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Performance Analysis of Phase Shift Full Bridge DC to DC Converter for Electric Vehicle using Flying Squirrel Search Optimization Technique

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Abstract:

The current-voltage forecast of a photovoltaic system is linear and reliant on environmental elements like solar radiation and associated heat. The maximum energy point tracking (MPPT) method is used to determine the solar array's energy production to charge the Electric Vehicle (EV). This work proposes the design of a Photovoltaic power fed Phase Shift Full Bridge (PSFB) DC to DC converter with Flying Squirrel Search Optimization (FSSO) Technique. The MPPT control algorithm creates switching signals which are fed to the converter, i.e., duty cycle. The control algorithm (FSSO) is compared with other Metaheuristic algorithms such as the Salp Swarm Optimization Algorithm (SSO), Emperor Penguin Optimization (EPO). Once the converter achieves the desired power, the rest of the power from the Photovoltaic source is used to charge the off-board battery. The Matlab/Simulink is used to develop the proposed system and the overall efficiency of each technique is compared.

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I. Introduction

As traditional cars use fossil fuels like diesel and petrol, air pollution has emerged as one of the most worrying issues. In addition to contributing to air pollution, the price of these fuels is always going up. As a result, over the past few years, interest in electric vehicles has increased significantly. Because EVs emit no pollution, increasing the use of these vehicles will help the environment by reducing the need for fossil fuels and automobiles. As a result, it significantly lowers greenhouse gas emissions from various vehicles, making it a viable alternative to internal combustion engines. Power generating sources are currently becoming insufficient due to the fast rising demand for electricity.

 Authors


 Figures


 References

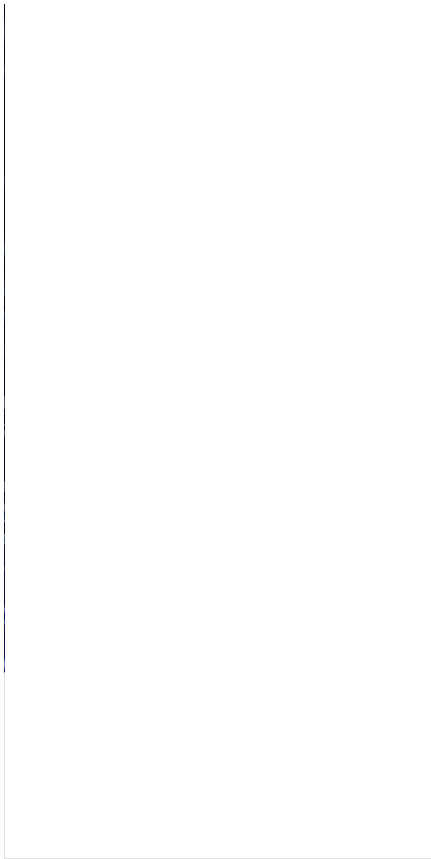

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