

Solar Electric Vehicles and the German Solarmobil Federation

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The present environmental and traffic problems require a consistent rethinking and quick reactions at all levels, making use of all technical, legal and organizational possibilities available to us.

The German Solarmobil Federation is for a new traffic and energy culture, and especially for **light and energy-efficient electric vehicles and their non-polluting power supply.**

Electric vehicles are called **solarmobiles** if the energy comes exclusively or predominantly from regenerative sources like solar-, wind- or small hydropower. Solarmobiles make possible an environmentally-friendly traffic system, one without burning fossil fuels, without pollution, without additional use of oxygen, without additional warming of the environment and without exhaust fumes and noise.

Electric vehicles are as non-polluting as their source of electric energy.

Combined with a solar or wind electricity generator, a solarmobil becomes a **"Real Zero-Emission Vehicle"**, a vehicle without exhaust emissions.

There are three ways of providing these vehicles with electricity:

1. **Self-sufficient solarmobiles:** Here the entire solar generator is housed on the vehicle. These are mostly pure competition vehicles. On vehicles designed for everyday use, the surface area is usually not large enough to allow for full power generation on the vehicle itself.
2. **Vehicles on the grid:** The power supply (solar, wind, water, or CHP- combined heat and power, or a combination of the four) is statically installed at a suitable place and feeds energy into the public supply network whenever it is available (when the sun shines, the wind blows etc.). This energy can then be retrieved from the grid at a different place and at a different time. The grid has a certain buffer function. Over the year, the energy balance should be correct, in other words, the total energy consumed by the vehicle should have been cleanly produced and fed into the grid. As a comparison: We have long used money in a similar way: "Our money" e.g. wage or salary is transferred to our account from somewhere else at a certain time and we can then withdraw that money wherever and whenever we want to. This is our money, although the notes are obviously not the same ones that were paid into the account. Over the year the balance should, *hopefully*, also be correct.
3. **A mixture of both** is possible: Some of the solar panels are mounted on the vehicle and keeps the battery topped-up when the vehicle is not used. The main generator is statically installed on the house, carpool or somewhere and feeds into the grid via static inverter. This possibility is unquestionably the best solution.

The German Solarmobil Federation campaigns for the advancement and spread of such environmentally-friendly powered electromobiles and calls them (logically enough) **solarmobiles**, or, in accordance with American legislation "Real Zero Emission Vehicles".

The German Solarmobil Federation demands new laws so that "Real Zero Emission Vehicles" can finally be built and put on sale.

The problem: Car traffic in Germany causes considerable emissions problems and is responsible for approx. 20% of CO₂ emissions. In conurbations with high traffic density the pollution from car traffic is almost intolerable and leads to direct health problems for the population through the so-called summer-smog. A remedy is urgently required: locally because of the health burden suffered mainly by the young and the elderly, globally to reduce the level of CO₂.

The solution: Similarly to the situation in the U.S.A., manufacturers should be forced by law to produce and put on offer a rising share of "**Real Zero Emission Vehicles**". Zero Emission Vehicles are vehicles without exhaust emissions. Currently this is only achieved by electric vehicles.

The German Solarmobil Federation demands that European law and/or German law define the term "Zero Emission Vehicle" more closely than in the U.S.A.

As an electric car is only as clean as its source of energy, the term "zero emission" must be extended to incorporate the energy source of the vehicle.

The German Solarmobil Federation demands proof of a clean energy source (real zero emission) in connection with the use of an electric vehicle, which is then called: "real zero emission vehicle" or "Solarmobil".

This can be proven through the ownership or shared ownership of a "clean" energy generator e.g. a solar cell array with connection to the grid. The law should define clean energy sources as ones which do not produce any emissions when in use such as solar cell arrays, wind generators or some small hydrogen generators.

Such a law would contribute directly and indirectly to a reduction in exhaust fumes in conurbations and in "climate killer" CO₂, would create additional jobs, and this at no cost to the government.

The "International German Solarmobile Championship".

Further activities of the German Solarmobil Federation include the co-ordination of solarmobile events including the evaluation of the results of an "**International German Solarmobile Championship**". The 1995 championship is the third time that this championship has taken place.

At solarmobile events prototypes, production models and the surrounding solar field are presented to the public and evaluated in situations similar to those found in everyday driving life. For this evaluation it is the energy efficiency and suitability for everyday life that are the main points. Innovative solutions, the sparing use of materials, low energy needs in production and recycling concepts also find special regard. **Requirement for participation is proof of a renewable energy supply for the electric vehicle.**

The intention is to show the standard of performance of solarmobiles, to increase their acceptance among the population and to improve the energy supply structure. The aim is also to show the interested public time and time again that light electric vehicles driven by solar power are suitable for individual transport needs over short distances.

It is possible right here and today to be mobile using solar energy and that is the message we are trying to get across.