



## A word from the Chair—a new EV paradigm for developing world?

For several years the IA-HEV has supported and encouraged the introduction of electric vehicles in developing nations. Countries such as China, India, Brazil, South Africa, and many others have a huge growth potential for electric propulsion in the transportation sector. Our workshops and dissemination activities have created many contacts. An interesting example is the NGO “Clean Air Island (CAI),” based in Mumbai, India. CAI plans to start a pilot demonstration application of a small electric bus operating on a service circuit in the inner part of Mumbai. A photovoltaic power installation, a novelty in Mumbai, will produce the energy.

IA-HEV Chairman Urs Muntwyler established contact between this proposal and the Swiss REPIC fund. REPIC is a joint activity of three federal offices of the Swiss Government. After fruitful discussions and project amendments, the REPIC fund decided to support the CAI project at the level of 100,000 Swiss francs, a breakthrough that followed Muntwyler’s meeting with all project partners in India and presentation of the activities of the IA-HEV at the SIAT 2009 conference in Pune.

Supporters of CAI have included the Bus Transport Company (BEST) of Mumbai and the Solar Center Muntwyler (Switzerland). The IA-HEV Chairman has the responsibility for reporting on the project and its progress to the REPIC fund, and he has observed that “...this is an interesting spin-off of our initiative to start an Annex on the Implementation of HEVs in developing countries.

*Urs Muntwyler, Chair IA-HEV*

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## Stavanger ExCo meeting looks at Kyoto Agreement’s targets/results in member and guest countries

As a special topic earlier adopted for discussion at the 30<sup>th</sup> IA-HEV Executive Committee meeting conducted in Stavanger, Norway on 11-12 May, member and guest country delegates to the meeting discussed how their respective country governments were implementing the Kyoto greenhouse gas reduction protocols, or portions thereof.

The delegate for **Italy** reported that his country had adopted relatively low GHG emission reduction targets compared to other countries but that achievement of these modest targets is within sight though it may come somewhat later than initially planned.

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In the **Netherlands**, it has taken almost 20 years to achieve a GHG emission reduction of 3 Megatons in the transport sector, but an additional 15 Megatons reduction should be achieved by 2020, although an accelerated pace of reduction would be required to meet this ambitious objective.

**Sweden** had a Kyoto protocol GHG emission target of +4%, recognizing the large emission reductions that had already been achieved before 1990. Nevertheless, the Swedish government set a -4% GHG emission reduction target for itself, and this target has already been achieved.

Although the **United States** did not concur with the Kyoto agreements, its delegate offered the opinion that current problems in the automotive industry might be an opportunity to move towards producing more energy-efficient and low emission vehicles. New stimulus legislation has created incentives purchasing PHEVs.

**Belgium** is succeeding in meeting emission targets with reduced-carbon (high-efficiency) conventional (petrol and diesel) vehicles, for which tax incentives are in place, despite lagging behind some other countries in sales share of hybrids.

In Kyoto reference year 1990, **Denmark** was importing much electricity from abroad, and those CO<sub>2</sub> emissions from production were not counted as part of Denmark's base inventory. Consequently, Denmark has a relatively modest reduction GHG target to meet, but still plans to move forward aggressively toward providing a greater share of domestic electrical supply from renewable sources such as wind.

**Ireland's** CO<sub>2</sub> emission target under the Kyoto protocol allows for a 13% increase compared to 1990. Nevertheless, the government aims for a 20% *reduction* by 2020. Today, 10% of electricity production is from renewable, and the target for 2020 is 40%. Ireland is actually now producing more electricity by wind power than it can use, so the country is looking to export electricity, use it in EVs, or both. Promotion of the EV option is enhanced by the teaming of the electricity infrastructure operator with Renault-Nissan (as in Better Place™ installations elsewhere), whilst the vehicle registration tax increases with CO<sub>2</sub> tailpipe emissions. Also, the government has recently published a sustainable transport policy.

