

Power Analysis of Light Electric Vehicles Using Fundamental Calculations

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Keywords: electric vehicle, vehicle loads, battery power.

Abstract. This paper presents a study of the power needed by batteries to drive an electric vehicle for specific purpose using basic theory and fundamental formulas. In order to develop an electric vehicle, the energy and power requirements of the vehicle in various driving environments need to be estimated. The energy efficiency of a vehicle depends primarily upon the specific vehicle design and the environment in which the vehicle is operated. Basic parameters are set off in the beginning such as car weight and much more comprehensive parameter will developed later such as vehicle cruising velocity. Generally, four forces affect vehicle motion; aerodynamic resistance, rolling resistance, climbing resistance and acceleration power. The total of these four forces will result in an estimation of maximum power needed for the electric vehicle.

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