

## A New MPPT Algorithm for Vehicle Integrated Solar Energy System

### Datenbank

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### Deskriptoren

Elektrofahrzeug; Strahlung; Vergleichsanalyse; Leistungsbewertung; Abstützvorrichtung; auswechselbare Vorrichtung; Verschiebevorrichtung; Solarenergie; Sonneneinstrahlung; Photovoltaik

### Freie Begriffe

optimaler Leistungspunkt; Batteriesystem

### Abstract

Photovoltaic (PV) systems are considered as a support unit and eco-friendly energy source for the electric vehicles. If the surface of the electric vehicle is covered by PV cells, it is possible to store considerable amount of energy in the battery system. In this study, different maximum power point trackers (MPPT) with different maximum power point (MPP) tracking algorithms have been tested on a PV structure moving according to a predefined motion loop. Compatibility of each algorithm to moving systems, such as electric vehicles, is presented in a real experimental environment. As a result of these experiments, positive factors in each algorithm have been defined and a new MPP tracking algorithm convenient for moving vehicle has been proposed. The proposed MPPT algorithm shows a better performance than other MPPT algorithms under fast varying radiations. However, proposed algorithm brings slightly higher costs compared to usage of other MPPT algorithms since it requires the measurement of solar irradiance. The developed algorithm is described in detail and comparative analysis and performance evaluation with other algorithms are presented.

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