**Spain's** CO<sub>2</sub> emission target is +15%, compared to 1990. In 2004, thanks to healthy economic growth, the actual value had reached +52%, but as of today has been reduced to +42%, with a goal for 2012 of +32%. Transport accounts for 32% of Spain's total energy consumption.

A scene from the Stavanger meeting is shown below.



### ***Hybrid vehicles market begins rebound as renewed interest in BEVs takes off***

This summer, the USA and Japanese governments offered cash incentives to spur sales of new cars to replace older, less fuel-efficient ones, resulting in a rebound in sales of hybrid electric vehicles (HEVs) from the lows earlier in the year. Also, this summer's introduction of Mitsubishi's iMiEV to the Japanese market and Nissan's announcement of the Leaf has recently increased public awareness of battery electric vehicles (BEVs).

In the U.S., sales of hybrids in August reached 38,701 units, which approached the monthly peak of HEV sales of 40,000 units reported in June 2008. Hybrid sales made up 3.07% of new light-duty vehicle sales in the U.S. in August. However, this represented a drop from the 3.55% market share captured by HEVs in July, as hybrid sales rose 9.2% from July to August, while overall light-duty vehicle sales jumped 26.5% in the same time frame, helped by the "Cash for Clunkers" (CARS) program. However, car sales are expected to recede from these figures now that the program has concluded, and the total sales of hybrids in the U.S. are projected to come in at less than 75% of the peak of 360,000 hybrids sold in 2007.

The Japanese government has likewise offered its citizens a tax incentive which ranges from \$1,000 to \$2,500 to encourage purchases of ecologically friendly cars including HEVs. Most notably, the new third-generation model of the Prius HEV has been the top-selling car in Japan since May, with 27,712 units sold in July 2009, almost four times as many sold in July 2008, according to data from the Japan Automotive Dealers Association. The Prius has become so popular that in late July Toyota, the manufacturer of the Prius, released a statement that

new orders in Japan would not be fulfilled until after March 31, 2010, too late to qualify for the tax incentive. Sales of the competing HEV Honda Insight came in at 10,210 units for July 2009.

Though these incentives have boosted sales of HEVs – at least for the summer months – BEVs have recently stolen some of the spotlight. Mitsubishi unveiled a production version of its i-MiEV electric minicar in early June (see below).



**Mitsubishi MiEV**

Several hundred units are currently available to local governments and corporations in Japan on a maintenance lease plan, and Japanese customers can place orders for delivery beginning April 2010. Also, Nissan announced its zero-emissions electric car, the Leaf, in early August, which it expects to sell in Japan and the U.S. beginning in late 2010. The company intends to manufacture about 300,000 units of the Leaf annually by 2012, even though Nomura Research Institute estimates demand for BEVs to reach only 180,000 units per year by then.



**Nissan Leaf**

*--Kristin Abkemeier*

## **IA-HEV welcomes new member country as it announces major BEV/PHEV initiative**

Effective 7 June 2009 the United Kingdom has rejoined the Agreement as a full member. At about the same time, the British Government's Science and Transport Ministers, through the Department for Business, Innovation and Skills' Technology Strategy Board, announced eight new low carbon vehicle projects that will share £25 million of Government funding to run 'real life' trials. The project will be the biggest of its kind and accelerate the availability of innovative low carbon cars to consumers. The successful bids arose from consortia comprising car manufacturers, power companies, Regional Development Authorities, councils, and academic institutions. Government investment will support the investment already made by the consortia themselves and is the most significant step in the UK to date of a co-ordinated move towards low carbon transport.

The Technology Strategy Board created this Low Carbon Vehicle Demonstrator competition to act as a catalyst for industry, the public sector and academia to come together to create low emission vehicles and provide solutions to powering them. It is planned that approximately 340 vehicles will begin trials on UK roads within the next three to fifteen months, the biggest project of its kind. The majority of the vehicles are electric, with a small number being plug-in petrol/electric hybrids. The information gained from this project will make an important contribution to the future plans of manufacturers and their partners, to develop low carbon vehicles for the mass market.

