

AVERE
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AVERE Position Paper

Act now for sustainable mobility

Battery and hybrid vehicles are today's sustainable mobility solutions preparing a future shared with a hydrogen economy

AVERE, the European Association for Battery, Hybrid and Fuel Cell Electric Vehicles, warmly welcomes the summary report of the High Level Group for Hydrogen and Fuel Cells presented in June 2003 which develop a vision on the contribution that hydrogen and fuel cells could make to the realization of sustainable energy systems in future.

However, the Association wishes to emphasize that as it is a long-term vision there is a need to take strong action in the short and medium term in order to address current environment and energy concern.

Energy and environment challenges for transportation

As stated in the Commission's November 2000 Green Paper on security of supply, in 1998 energy consumption in the transport sector was responsible for 28% of emissions of CO₂, the main greenhouse gas. According to the latest estimates the current CO₂ emissions from transport can be expected to increase by around 50% to reach 1 113 billion tons in 2010, compared with the 739 million tons recorded in 1990, 84% of which attributed to road transport.

It is both an ecological necessity and a technological challenge to reduce dependance in oil from the current level of 98 % by using alternative fuels and improving the energy efficiency of methods of transport. The hydrogen economy is only planned to start around 2020 at the earliest and to be established amount 2050. Fortunately, much of the common electric drives technology preparing a future shared with a hydrogen economy is already in development today.

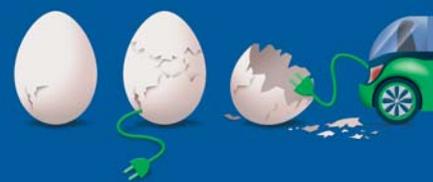
Two transport technologies are ready today to play a great role in this context : battery electric vehicle and the thermal hybrid electric vehicle.

Battery electric vehicles, an available sustainable solution for urban mobility

It is an established fact that from a well to wheel emission point of view the results are positive and in favour of the battery electric vehicle. Important and recent studies on the environmental balance of battery electric vehicles show substantial emission and primary energy benefits, and thus CO₂ reduction, as compared with conventional cars.

The electric vehicle is an optimum solution for urban mobility as it emits no exhaust fumes.

Particularly in cities and in adverse climatic conditions, traffic-generated emissions are degrading air quality up to the point where the physical health of the population is directly threatened. Several cities have already had to apply repeatedly drastic traffic restrictions.



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The electric vehicle is also ideally suited to be integrated into new traffic management concepts, such as automatic rent-a-car systems and goods distribution centers, or small buses for city-center services. These measures emphasize the synergies between different transport methods and contribute to the relief of traffic congestion.

Again, the electric vehicle through its respect for the environment allows access to historic city centers and contributes to the reduction of air pollution and noise pollution.

For all these reasons, often with the support of the EU Commission and some member states, an increasing number of cities and environmentally concerned companies have introduced electric vehicles in their fleets.

Today, there is a clear necessity to generalize the support organized at the European level.

Batteries, the challenge

Energy storage remains a key point. The development of alternative battery systems shows the possibility of making a real technical and economic breakthrough in a short or medium term consistent with an important market development. New battery types such as high-temperature batteries, Nickel-Metalhydride batteries, and Lithium-based batteries are already on the market or will be available in the coming years. Due to their extremely high energy density, they will offer unprecedented vehicle ranges, even up to 250 km. But, a powerful public national and European support is necessary as well as an effective marketing approach.

Thermal hybrid electric vehicles combining long range and energy efficiency

The long-range or multi-mission electrically driven vehicle will become a reality through the development of hybrid drive trains. Hybrid vehicles combine electric and other drive systems, such as internal combustion engines, gas turbines and fuel cells

The main advantage of this combination is the permanent interaction between the highly efficient electric system and the thermal engine. This leads to efficient energy management, as well as the recovery of the kinetic energy while braking. Here too, the power batteries or other power boosters such as supercapacitors or flywheels play a key role. A number of reliable vehicles are coming on the market today with a large spectrum of hybridisation ratios (from start and stop systems to full hybrid power train).

Due to the inbuilt dual function hybrid vehicles have a longer range than battery electric vehicles. They can offer the option of running on electricity alone in urban environments so being locally zero emission at this time. Some of these vehicles can be plugged-in using conventional or renewable sources of energy in an effective way.

The hybrid technology is now particularly favoured for heavy-duty vehicles such as city-buses and leads to 20 to 30% reduction in both energy consumption and associated emissions.

For personal cars, the deployment of hybrid drive trains is a logical way to reduce fuel consumption and CO₂ emissions.

Battery and hybrid electric vehicles are able to ensure a mobility sustainable solution preparing a future shared with the hydrogen economy.

At the present phase of their development, electric and hybrid vehicles still need support from public authorities, so that the market can reach a size allowing its natural development.



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R&D development efforts are also needed for higher efficiency and lower cost electric drive systems (batteries, power electronics, ..). These components will be also needed for the fuel cell vehicles in the long term.

Expectations

Political authorities, at th European, national and local levels, should take all necessary actions to favour the market of battery and hybrid vehicles, as they are part of the solution to major present and future concerns on energy and environment. They also will contribute to long term solutions such as fuel cell vehicles.

European industrial stakeholders are expecting from European political authorities strong and clear signals. A wide spectrum of incentives and other measures are necessary to speed up the market penetration of Battery and Hybrid Vehicles as well as the development of associated components technology. These actions are needed also in order to maintain the European technological level at the edge.

