All-electric cars are just around the corner and could make a big difference to our P&Ls

By ARCHIE BAYVEL

THE day when most of us will be driving all-electric cars has just come a big step closer with the recent announcement by the Victoria Government of its Electric Vehicle Trial.

It's our first official confirmation of what Europeans and Americans already know: That all-electric cars will take over our roads. Soon.

The first handful of EVs (electric vehicles) has already slipped into Sydney almost unnoticed, and they are being assessed by government and fleet owners while at least two companies are already well along the way to setting up thousands of re-charge and battery exchange points in Sydney, Melbourne, Adelaide, Perth and Canberra.

All-electric cars are entirely powered by lithium batteries, like those in laptops and mobile phones, but few will go more than 160 kilometres before you need a recharge ASAP.

Unlike petrol-driven cars and hybrids you can't run out of battery then stroll to the nearest petrol station for a can of gas. Buying a new battery and lugging it back to your car isn't on either because the things are very heavy and cost $thousands.

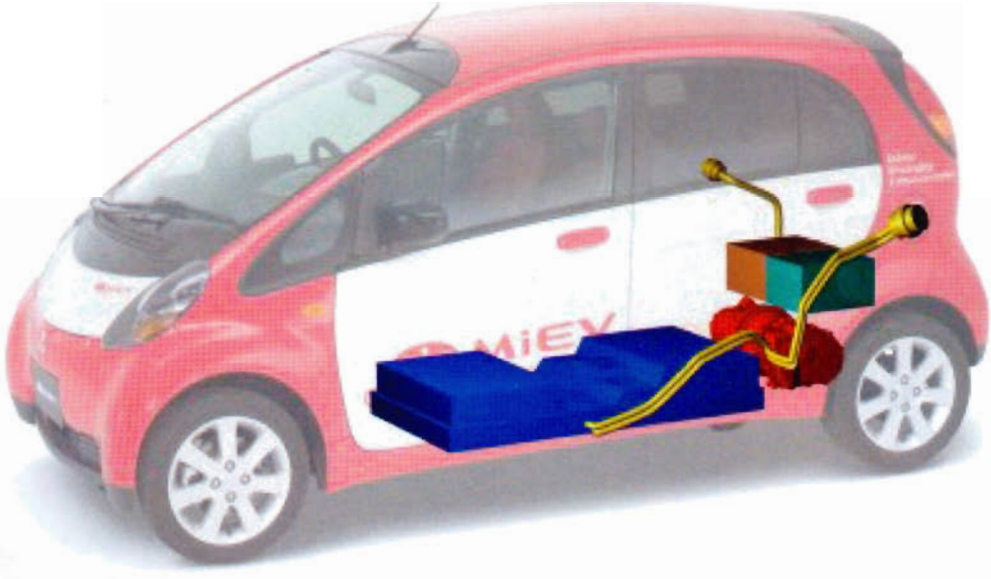
So the recharge issue is likely to be a major topic of investigation in the Victorian research. Long before the results of its five-year project are out, however it's likely that fast-recharge points will be all over the place - some on kerbside bollards, others at central charging stations, more in special home recharge plugs.

Or your empty battery will be whisked out at battery-swap stations and replaced with a full one in about three minutes; just like barbecue gas bottles now except fully automated, no more queuing for the bottle cage key!

Plug-in recharges will take anything from 15 minutes to eight hours depending on how much power you want, how quickly and when you want it eg: Off-peak, green power only or right now regardless of cost or green-ness. And, of course, if you simply want to plug your EV into the garage socket, that will do the job too but without the refinements of the professional fitting.

The bollards will be card-activated, hi-tech installations complete with wireless modem to SMS you when your car is charged and how much you're up for, or to tell you there's been a hitch. Another modem tells the electricity supplier your billing details. While an average petrol car costs about $12 to travel 100 kilometres, an electric one will be only about $2! Fine detail of what you'll pay is still being pondered but the $30 billion national gasoline bill will be slashed to about $5 billion.

What already seems certain is that re-charge operators will make millions. At present there are only two majors in



X-ray view of the i MiEV's 47kw electric motors (red) and its 330-volt lithium-ion batteries (blue).

Australia– ChargePoint and Better Place. Technical know-how for both originates in America with financing, roll-out and on-going management by Australian entrepreneurs.

ChargePoint is run from Sydney by Luke Grana, at 26, little longer than a business degree, out of Riverview school but already a veteran entrepreneur and one of Australia's handful of EV gurus. Better Place is led by Evan Thornley, a one-time Victoria MP turned pioneer entrepreneur.

Both men must be watching the oil companies like hawks to see what they are going to do about the EV revolution which spells the end of petrol stations as we know them. A few diehards still think the petrol companies will come up with something, future freaks say electricity is but a flash in the pan until air or hydrogen propulsion is perfected.

They're dreaming, however, because the United States alone has invested billions of dollars in EV technology and is spending even more to refine it; the world's major car-makers are committed to it – even India is among the leading EV-makers whose cars will be on the roads within months.

