they can be networked, run in mixed mode (with both PRT and GRT vehicles) and achieve very short headways down to 3 seconds.



Copyright © 2012 Vectus All Rights Reserved

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.



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



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, leisure attractions, campuses, parks and hospitals etc.



The technology was first demonstrated on a full scale test track, certified and approved by the Swedish Rail Agency, which operated in Uppsala from 2007-2012.



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



Light steel tracks are mounted onto either slim profile steel or concrete beams providing an optimum, low-friction interface to the vehicles.



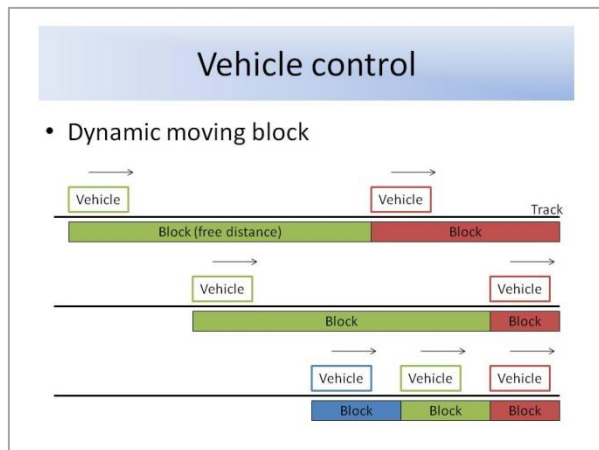
The **VECTUS drive technology** (*such as in-track LIMs, or direct drive to the wheels*) and method of current collection is optimally selected according to project-specific requirements such as network complexity, overall track length, gradients and environmental conditions.



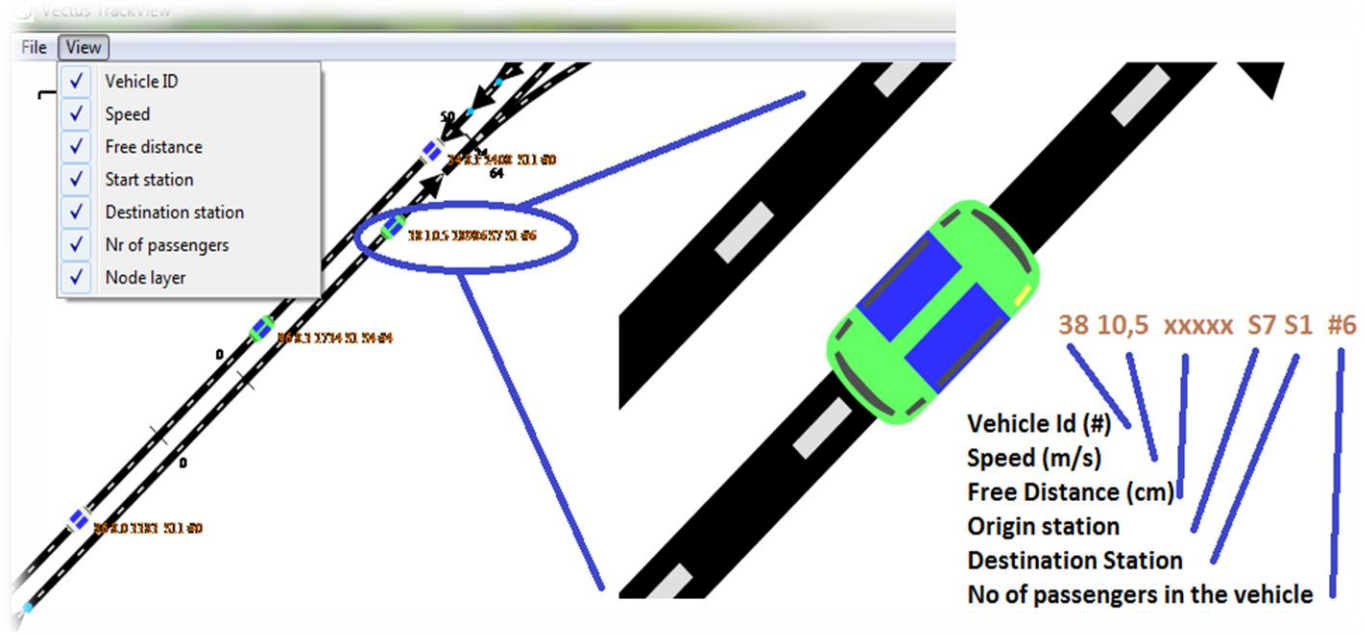
The **VECTUS track system** has no moving parts; all switching is carried out within the vehicle bogies.



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.



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.



The first commercial **VECTUS system** has been built 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 will provide quiet, comfortable and eco-friendly transport for the three million annual visitors to the reserve.

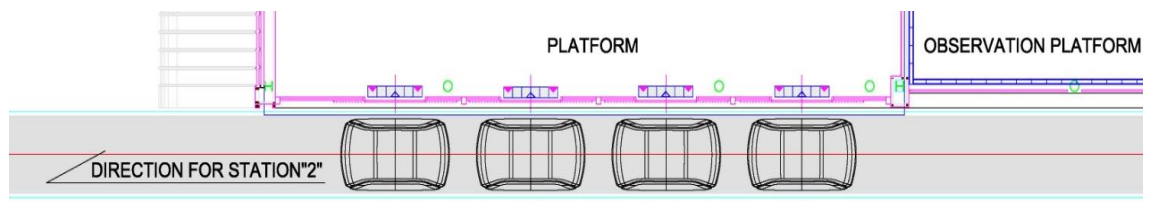


40 vehicles will be operating along 5kms of elevated, double tracked guideway. Being a region of seismic activity and typhoons, combined with poor ground conditions, extensive piling has been required.



Architect designed stations reflect the advanced styling of the vehicles





All stations have 4 berths, in-line platforms with entry gates & screen doors



Main station (1) also incorporates the depot, workshop & control room



All vehicles have wide doorways with full wheelchair access



Wide bench seats are provided for seating 6-8 passengers; they lift up for easy access to equipment beneath



Additional, full height standing space is available for up to 6 passengers



500vdc continuous current collection is provided along the entire length of the guideway (no batteries for propulsion)





Suncheon vehicle performance

Method of propulsion	<i>linear induction &/or rotary motors</i>
Power transfer	<i>continuous current collection</i>
Guidance principle	<i>captive to steel track with switch wheels</i>
Emergency evacuation	<i>escape doors on both sides of vehicle</i>
Dimensions (mm)	<i>3740 long x 2100 wide x 2500 high</i>
Door opening	<i>900 wide x 1950 high</i>
Number of passengers	<i>nominal 6-8 seated + potential for 6 standing (full height)</i>
Wheelchair space	<i>RVAR compliant, all vehicles</i>
Laden weight	<i>2500 kg (with seated passengers)</i>
Speed	<i>< 70kph</i>
Max speed in curve	<i>R20m=16kph/R50=26kph/R100=36kph</i>
Acceleration/deceleration	<i>1.2m/s² typical</i>
Emergency deceleration	<i>5m/s² max</i>
Energy consumption	<i>0.24kWh/km @ 30kph (typical laden)</i>
Air conditioning	<i>full HVAC system on board</i>
Safety philosophy	<i>designed to international rail standards</i>



Generic infrastructure & control

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

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

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

