

Solar car: brief review and challenges

ABSTRACT

Solar energy is known as renewable and clean source of energy. This tremendous amount of energy is widely used from small portable application to gigawatt size power plant generation. It has been utilized for various off grid or standalone applications including for vehicles. However, the progress of Solar Car (SC) was unsatisfied. Unlike Hydrogen Car (HC) and Pure Electric Vehicle (PEV), there is no commercialize SC marketed yet. Many strategies contributed to the successful of HC and PEV such as supportive policy, taxation, facilities and private involvement. The main component of SC can be simplified and consists of the structure, photovoltaic (PV) module, rechargeable battery pack, electric motor and power management unit. Main issue for SC is how to match between energy require and supply. Researchers are trying to find multiple solution from various aspects. Thirty SC prototypes were developed globally by numerous parties and most of them from academic bodies or universities. The purpose of the development is for solar car racing and to break commercialization boundary. As far as technology is concern, to achieve self-powered SC is quite challenging. The nearest potential solution can be learned from HC and PEV. All these potential solutions must be balance with the other side factor and come with a cost.