Using intelligence to unlock the market for electric vehicles

October 1 2014

Our fuel-based economy must be radically overhauled if Europe is to achieve its ambitious emission reduction targets. One important piece of this jigsaw could be the increased commercialisation of electric cars, which use carbon-free energy sources and emit no CO2 or other pollutants. As an added bonus, electric vehicles also create less noise and vibration.

So why are there not more electric cars on the road? Cost is undoubtedly a factor, but a key constraint is the fact that these vehicles have limited driving ranges, which decreases their attractiveness as viable alternatives to fuel-driven cars. What is needed is greater energy efficiency to preserve battery life, which is exactly what the EU-funded OPENER (Optimal ENErgy consumption and Recovery based on a system network) project has achieved.

After three years of intense collaboration and EUR 4.4m of EU investment, the OPENER project recently presented two demonstrator electric vehicles in Spain. Increased driving range was achieved not through enhanced battery technologies, but by the development of an intelligent energy management and recovery system.

In particular, the team worked on improving the braking system, the navigation system and surrounding sensors. An adaptive cruise control was also installed to guarantee more economical driving. These "eco-routing" functions are the key to achieving energy efficiency and preserving battery life.

Safety was another driving factor behind the project, with sensory advice targeted not just at energy efficiency, but also at providing timely warnings. Optimised range predictions show reliable information on remaining driving range, thereby avoiding unwanted and potentially risky stops due to an empty battery.

In practice, this means that the car is intelligent, and provides the driver with braking tips based on traffic flows and advice on the best route to limit energy use. Up to 30 % of energy can be saved this way, without losing much time along the way. The project team, together with reviewers and members of the public, were able to drive the new vehicles and try out the new functions.

The OPENER project, which was completed earlier this year, comprised six partners from across Europe who shared a firm belief that electric vehicles can – and should – be improved. The team now hopes that the new system will be progressively integrated into production from 2015 onwards.

The EU has stated that it aims to have between eight and nine million electric vehicles on the road by 2020. There are a number of challenges ahead however, including increasing the reliability and durability of batteries and super-capacitors, reducing battery weight and volume, safety, cost reduction, charging infrastructure and plug-in solutions. Nonetheless the electrification of transport (or electromobility) is an EU research priority.

The European Green Cars Initiative (EGCI), of which the OPENER project was a part, was launched in 2011 within the context of the European Recovery Plan. The initiative is designed to support the achievement of the EU's ambitious climate goals, such as the reduction of CO2 emissions by 60 % by the year 2050. EGCI also supports the research and development of road transport solutions that have the

potential to achieve sustainable results.

More information: For further information, please visit: www.fp7-opener.eu/

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