The winning consortia are:

- The West Midlands consortium (Coventry and Birmingham Low Emission Demonstrators) of 13 organizations that will develop and demonstrate 110 road-worthy vehicles in the two named cities.
- The North East project (Newcastle) that will include 15 Nissan cars, 10 Smith electric taxis, five Smith people carriers, a Smith executive minibus, two AVID saloon cars and two Liberty urban Range Rovers, alongside a network of charging points.
- Ford Focus BEV Development Project, a consortium of Ford, Scottish and Southern Energy and Strathclyde University that will provide a fleet of zero emissions prototype Ford Focus BEVs and a charging infrastructure in and around Hillingdon, Middlesex during 2010.

- London South East Bid consortium partners EDF Energy, the Greater London Authority, the Elektromotive Corp., and Westminster City Council that will continue and expand operation of 100 smart™ electric cars in a trial across the London South East and West Midlands regions. An additional 60 vehicles are planned for the London South East region.
- The MINI E Research Project, a 12-month field trial, that will place forty MINI E models with private drivers in the Oxford region, and partners BMW Group, Scottish and Southern Energy (responsible for providing the infrastructure in and around Oxford and the South-East of England), and Oxford Brookes University's Sustainable Vehicle Engineering Centre.
- The Allied Vehicles Project consortium of Allied Vehicles, Glasgow City Council, ScottishPower, Axion and Strathclyde University that aims to design, test and bring to production 40 battery electric cars and 40 charging points, with a range of 80 to 100 miles on a full recharge and capability to operate in Glasgow and recharge from the domestic or a commercial power supply. An innovative GPS system will record the number and length of individual journeys, the date and time and the energy usage of each journey, the time and length of charging and the ambient temperature.
- A project called "PHV – Paving the way to full commercialisation of plug-in hybrid vehicles," developed by Toyota and EDF Energy, that starting in mid 2010, predominately within London and lasting for a period of 3 years, will deploy up to 20 innovative lithium battery-equipped Toyota Plug in Hybrid Vehicles (PHV) leased to existing Toyota Prius fleet customers that include a mix of public bodies and private companies.
- The "EEMS Accelerate" project, a consortium led by AEA consultancies with partners Delta Motorsport, Lightning Car company, Westfield Sports cars, Ecotricity cars, and Green-Motion rental network, that will put 21 cutting edge high specification electric sports cars on the road for 12 months to provide a major boost to widespread adoption of these exciting BEVs.

A sampling of the vehicles involved in the programme is shown in the next column at the official project launch in London.



In addition, the UK Government is taking a more pro-active position on greater electrification of the national transport system by announcing (July 2009) a grants/producer support scheme that will provide £250 million for various dimensions of ultra-low-carbon vehicle development and deployment. The bulk of the money (around £230m) will be used to deliver point of purchase price reductions in the region of £2,000 - £5,000 for consumer purchase of electric and PHEV passenger cars in an incentive scheme scheduled to start in 2011, when a broad a range of choice in electric vehicles is expected to become available. An additional £20 million will be provided through the "Plugged in Places" Electrical Vehicle Infrastructure Framework to help deliver the charging points that these vehicles will need. This amount is being further supplemented by up to £10 million from the low carbon element of the Strategic Investment Fund.

Eligibility criteria currently proposed for these vehicles (still under review and comment) include:

- tailpipe emissions of 0gCO<sub>2</sub>/km for an EV or 75gCO<sub>2</sub>/km or less for a PHEV
- minimum electric drive range in excess of 70 miles for an EV or 10 miles for a PHEV
- maximum speed in excess of 60mph
- a rating of at least 4 stars under the EuroNCAP safety features scheme
- original manufacturer's (or comparable entity) warranty comprehensively covering the vehicle and its key components, including provision of at least 7 years (or 100,000 miles) coverage for the battery and electric powertrain, and at least 3 years (or 60,000 miles) coverage for other conventional elements of the vehicle; and
- demonstrable mass market potential.

