



*Advanced Technology for Traffic Management and Urban Mobility*



# Terminal guidance

Qatar's new airport gets state-of-the-art TMS

### MAN extends Iteris contract

European heavy truck manufacturer, MAN Nutzfahrzeuge, has signed a three-year contract extension to continue to offer Iteris's AutoVue Lane Departure Warning (LDW) systems as a factory-installed option on its heavy trucks and buses. The new contract covers 2010 through 2012. MAN is using the AutoVue LDW system for its MAN Lane Guard System, designed to help drivers stay in their lanes on motorways and dual carriageways. [www.mn.man.de](http://www.mn.man.de) [www.iteris.com](http://www.iteris.com)

### Durability milestone for fuel cell system

UTC Power, a United Technologies Corporation company, has announced one of its latest-generation PureMotion Model 120 fuel cell powerplants for hybrid-electric transit buses has surpassed 5,000 operating hours in real-world service with its original cell stacks and no cell replacements. This powerplant is aboard an Alameda-Contra Costa Transit District (AC Transit) bus operating in the Greater Oakland, California area.

Three of AC Transit's buses are equipped with UTC Power fuel cell systems and have now travelled over 340,000km, with an average fuel economy that is 65 per cent better than the control fleet of diesel buses running the same routes and duty cycles.

[www.utcfuelcells.com](http://www.utcfuelcells.com)  
[www.actransit.org](http://www.actransit.org)

### ECotality opens in Australia

ECotality has established a new, wholly owned subsidiary, ECotality Australia, with headquarters in Brisbane, Queensland, to market and distribute battery-charging equipment to support on-road electric vehicles, industrial equipment and electric airport ground support equipment (GSE). According to the company, its new subsidiary is well positioned to immediately capitalise upon Australia's emerging market for plug-in electric vehicles.

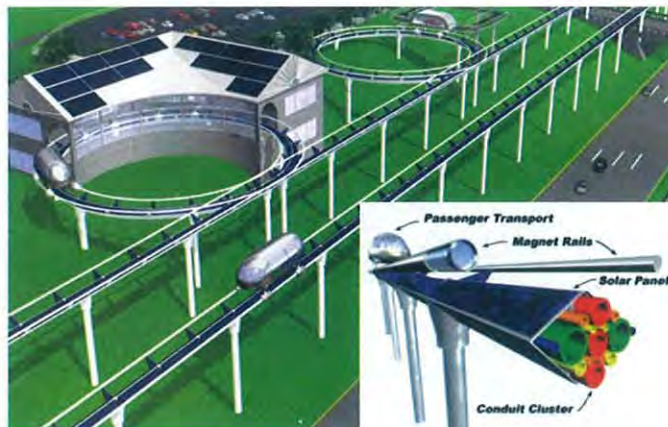
[www.ecotality.com](http://www.ecotality.com)

# Michigan infrastructure vision

An innovative infrastructure project proposed by The Interstate Traveler Company (ITC) has won strong backing from the Michigan House of Representatives Task Force, as well as being awarded a Michigan's Going Green Award.

ITC plans to build a self-sustaining magnetic levitation HyRail transportation system and clean energy solution that will carry people, cars and freight at high speed while creating and storing excess energy generated from solar power. The system would also provide a conduit to distribute electricity, potable water, fibre optics, hydrogen and other vapour- and liquid-based resources.

ITC says the project would not need any taxpayer funding to build or maintain. In fact, the company proposes a revenue-sharing model (in exchange for expressway rights-of-way to build the rail) that will provide monies to various government entities at the federal, state, county and local municipal



levels. ITC therefore becomes a significant 'taxpayer' and relieves the burden of taxes on Michigan's citizens, rather than adding to their tax burden.

Michigan's Task Force recommendation concerning the project states: "This company (ITC) offers the opportunity to single-handedly change Michigan's future by providing thousands of temporary and permanent jobs,

providing the federal, state, and local governments with millions of dollars to their tax bases, while also expanding our electrical grid. The members of the task force believe this project could potentially boost Michigan to the forefront once again for business relocation and reinvention, while allowing Michigan to again become the nation's envy."

[www.interstatetraveler.us](http://www.interstatetraveler.us)



## Qatar's first tunnel management system

Traffic Tech (Gulf), in partnership with Telegra, has commissioned the first tunnel management system in Qatar, an ITS project implemented on the newly opened Ras Abu About Tunnel that links Corniche and Wakrah Road, leading to the New Doha International Airport.