Our pilot fleet of electric cars are Mitsubishi i MiEVs but a Californian company will sell you an EV right now for around $110,000. Called the Tesla Roadster, it performs like a Porsche and has a range of up to 320 kilometres. That's about the distance from Sydney to Bathurst, Melbourne to Portland, Brisbane to not-quite Gladstone, and Perth to Southern Cross. One-way only of course so your return at this stage would depend on finding a friendly householder who would let you plug in overnight.

The time lapse between noting you're almost out of power and finding that friendly plug-in point is known in Britain and the USA as range anxiety. Among the chardonnay and cafe latte sets, it is almost a neurological badge of distinction, an anxiety one can experience only if one has the money to afford an EV and the avant-gard spirit to be among the first buyers of the thing.

A recent driver review of the Nissan LEAF EV carried out by the Wall Street Journal described range anxiety as neurotic and added:

"The vast majority of Americans drive less than 40 miles [64 km] per day. The LEAF goes twice that far with room to spare (also, Nissan engineers have built a small fudge factor into the charge meter, much like a gas tank's reserve fuel) ... For the record, I logged more than 80 miles [128 km] on the LEAF and still had about 20 per cent charge in reserve. What anxiety?"

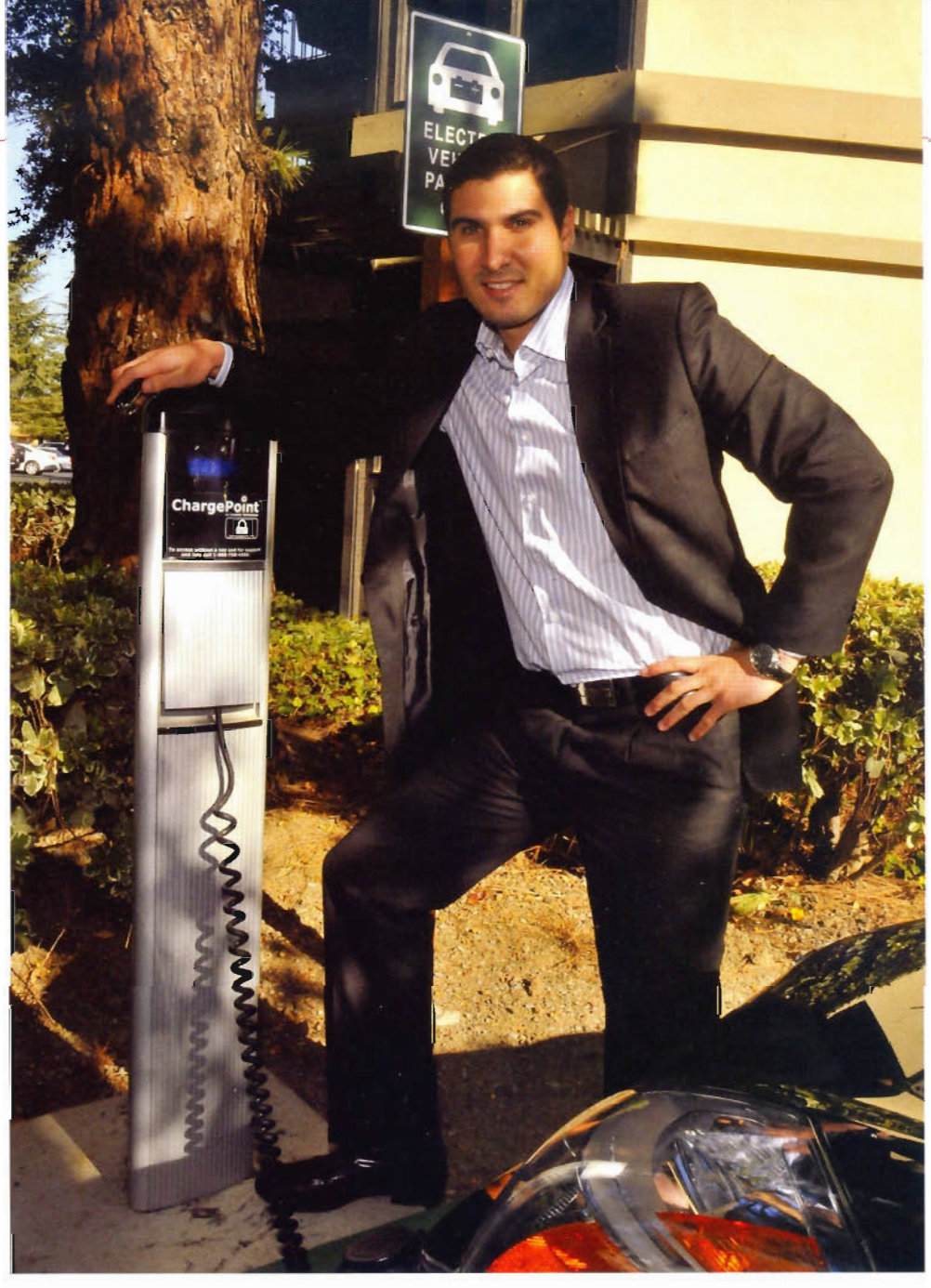
An EV trial by CENEX in the UK found that users were over-cautious when planning journeys. Range anxiety effects were significant throughout the trial, despite the maximum journey length being only one quarter of the available vehicle range. The trial also found that users modified their driving style when the battery charge fell below halfway. The same trial found that the electric vehicle exceeded the general public's expectations on all monitored performance criteria. This led to nearly three quarters of the drivers stating they would use an electric vehicle as their regular car, compared to less than half before their test drive.