*Contributed by Ranbir Nota,  
UK Department for Transport  
Energy Saving Trust*

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## **Performance news: hybrid drive technology scores major race wins in 2009 Formula One season**

Hybrid drive technology played a role in two recent victories in the current season of Formula One (F1) auto racing, the world's most expensive sport. F1 rules for the 2009 racing season allowed teams the option of installing Kinetic Energy Recovery Systems (KERS) on their race cars for the first time. F1 rules allow KERS to draw 60 kW of power from the rear axle on the car as it decelerates, which is then stored in a battery. The energy can then be reused in the next lap to give up to a 6.6 second boost to overtake another car. An optimized KERS package can be expected to deliver a 0.3 to 0.5 second gain per lap.

Though four teams began the 2009 season fielding KERS-equipped cars, two abandoned the technology as the hybrid technology failed to win or set pole positions from March through June. In early July, the Formula One Teams Association (FOTA) comprising eight of the competing teams formed a gentlemen's agreement to refrain from using KERS for the 2010 season, deeming the expense of developing and installing these systems as unaffordable. However, in late July the Hungarian Grand Prix victory by the 2008 F1 champion Lewis Hamilton driving the Vodafone McLaren Mercedes team's MP4-24 car (see below) demonstrated that it was possible to win with KERS. A month later, a win by the KERS-equipped Ferrari team's Kimi Räikkönen at the Belgian Grand Prix showed that the earlier victory using the technology was not a fluke, and the Renault team has been reported as considering bringing back its KERS system for some late-season races. (Note: The McLaren car's KERS system features custom lithium-ion power cells developed by A123Systems that offer more than 20,000 W/kg. French lithium-ion cell manufacturer Saft provided the battery for the Ferrari team.)



**McLaren Mercedes MP4-24**

F1 has permitted KERS as an option for the 2010 racing season, maintaining the 60 kW power boost limit but increasing the minimum weight of cars to partially accommodate the added weight of the system. Regardless of the FOTA agreement, F1 races may yet see the high-performance hybrid drive technology next year, as one team that is not a member of FOTA has already announced its willingness to use KERS. As a result, the battle of hybrid versus conventional technology in F1 racing looks likely to continue to be as compelling off the race course as has become on it in 2009.

--Kristin Abkemeier

## **German government formally embraces "National Development Plan for Electromobility"**

Effective 19 August, the German Federal Government has finalised and adopted the *National Development Plan for Electromobility*, which was crafted jointly by the Federal Ministries of Industry and Technology; Commerce, Construction, and Urban Development; Environment, Ecology, and Nuclear Security; and Economic Progress and Development. The Plan incorporates significant vision with milestones for the future of mobility in Germany, and identifies the specific goal of deploying 1 million electric vehicles into service on German roads by the year 2020. To reach this goal, the next ten years of developmental activity in German transport will emphasize more improvement in battery technology, (two-way) integration of EV recharging capability into the national electrical grid, and additional market preparation and introduction of electric vehicles. In tandem with the national goal of providing more electricity from renewable/zero carbon generation sources, this Plan should significantly reduce national carbon dioxide emissions by creating a practically zero-emissions vehicle alternative. Prior initiatives in this area by the German Government have already committed more than €500 million in relevant resources.

