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Fall 2010

Test drive the future with eTV



WELCOME TO eTV's *green* WHEELS

The "*Electrification of Transportation*": Coming to a plug near you!

Welcome to the Fall edition of *eTV's Green Wheels*, the ecoTECHNOLOGY for Vehicles (eTV) program's quarterly e-newsletter. You have already seen electric vehicles (EVs for short), like hybrids, on the road in Canada.

However, manufacturers are developing new types of EVs, including plug-in hybrid electric, battery electric and fuel-cell EVs. That's why eTV recently launched an information booklet entitled *Electric Vehicle Primer* and *The Life Electric*, a video on EVs, to inform Canadians about these technologies.

This edition of Green Wheels includes:

- An update on eTV outreach activities
- The article *Alphabet Soup for Electric Cars*, which explores some of the terminology related to electric cars.
- How eTV is working with manufacturers to put EV technologies — including the Mitsubishi i-MiEV and the Tesla Roadster — through their paces in the laboratory, on the test track and on the road.
- eTV's plans to conduct one of the first electric vehicle driver evaluation programs in Canada.



Happy reading!

Fall has been very busy for eTV's outreach team. Over the past few months, the group organized or attended several events across the country.

eTV Media Days (September 9-10)



BMW118d Media day test drive --
emergency lane change manoeuvre

eTV hosted two media days at Transport Canada's Motor Vehicle Test Centre, in Blainville QC. A number of journalists were invited to come and learn about the program's latest electric vehicle test activities. They even had a chance to drive several eTV vehicles, including the all-electric Mitsubishi i-MiEV, Tesla Roadster, and a clean diesel BMW 118d (which was the 2008 World Green Car of the Year). The event was a great success. Several national papers and television stations ran stories explaining to Canadians that electric vehicle technologies are right around corner.

EV2010 (September 13-16)

Immediately following media day, eTV staff travelled to Vancouver for the Electric Vehicle Conference and Trade Show. During the conference, eTV debuted its latest video, *The Life Electric*. This short video, produced with Electric Mobility Canada and BC Hydro, explores what EVs mean for Canadians, and how they could fit into the Canadian transportation system.

During the conference, eTV also launched its *Electric Vehicle Primer: An Introduction to Hybrid, Plug-in Hybrid Electric and Battery Electric Vehicles*, a short booklet that explains electric vehicles in easy to understand terms, and uses case studies to show how different EVs could fit into Canadians' everyday life. You can download a copy of the Primer from eTV's website.

World Energy Congress (September 13-16)

eTV was front and centre at the 2010 World Energy Congress (WEC) held in Montréal, from September 13 to 16, 2010. WEC is an international forum organized by the World Energy Council every three years, with participants from academia, government, energy producers, industry and international organizations to discuss and share solutions from a global perspective.

Part of the Government of Canada's Pavilion, the eTV booth included the Mitsubishi i-MiEV battery EV and the Segway i2 Personal Transporter. With more than 1,500 visitors to our booth, WEC 2010 provided eTV with the unique platform to share Canadian test results with world leaders in the field of energy, as well as exchange information on global efforts towards clean energy.

Mitsubishi City Chase Presented by Blackberry (July 17)



City Chaser offsetting carbon emissions, with an electric i-MiEV pictured upper right

eTV staff took part in the Mitsubishi City Chase, an urban adventure that is part obstacle course, part treasure hunt, which attracts both residents and tourists. Participants (or “Chasers”) must seek and find, in a six-hour window, at least 10 “Chase Points” hidden throughout the city. At each Chase Point, they must complete a “challenge” to prove that they have indeed found the site. eTV was proud to use this event to showcase the fully electric Mitsubishi i-MiEVs.

At the eTV Chase Point, we presented Chaser teams with a mental and physical challenge. First, we asked them five questions about electric vehicles and vehicle emissions. Their scores determined how many 10-kg

cinder blocks they had to move from one side of the street other at four stations, each corresponding to a vehicle technology: gasoline, clean diesel, hybrid and battery electric vehicles.

Chasers who scored five out of five on the quiz could skip the most carbon polluting vehicle technologies and “offset” or move just the cinder blocks that represented the electricity generation carbon emissions of an electric vehicle over 1,000 km (~ 30 kg CO₂). A poorer score meant the Chasers had to offset the carbon emissions of a gasoline vehicle (190 kg CO₂), a diesel vehicle (140 kg CO₂), a hybrid vehicle (120 kg CO₂) and finally an electric vehicle (30 kg CO₂).

The eTV Chase Point attracted nearly 36% of all City Chase participants, as well as many bystanders and tourists. And the event raised more than \$22,500 for Right To Play—for every \$50 raised, a child will enjoy the benefits of the Right To Play’s Sport and Play programming for an entire year. All in all, a great day!

Alphabet Soup for Electric Cars

At eTV, we know that making sense of the terminology around new vehicle technologies is not easy. That’s why we created an English/French glossary on the eTV website – to help Canadians better understand them. To help reduce some of the confusion, here are some common abbreviations related electric vehicles, with links to the eTV website for more information. Let us know if there are words that you think we should add — we periodically update the glossary and add words, and we would like to hear from you.



