

عنوان مقاله:

An Improved Sliding Mode Controller for DC/DC Boost Converters Used in EV Battery Chargers with Robustness against the Input Voltage Variations

محل انتشار:

مجله الکترونیک صنعتی، کنترل و بهینه سازی، دوره 4، شماره 2 (سال: 1400)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Gholamreza Mohebalizadeh - *Department of Electrical Engineering, Islamic Azad University, Shabestar Branch, Shabestar, Iran*

.Hasan Alipour - *Department of Electrical Engineering, Islamic Azad University, Shabestar Branch, Shabestar, Iran*

Leila Mohammadian - *Department of Electrical Engineering, Islamic Azad University, Shabestar Branch, Shabestar, Iran*

.Mehran Sabahi - *Department of Electrical and Computer Engineering, University of Tabriz, Tabriz, Iran*

خلاصه مقاله:

Abstract- An Electric Vehicle Battery Charger (EVBC) faces serious challenges as continuous charging voltage ripple, charging speed, input voltage level variations, and its ability to adapt to the Battery State of Charge (BSOC). A proper controller has an important role to prepare all the mentioned above. A nonlinear one such as sliding mode controller (SMC) is eminently suitable for solving these issues. Therefore, an improved SMC, to take control of a DC/DC boost converter as an EVBC, is presented in this work. This proposed controller has a more robust structure in the input voltage significant variations than the other SMCs. Therefore, this provides the capability to apply various kinds of power supplies as input voltages in EVBC stations. The EVBC power and battery voltage/capacity are assumed ۱۴ kW and ۴۰۰V/۶۰Ah, respectively in this converter. The simulation results in Matlab Simulink verify the controller's high performance compared with the other SMCs.

کلمات کلیدی:

Battery State of Charge (BSOC), Electric Vehicle Battery Charger (EVBC), Mean Displacement Error (MDE), (Renewable Energy Source (RES), Sliding Mode Controller (SMC

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1480131>