## **IA-HEV Clean Vehicle Awards announced**

Since 1993, the Implementing Agreement for Co-operation on Hybrid and Electric Vehicle Technologies and Programmes (IA-HEV) of the International Energy Agency (IEA) has fostered information exchange and coordinated research in the field of clean vehicle technologies across national boundaries. During this period, clean vehicle technologies and their components have achieved remarkable progress, reaching market

breakthrough to full commercialisation of three generations of vehicles. This progress is driven by committed persons, teams, and manufacturers. In 2005 the IA-HEV instituted an annual award to honour outstanding commitments to the advancement of clean vehicles, and on 14 May at EVS-24 in Stavanger the 2009 winners of IA-HEV's Clean Vehicle Awards were announced. Awards are in three categories:

1) **Manufacturers**, for outstanding worldwide sales figures for hybrid models. The 2009 winner is **Honda Motor Co. Ltd** (Japan) for achieving in 2008 the outstanding worldwide sales figure of more than 300,000 total hybrid vehicles, and specifically for more than 250,000 Honda Civic hybrids since that car first entered the marketplace.

2) **Nation or Institutional Entity**, in recognition of outstanding promotion of electric vehicles. The 2009 winner is the **Energy Saving Trust (EST)** (UK) for its outstanding promotion of clean vehicles.

3) **Personal Award**, intended to honour a long-standing commitment by an individual to the promotion of clean vehicles. The 2009 winner is **Mr. Steen Volmer Jensen** (Denmark) for the pioneering development and production of a lightweight commuter vehicle with electric drive.

The awards ceremony is shown below. Awardees' representatives for Honda and EST, respectively, stand to the left side of the photograph with officials of EVS-24 and the IA-HEV ExCo Chairman center, as Mr. Jensen speaks at the microphone.



## **IEA EUWP accepts IA Phase III report; plans for IA Phase IV approved**

The ExCo Chair is pleased to report that the End-use Working Party (EUWP) of the IEA at its 14-17 September meeting in Stockholm accepted the final report of the third phase (2005-2009) of the Implementing Agreement on Hybrid and Electric Vehicles, and has formally approved the plan for continuation of the Agreement for an additional 5-year phase to begin later this year. The approval was granted in conjunction with a number of recommendations regarding practices and outreach methods of the IA for which official documentation will be received soon. This step now opens the way for final approval of the plan at the full IEA meeting in November.

## **Operating Agents and Annex I Country Experts for 2009**

### **OPERATING AGENTS**

#### *Annex I: Information Exchange*

##### **Chris Saricks**

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#### *Annex X: Electrochemical Systems*

##### **James A. Barnes**

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FreedomCAR and Vehicle Technologies  
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#### *Annex XI: Electric Cycles*

##### **Frédéric Vergels**

European Electric Road Vehicle Association  
(Association Européenne des Vehicules  
Electriques Routiers - AVERE)  
VUB-TW-ETEC  
Boulevard de la Plaine 2  
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#### *Annex XII: Heavy-Duty Hybrid Vehicles*

##### **Carlo Mol**

Project Developer, Smart Grids  
VITO - Flemish Institute for  
Technological Research  
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B-2400 Mol, Belgium

#### *Annex XIII: Fuel Cells for Vehicles*

##### **Dr. Gabriela Telias**

A3PS - Austrian Agency for Alternative  
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#### *Annex XIV: Lessons Learned*

##### **Thomas Turrentine**

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University of California, Davis

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*Annex XV: Plug-in Hybrid Vehicles*

**Charles Thibodeau**

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**ANNEX I COUNTRY EXPERTS**  
*(Principal/Alternate)*