BEV	battery electric vehicle: A vehicle whose energy typically comes from being charged for a few hours from a standard 110 V or 220 V outlet
CACs	criteria air contaminants: Refers to a group of pollutants that includes sulphur oxides (SO _x), nitrogen oxides (NO _x), particulate matter (PM), volatile organic compounds (VOC), carbon monoxide (CO) and ammonia (NH ₃)
FCEV	fuel-cell electric vehicle: A vehicle in which electricity is generated through an electrochemical reaction of hydrogen with oxygen
GHGs	greenhouse gas emissions: Gases in the environment that absorb and emit radiation. Common GHG emissions include water vapour (H ₂ O), carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (NO _x), ozone (O ₃) and chlorofluorocarbons (CFC)
HEV	hybrid electric vehicle: A vehicle that integrates an internal combustion engine, an electric motor, a generator and a battery pack.
ICE	internal combustion engine: A heat engine in which the pressure necessary to produce motion of the vehicle results from the ignition or burning of a fuel-air mixture within the engine cylinder
Li-ion	lithium-ion: A type of battery chemistry commonly used in electric and plug-in hybrid electric vehicles
NiMH	nickel metal hydride: A type of battery chemistry commonly used in hybrid vehicles
PHEV	plug-in hybrid electric vehicle: A vehicle that can be powered by a gasoline motor and an electric battery that draws its power by being plugged in to a standard 110 V or 220 V outlet
PM	particulate matter: Fine solids or liquid droplets suspended in the air, including grit, dust, fumes, aerosols, soot and smoke emitted directly from vehicles (especially diesel)
PZEV	partial zero emission vehicle: In order to merit the PZEV designation, a vehicle must satisfy the most stringent level of emission standards aside from the zero emission level (Tier 2, Bin 2; also known as Super Ultra Low Emission Vehicle, SULEV standards in California) and release near-zero volatile organic compound (VOC) emissions while the vehicle is not in operation
SOC	state of charge: Indicates the amount of fuel (electricity) remaining for use in a battery electric vehicle, hybrid-electric vehicle or plug-in hybrid electric vehicle

Testing EVs



Tesla Roadster

The Tesla Roadster is a light-duty passenger vehicle available in Canada and the United States. It proves that environmental performance does not have to come at the expense of innovative vehicle design or driving performance. This fully battery electric sports car can travel nearly 400 kilometres on a single charge of its lithium-ion battery pack and can accelerate from 0 to 100 km/h in 3.9 seconds.

Mitsubishi i-MiEV

The Mitsubishi i-MiEV is a four-passenger sub-compact, battery electric vehicle that will be available in North America in 2011. The electric motor provides exceptional torque at very low speeds. This allows the vehicle to accelerate quickly and quietly. The vehicle's 16 kWh lithium-ion battery packs are stored under the passenger compartment to maximize passenger and cargo space. With a range of up to 120 kilometres (75 miles), the i-MiEV could be a good choice for people who commute daily in urban or suburban neighbourhoods.



These are two very different vehicles, both fully electric. Over the coming months, eTV will be putting them through their paces, both in the laboratory and in real-world driving conditions, to determine electricity (energy) consumption, performance and vehicle range. eTV is most interested in evaluating their performance in city stop-and-go traffic as well as in colder temperatures.

Down the Road for eTV

In the coming months, eTV will focus on completing its EV testing and evaluation strategy. This includes:

- conducting one of the first electric vehicle driver evaluation programs in Canada. This project puts average Canadians behind the wheel of an EV to study how they perform in real-world driving conditions and to identify possible barriers to drivers choosing EVs in Canada;
- pioneering cold testing on a number of battery electric vehicles to help inform the development of EV standards and regulations;
- continuing outreach activities to inform Canadians about advanced technologies, with a particular focus on EVs;
- completing our testing and evaluation of other advanced technologies.

On this last point, over the next few months, we invite you to check the eTV website for test plans and test results on the following technologies:



BMW 118d, the 2008 World Green Car of the Year that exemplifies modern clean diesel vehicles, with its advanced common rail direct injection technology and automatic start-stop, a feature more commonly found in hybrids and micro-hybrids.



The Renault Mégane Berline dCi 110, a clean diesel vehicle which, aside from being equipped with advanced glow plugs to reduce cold starting problems, is 95% recyclable.



Subaru Forester PZEV, a Partial Zero Emission Vehicle or PZEV, that emits extremely low levels of key pollutants, including hydrocarbons, carbon monoxide, nitrogen oxides, particulate matter and formaldehyde.



Ford Fiesta ECONetic, a turbocharged diesel that is one of the most efficient vehicles in Ford's European line-up.

Parting Thoughts

We hope that you share our excitement about these promising new green technologies and will visit our website to read more about how eTV is *test driving the future!*

If you have any questions, comments, or know of an event eTV should attend to showcase advanced technologies, please send an e-mail to eTV@tc.gc.ca.

The ecoTECHNOLOGY for Vehicles Team

Subscription

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