Equipped with advanced ITS components, the system provides real-time traveller information, vehicle guidance, lane control, automatic incident detection, speed enforcement and an automated and synchronised system configuration that manages emergency incidents. In addition, the tunnel is equipped

with lane lights for increased lane visibility as well as three over-height vehicle detection systems to restrict entry of vehicles over 5.5m in height.

All other tunnel components including emergency telephones, fire alarm system, illumination, ventilation system, and surveillance cameras are also integrated into the system, monitored and operated via a graphical user interface located in the tunnel's control room (see feature story on pp.43-44 of this issue).

[www.traffic-tech.com](http://www.traffic-tech.com)  
[www.telegra-europe.com](http://www.telegra-europe.com)

## SAIC acquires CarScan

Science Applications International Corporation (SAIC) has completed the acquisition of Spectrum San Diego, a high-tech security firm specialising in ultra-low-dose X-ray scanning systems. Under the agreement, SAIC has acquired Spectrum's CarScan product line, which scans cars and vans in the normal flow of traffic at vehicle checkpoints, such as borders and high security government facilities. The equipment enables security personnel to look for weapons, drugs, currency, stowaways, and other hidden contraband.

[www.saic.com](http://www.saic.com)



# Pedigree solution

Husam Musharbash, Traffic Tech Group, talks about tunnel management system implementation on the new route between Doha and the soon-to-open New Doha International Airport

The new Ras Abu About Tunnel in Qatar, which opened to traffic in January of this year, will serve the New Doha International Airport once the latter opens in 2011.

The new airport, which is being built to the east of the existing Doha International Airport, will cover around 22km<sup>2</sup>. Initially, it will handle around 24 million passengers a year (three times as many as the existing airport) and this will grow to about 50 million on completion, making it the second-largest capacity holder in the region after Dubai International Airport.

Around half of the New Doha International Airport will be built on reclaimed land. This has necessitated a whole new road layout and has effectively allowed designers the rare opportunity of a truly clean sheet of paper when it comes to design and systems selection, says Husam Musharbash, CEO of Traffic Tech Group, the company responsible for tunnel management system integration at the Ras Abu About Tunnel project.

## Multi-million dollar expansion

"The Ras Abu About Tunnel is a part of the last stage of the Ras Abu About road project, a US\$200 million road network

expansion that will link the country's capital with its new airport.

"Despite its name, the tunnel is in fact a long - 350 metre - underpass but it will see the first use in Qatar of quite a number of ITS technologies, such as Variable Message Signs [VMS], lane indicators, speed indicator signs and an Automated Incident Detection (AID) system and cameras. Although Qatar already has a very good level of technology deployed in urban areas, away from the main population areas technology use still tends to be rather more limited.

"That said, by comparison with some other countries in the region the general standard of driving is good," Musharbash continues. "Speeding has historically been a problem but Qatar now has a very well-developed, radar-equipped enforcement system and a penalty structure that is weighty enough to make non-compliance a severe impact on the wallet or purse despite the country having one of the highest per-capita incomes in the world: for instance, a first-time speeding ticket incurs a penalty of 3,000 riyals [\$800]."

Although there are plans for a 12km undersea link between both sides of Doha Bay, Qatar is essentially a flat country. There are no tunnels. The Ras Abu About Tunnel, therefore, is something of a first.

The control solution selected for the tunnel is Telegra's topXview SCADA system, which is currently deployed in over 30 large installations worldwide.

"We looked at several solutions but topXview was chosen for its ability to seamlessly integrate all the elements necessary for a state-of-the-art tunnel management system. As well as the traffic management and AID aspects, that also encompasses ventilation and smoke/environmental detection systems," says Musharbash (see Sidebar, 'Ras Abu About Tunnel systems').

"These are all integrated onto a GUI [Graphical User Interface] which operators use to verify condition alerts and then select from preset scenarios. This removes subjectivity and the need for improvisation."