**Austria:** *Andreas Dorda/ Gabriela Telias*, BMVIT (A3PS)

**Belgium:** *Carlo Mol*, Project Developer, VITO

**Canada:** *Carol Burrelle/Charles Thibodeau*, Natural Resources Canada

**Denmark:** *Jørgen Horstman*, Technical University of Denmark - Ørsted

**France:** *Stéphane Biscaglia*, ADEME

**Finland:** *Jussi Suomela/Teemu Lehmuspelto*, TKK (Helsinki Univ. of Technology)

**Germany:**

**Italy:** *Mario Conte*, ENEA

**Netherlands:** *Arie Brouwer*, SenterNovem

**Sweden:** *Peter Kasche*, STEM

**Switzerland:** *Sigrid Kleindienst*, Engineering Office Muntwyler

**Turkey:** *Hamdi Ucarol/Eren Öszu*, Scientific and Technological Research Council of Turkey (Tübitak)

**United Kingdom:** *Michael Hurwitz/ Roy Collins*, Department for Transport, Bureau of Environment Policy and Delivery

**United States:** *Danilo Santini*, Argonne National Laboratory; *James Barnes, David Howell*, USDOE/EERE/OFCVT

**Relevant Activities Agenda —**  
**3<sup>d</sup> and 4<sup>th</sup> quarter 2009**

June 8-12, 2009	Advanced Automotive Battery & EC Capacitor Conference Long Beach, California, USA
June 9-10, 2009	IEA CERT Meeting. Paris, France
June 18-19, 2009	SAE Symposium 'Facing the Challenge of Future CO2 Targets: Impact on European Passenger Car Technologies.' Turin, Italy
June 22, 2009	Annex XIII Workshop 'Fuel Cell Vehicle Technologies.' PSI, Villingen, CH (Switzerland)
June 29-July 3, 2009	Lucerne Fuel Cell Forum. Lucerne, Switzerland
August 10-13, 2009	Plug-in 2009 Conference. Long Beach, California, USA

Sept. 7-11, 2009	5th IEEE Vehicle Power and Propulsion Conference. Dearborn, Michigan, USA
Sept 9-10, 2009	Low Carbon Vehicles Event, Millbrook Proving Grounds. Bedfordshire. UK
Sept. 14-15, 2009	IEA EUWP Meeting. Stockholm, Sweden
Sept. 28-30, 2009	PHEV 2009 Conference, Montreal, Canada
Sept. 30-Oct. 2, 2009	IEA IA-ECES Workshop, 'The Role of Energy Storage in Future Energy Systems.' Bad Tölz, Germany
Sept. 30-Oct. 2, 2009	Batteries 2009 Conference, Cannes-Mandelieu, France
Oct. 7-9, 2009	Formula Electric & Hybrid Italy 2009, at ENEA Casaccia, S. Maria di Galeria (Roma), Italy
Oct. 16, 2009	A3PS conference 'Alternative propulsion systems and energy carriers' Vienna, Austria
Oct. 26, 2009	Annex I, Annex XIII Expert Meetings, Golden, CO, USA
Oct. 27, 2009	NREL Seminars and Tours for IA-HEV. Golden, CO, USA
Oct. 28-29, 2009	31st IA-HEV ExCo Meeting. Golden, CO, USA
Oct. 30, 2009	Annex XII Expert Meeting, Golden, CO, USA
Nov. 4-5, 2009	IEA CERT Meeting Paris, France
Nov. 23-24, 2009	Annex XV Workshop 'Grid Connected Vehicles and Renewable Energies - Exploring Synergies' Copenhagen, Denmark <b>(see IA-HEV website for details)</b>

**Colophon**

This electronic Newsletter is produced by the IA-HEV, also known as the Implementing Agreement for Cooperation on Hybrid and Electric Vehicle Technologies and Programmes, which functions within a framework created by the International Energy Agency (IEA). Views, findings and publications of IA-HEV do not necessarily represent the views or policies of the IEA Secretariat or of all its individual member countries. For submission of contributions to this Newsletter, please contact the Operating Agent of IA-HEV's Annex I, Mr. Chris Saricks, at: [csaricks@anl.gov](mailto:csaricks@anl.gov). For information about the Agreement and enquiries about its publicity materials including this Newsletter, please contact the IA-HEV secretary, Mr. Martijn van Walwijk, at: [secretariat.ieahev@wanadoo.fr](mailto:secretariat.ieahev@wanadoo.fr).