In Victoria's Electric Vehicle Trial, 180 households will be given an EV for three months each. The trial will provide the vehicle charging point and pay for insurance; the household will pay the cost of electricity and the results are aimed to show how, where, why and when they drive the vehicle, and what they think of it.

Indications from some international trials suggest that most electric vehicle drivers will charge their vehicles mainly at home. If you're using a power point at your house the cost of the electricity will just be part of your electricity bill. Having a specialist charging point won't change this but it will provide you with better control over when you charge your vehicle (for reasons of price, convenience or the environment).

The commercial implications of recharging are almost endless with some overseas employers providing the service for free as a staff benefit. Recharging, even if it costs, would be an obvious inducement for shopping centres to incorporate bollards in their vast car parks.

Pilot recharge projects are being prepared right now by ChargePoint and it has taken delivery of its first i MiEVs. BetterPlace, which specialises in total battery swaps, expects to have national coverage in 2012 when the real EV rush hits our shore. The two companies plan to work together to achieve standardisation of fittings and access.



ChargePoint's 26 year-old pioneer Luke Grana shows how a kerb-side re-charger will operate.

Luke Grana became an entrepreneur while still at uni where he opened, then on-sold, a couple of cafes but his ping moment came in London in 2007 when he saw Westminster preparing for its EV revolution. Back home he made a deal with Couloumb, America's leading developer and manufacturer of recharge systems. Wonder-boy or no, he has gathered around him a team of seasoned technicians, financiers and managers to hold market leadership and is poised to close a big financial deal.

Evan Thornley has already secured $25 million from Lend Lease's venture capital division, recruited Harrison Young, a prominent banker, as chairman of his company and appears equally innovative.

Despite all that, there are still sceptics who claim the EV revolution will be a fizzer and they point to the amazing fate of The Impact, a super-looking and super-performing all-electric car produced by General Motors in 1995. They were a common sight in California until suddenly recalled, crushed and shredded. It's been described as the automotive industry's biggest blunder.

Fifteen years later, the fact is that this EV revolution is now too big to stop. Global circumstances and opinion have changed radically. The US Government has already poured close to $100 billion into development and gives EV buyers an $8000 subsidy. A £5000 rebate is in place in Britain where London alone aims to have 15,000 charging stations.

The last time any of us would have been aware of such vehicles was probably when electric milk floats swished through pre-dawn streets, drivers jumping out every few houses to leap gates and trample hedges as they ran door to door, glass bottles clattering in their crates.

Nowadays, that's power walkers' time when safety often depends on hearing approaching traffic, so perhaps they should be practising emergency safety leaps because electric cars are almost silent. No internal combustion, no warning noise. They will be our biggest lifestyle development since horse and buggy with half all cars in Europe predicted to be electric by 2015. Australia lags Europe, Japan and the US but we can expect EVs to be dominant here in 10 years.

Almost all car-makers are far advanced with all-electric models due in the next three years. While Mitsubishi's I MiEV is, so far, the first to arrive in Australia, Nissan has its Leaf already in production; Ford will launch its Transit Connect van this year; BMW already has a Mini-E test fleet in the US; and Volkswagen, Toyota, GM, India's Tata – you name them and they're building all-electric cars hand-over-fist.

Serenely observing all that are the companies that mine lithium as battery-maker demand soars from $millions to $billions. (See The Lithium Enigma, Shipping Australia magazine's autumn edition 2010, page 16).

Sharemarket urgers have been pushing lithium investment for a while now but Soquimich, the world's biggest lithium miner, has dropped its prices by 20 per cent and Chile, Argentina, Bolivia and Tibet are rotten with the stuff. Even WA has two lithium mines. So plungers might consider lithium's other role of calming mania and other excitable conditions while they contemplate the news that stock in BYD, a chinese battery-maker, rose 600 per cent in 18 months.

As all that whirls along, there's a viewpoint that the plug-in concept will transform car-lovers' pride and joy into just another smart appliance like a washing machine. But for fleet owners and people whose cars are a significant item on their P&L, their EVs look like being a godsend and with no emissions they should make environmentalists happy too.

And there is something in it for the rev-heads and car freaks. With no transmission trains and direct drive, the EVs' acceleration is ... the only word for it is electric!