The Ras Abu About Tunnel features numerous ITS technologies which are being used for the first time in Qatar, including gantry-mounted VMS



## Ras Abu About Tunnel systems

The Ras Abu About Tunnel features a comprehensive traffic and environmental management system, all controlled by Tegera's topXview SCADA system. Elements include:

- Four gantry-mounted and two ground-mounted full-matrix VMS;
- Three ground-mounted LED signs for warning over-height vehicles;
- Three over-height vehicle detection systems;
- Four PTZ dome cameras;
- Four AID cameras;
- Two fixed cameras;
- Four emergency telephone points;
- 14 lane indicator signs (capable of displaying an 'X' or arrows);
- 16 variable speed limit signs;
- 2 radar detector-equipped variable speed limit signs (which flash if an approaching vehicle is being driven at above the set speed limit);
- Two pictogram-capable RGB signs;
- 50 LED LaneLight in-pavement markers;
- Nine LED inner illumination signs;
- Three roadside controllers;
- A complete Gigabit IP network over fibre optics;
- A complete control room equipped with servers, workstations, LCD screens and RAID storage for video recording; and
- Tunnel infrastructure subsystems including fire alarm system fire-fighting equipment, ventilation system with pollution control, flood control submersible pump system, and tunnel lighting with an optical sensor system.

► The resultant solution can respond very swiftly, according to Musharbash: "Incidents can be detected within two seconds and scenarios can be enacted within five to 10 seconds. Gantry-mounted VMS located along the 1km approach to the tunnel entrance are supported by others at ground level and can be used to convey information to road users. Three complementing systems guard against fire; there are both smoke and heat detectors in the tunnel ceiling, and the AID cameras also have a fire detection capability. In any such emergency the ventilation systems act automatically, warnings are generated and the tunnel's operators are taken into a scenario-led response.

"Scenario generation and getting the correct VMS management strategies learnt heavily on Teagra's specialist knowledge."

### Capacity delivery

A number of factors contributed to the choice of Teagra as a partner beyond its topXview system, according to Musharbash. The Croatian company has gained extensive knowledge of tunnel

management in its home country, where it dominates the market. Another consideration was the need to fast-track the project in Qatar: "We went and looked at some of Teagra's existing projects in Croatia and Turkey to get some idea of their capabilities, especially production capacity and project implementation support, because this project had to be completed from design to full implementation in just five months. [See Sidebar, 'Project gestation'.]

"Teagra not only produces the software but was also able to manufacture a significant proportion of the hardware. Tunnel management is Teagra's bread and butter, few other companies are so specialised, and it supplied all of the VMS, the variable speed limit signs and the lane indicators, as well as the roadside controllers, AID system and emergency telephones.

"To meet the necessary deadlines involved a round-the-clock production effort and a major logistical undertaking; equipment manufacture took place within a four-week time window and some 20 tonnes of equipment was shipped to site

by air. The CCTV cameras, the smoke and heat detectors and other environmental systems came from other manufacturers. Integration, including - at the last minute - LED lane lights from Swarco, was relatively straightforward using topXview. On-site finishing took just 10 days."

### State of the art

The result, Musharbash states, is a tunnel management system which is state of the art.

"In fact," he adds, "the same system would serve a larger tunnel very well."

Alongside the continued testing and refinement of incident response scenarios, some of which takes place in the tunnel's running lanes at night, a major next step is the production of an educational brochure for local drivers.

"First feedback from the client side and the local media has been excellent. The next step is going to be a relatively large public education campaign. The use of lane indicators and VMS is new locally, and there is the issue of language to consider: VMS messages are posted in both Arabic and English, and while English speakers are perhaps more used to the use of certain abbreviations the same is not necessarily true for those who speak Arabic. Finding the best way to abbreviate messages is therefore a priority and the use of pictograms is a possibility." ■

traffic-tech.com

## Project gestation

The NDIA Steering Committee looked to implement a state-of-the-art tunnel management system that meets global safety standards, in the road expansion project that will link Qatar's capital to the soon-to-open New Doha International Airport. Consult Maunsell provided professional advice on design issues and during the project conceptualisation phase the Midmac-Yuksel joint venture empowered Traffic Tech (Gulf) to propose an integrated TMS solution.

Traffic Tech (Gulf) executed the whole project in a span of five months, from design to installation and commissioning, coordinating with Teagra and other component suppliers.

"We started talking about a tunnel management system in December 2008 and gave over 20 presentations locally," says Musharbash. "In the end, a letter of award was received in August 2009 and the tunnel opened on 10 January this year."

A next stage for the Ras Abu About Tunnel's operators is a large-scale public education campaign which will leave local road users more familiar with the systems being used to monitor and control access

