Jie He

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EDUCATION

Guangdong Ocean University Sep. 2019-Jun. 2023

B.E. in Electrical Engineering and its Automation, GPA:85.1/100, IELTS 7 (6.0)

PUBLICATIONS

[J1] F. Li, **J. He**, et al.: Synchronous Dual-Switch Ultrahigh Step-Up DC-DC Converter Based on Coupled Inductor and Voltage Multiplier for Photovoltaic Systems. **IEEE Trans. Ind. Electron**. 71(5), 4807-4817 (2024)

[J2] P. Luo, **J. He**, et al.: A high step-up DC-DC converter based on three-winding coupled inductor and voltage multiplier for renewable energy applications. **IET Power Electron**. 16(6), 961-974 (2023)

[J3] F. Li, **J. He**, et al.: Quadratic-type high step-up DC-DC converter with continuous input current integrating coupled inductor and voltage multiplier for renewable energy applications. **J. Power Electron.** 23(4), 555–567 (2023)

[C1] **J. He**, F. Li, et al.: A Single Switch Quadratic Step-up DC-DC Converter Based on Three-winding Coupled Inductor and Switch-capacitor. IEEE 6th Information Technology and Mechatronics Engineering Conference (ITOEC). 6,1624-1628 (2022)

[P1] F. Li, **J. He**, et al.: A secondary boost DC-DC converter for fuel cell system. Chinese patent: CN217063567U[P]. 2022-07-26

RESEARCH EXPERIENCE

High step-up DC-DC converters for sustainable energy resources (SERs) Sep. 2021-Jun. 2023

- Proposed 4 new topologies with quadratic technique and continuous input current, high transfer ratio can be achieved by moderate duty cycle, and the voltage stress across the switches is alleviated. Therefore, the low input voltage generated by the SERs can be boosted up to the DC bus for further utilization.
- Mian work: Literature reviews (appreciated by reviewers), operating principles and loss analysis, prototype fabrication, experiment, and maximum power point tracking (MPPT) simulation.

BUCK-BOOST converter for energy storage device Feb. 2022-Sep. 2022

- A proposed topology based on Cuk converter featuring leakage inductance recovery with integrated PI control and voltage feedforward for offshore Piezoelectric energy utilization.
- Mian work: Transfer functions calculation and small-signal modeling. Improve the transient response by applying the feedforward control. Component selection and inductors fabrication.

High step-down ZVS-ZCS converter Apr. 2022-Jul. 2022

- A new soft-switching buck converter without an auxiliary switch has been designed to step down the grid voltage to the desired level for battery connection, aimed at peak load reduction.
- Mian work: Simulation, operation principle, steady-state analysis, parameter specification, and report writing.

WORK EXPERIENCE

A 125 kW PV string inverter — Shenzhen SHINEYOUNG New Energy Tech. Co., Ltd. Jul. 2023-Mar. 2024

Hardware Engineer

- Design the main power board (including boost and 3-level T-type NPC circuit) and SiC MOSFET driver board.
- Double pulse testing (DPT) for worst-case operating conditions (1000+ tests, 500+ datum) and loss analysis.
- Achievement: Implementation of 5-input parallel boost circuit, reduction of 30 % switching loss of the MOSFET, solved the problem of false turn-on of IGBT caused by parasitic inductance.

HONORS & AWARDS

Chinese National Scholarship (top 0.6 %), GDOU 2023

Outstanding Graduates Awards (top 2%), GDOU 2023

Jiangmen Nanyang Scholarship (top 2%), JNS 2023/2022

National First Prize, The 1st College E&EE Innovation Competition, Schneider Electric 2022

Academic scholarship, First-class / Second-class / Third-class, GDOU 2022/2021/2020

SERVICES

The student leader of the Power Conversion Innovation Team in GDOU Nov. 2021-Jun. 2023

- Held 2 recruitment sessions with 400+ attendees, interviewed 90+ students, and recruited 30 members.
- Organized 3 laboratory safety training, and supervised over 20 experiments, achieving 0 accidents during the tenure.

SKILLS

- Theoretical analysis (Mathcad, SIMPLIS, MATLAB/Simulink), Data processing (Origin, Visio, Photoshop)
- PCB design (Altium Designer), Programming (CCS, DSPs)
- Proficiency in using DC sources, electronic loads, oscilloscopes, signal generators, multimeters, etc.
- Language: English (IELTS: C1), Mandarin (native), Cantonese (native)