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News / Business

Creating the infrastructure for electric vehicles



Singapore firm Zeco Systems has launched a solution called 'Greenlots' that provides the infrastructure for the take-off of electric vehicles by allowing users to charge their rides at convenient hotspots.

February 17 - What will it take to jump start the transport industry towards cleaner technologies? With heightening concerns over global warming and air pollution, the time seems ripe for the electric vehicle (EV) industry to take off, given the right policy framework and consumer acceptance.

Zeco Systems, a Singapore born and bred clean technology company, is paving the way for a quiet revolution in the way we move around. The firm launched a global rollout of its EV charging solutions last week on Feb 11 called 'Greenlots'.

Greenlots Point is a charging station which enables EV users to simply plug in and charge their vehicles via a simple authentication process.

It can be located at carparks of homes, office buildings, residential buildings and shopping malls. Greenlots managing director Oliver Risse said, "The beauty of electric vehicles is that the infrastructure is already in place." By plugging into the existing grid, it helps to keep costs low and allows for scalable growth.

Ten charging stations have so far been set up in Singapore including the INSEAD campus at Buona Vista, Parkway Parade and the Swiss Club.

The island's first stand-alone solar charging station called Greenlots Solar was launched in August 2009 at a cost of Sing \$30,000 and located at the Singapore Polytechnic. It generates about 3.15 kilowatt hours a day and can charge three to four electric scooters.

Greenlots runs the stations on a web-based software called Greenlots Sky, which provides an opportunity for independent network operators to set up their own networks and control all charging devices including metering, billing, security and reporting. Each charging station costs US\$2,500 for the operator, with a nominal monthly charge for being a part of the network.

Mr Risse said Greenlots is actively looking to team up with utilities, network operators and EV manufacturers. It currently has partners in Austria, China, Hong Kong and Germany and is seeking tie-ups in EV hotspot places such as Australia, India, Japan, UK, US and some European countries. He is targeting to install Greenlots networks in more than 10 countries in 2010.

The widespread use of electric charging stations through the rise in demand for EVs provides a revenue

opportunity for utilities, if the industry moves away from traditional fossil fuel dependent internal combustion engines towards grid dependent vehicles.

So how well is Singapore suited for electric vehicles?

Singapore is perfect for EVs as it is a city of short distances. On an average, people here drive about 40 kilometres a day mostly for commuting between home and work; something that takes no more than 2 hours a day. About 90 per cent of vehicle users park their vehicles for around 22 hours a day at home, office, shopping and leisure.

These conditions make it ideal for the introduction of EVs. The E-Max brand of scooters that Zeco systems introduced in the Singapore market in 2009 come in two models : the E-Max 90S with a driving range of 45-60 kms, and the E-Max 110S with a driving range of 70-90 kms which is enough for a majority of trips. Charging takes about 3 hours, and operational costs amount to about Sing \$60 per year. The scooters are priced between Sing \$6,999 and \$7,399 and run on lead-acid batteries which need to be changed every 3 years or so at a cost of about Sing \$ 600- \$800.

For EVs to really take-off, a major push towards infrastructure building needs to take place, for which the right top- down policies have to be created to encourage homes, private estates and shopping malls to install charging stations. The more the demand for EVs, the more the demand for charging stations is likely to be. Consumers on the other hand are more likely to embrace EVs only if it is convenient for them to recharge. They also have to gain confidence that road conditions are safe for them to use Evs, especially scooters. So it boils down to a chicken and egg situation – does the infrastructure come first or the demand for EVs?

Singapore has launched a \$20 million test-bed program in 2009, to allow for automakers undertake a test performance of EVs and the infrastructure. This is a 3 year pilot run by a taskforce co-chaired by Energy Market Authority(EMA) and Land Transport Authority (LTA). The task force is working with Mitsubishi, Renault-Nissan and others to enable supplies of EVs into Singapore.

Come September 2010, Singapore will see the introduction of electric cars such as the i-MiEV model by Mitsubishi. Sizeable tax breaks are also expected for plug-in hybrids in future, according to the proposals by the Economic Development Board (EDB).

What are the environmental impacts of EVs?

EVs will go a long way to ameliorating cities' air quality, as they have no exhaust emissions. Even if the grid that EVs plug into coal fired power plants or in Singapore's case, on natural gas, net carbon emissions will reduce.

David Tan, Deputy Chief Executive of the Energy Market Authority mentioned at the Singapore International Energy Week in 2009, that this island can reduce up to 4% of the land transport sector's carbon emissions by 2020 with only a 2% EV penetration rate.

Batteries come in various forms using elements and metals such as lead, lithium, nickel and cadmium which are obtained through mining processes. The ecological impact varies depending on mining practices and local environmental regulations. Batteries need to be disposed off properly, to avoid toxic metals reaching landfills and water bodies. Recycling capabilities are therefore very important to ensure that such environmental damage is minimised.

Where is the industry at the moment?

Pike Research in its report on "EVs: 10 Predictions for 2010" expects a rapid growth in the sales of plug-in hybrid electric vehicles and battery electric vehicles even though the combined market will represent only 2.5% of the total vehicle market globally. This expansion will create a US \$8 billion

industry for Lithium ion (Li-ion) batteries by 2015.

One interesting observation made by the report is that Asia will be the dominant supplier and consumer of EVs and batteries, with more than 1 million EVs including hybrids expected to be sold in Asia during 2015 and the Asian Li-ion battery market powered by Japan, Korea, and China representing a 53% market share.

Some cities have already started preparing for EVs. The New York Times reported recently that the San Francisco building code will soon be revised to require that new structures be wired for car chargers.

The top 10 automakers of China have announced of industry-wide EV standards. They aim for a combined annual production of 500,000 EVS including hybrids.

Shai Agassi, the well known California based entrepreneur, and global provider of electric vehicle services called Better Place, has just got a fresh round of financing at the World Economic Forum at Davos to the tune of US \$350 million dollars. This will enable his company to scale up EVS in Israel and Denmark with the support of automakers Renault and Nissan.

There is momentum building up in the EV industry, both as far as the infrastructure building and the commercial acceptance of EVs are concerned. In Singapore, the seeds are being laid by the likes of Zeco Systems to revolutionise the land transport sector with EVs, but whether they germinate and take off here, and elsewhere in the global markets, only time will tell.



By [Bhavani Prakash](#)

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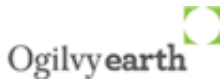
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