

Bidirectional DC-DC converter based multilevel battery storage systems for electric vehicle and large-scale grid applications: A critical review considering different topologies, state-of...

Bidirectional multiport solar-assisted SRM drive for pure electric vehicle applications with versatile driving and autonomous charging capabilities ISSN 1751-8660 Received on 6th August 2019 Revised 11th November 2019 Accepted on 18th November 2019 E-First on 24th February 2020 doi: 10.1049/iet-epa.2019.0658 Jose Thankachan1, Sajjan Pal Singh1 ...

The main objective of the study involves developing a theoretical-simulation model for a coupled energy storage unit suitable for Saudi Arabia's climate conditions. The ...

Effective power management is essential for BDWPT in EV applications, managing energy flow between EV batteries, the power grid, and other storage technologies [17]. To ensure system stability, optimize energy use, and maximize renewable energy advantages, bidirectional energy management, grid synchronization, and effective power flow regulation are crucial [...

Ability to change direction of power transfer quickly. High efficiency >97% (End to End) at power levels up to 22KW. simple topology for control. Reduces battery ripple current. Minimizes the ...

Power is fed back into HESS to charge battery and SC by operating the bidirectional DC converter in buck operation. During deceleration, load current becomes negative. This current is divided into battery and in SC current, where SC provides the transient component. Here, both battery and SC current become negative, hence charging of both ...

This paper delved into the thermal dynamics and stability of Wireless Power Transfer (WPT) systems, with a focus on the temperature effects on the coil structure. Using the Finite Element Method (FEM), this study investigated both unidirectional and bidirectional coupling field simulations, assessing their impacts on the transmission efficiency of LCL-resonant WPT ...

Bidirectional power flow-based EV charging stations can use power electronics devices with their controlling techniques to support the grid during peak demand hours. This ...

In the long-term, these distributed sensors are often dependent on power supply from municipal power grids or battery charging, which either limits their potential application or requires significant maintenance effort [4]. Given the benefits of miniaturization and low power consumption, self-powered sensor nodes are being widely studied by exploring new methods ...

Finally, the single-phase on-board charger concept is extended to a higher power level to charge the battery faster. By utilizing the three-phase interleaved CLLC resonant converter as DC/DC stage, the charging power is pushed to 12.5 kW. In addition, the integrated PCB winding magnetic in single phase is also extended to the three phase. Due to the interleaving between the three ...

This work develops a bidirectional power flow control for the single-phase grid to lithium-ion battery and vice versa. The proposed system is initially developed in MATLAB Simulink and a ...

International Journal of Solid State Technology ISSN: 0038-111X Vol. 63, No. 3, (2020) 783 A Reconfigurable Bidirectional Wireless Power Transceiver for Battery-to-Battery

We will develop and deploy hydrogen batteries that are more cost-effective and have substantially longer life cycles than Li-ion batteries for grid applications and batteries that tolerate higher temperatures, therefore reducing cooling requirements, ...

Due to light-weight and high energy density, the lithium-ion battery is taking a large portion of the actual storage device's role in grid and electric vehicle application. This work develops a ...

Bidirectional power flow-based EV charging stations can use power electronics devices with their controlling techniques to support the grid during peak demand hours. This paper presents the development of a bidirectional converter implemented in charging stations for Electric Vehicles (EVs), integrated with an IoT-based monitoring system, which ...

Due to light-weight and high energy density, the lithium-ion battery is taking a large portion of the actual storage device's role in grid and electric vehicle application. This work develops a bidirectional power flow control for the single-phase grid to lithium-ion battery and vice versa.

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