February 9, 2023 | Issue 31

IEEE POWER ELECTRONICS SOCIETY
Powering a Sustainable Future

Products Newsletter

IEEE Power Electronics Magazine

Last June, the IEEE Power Electronics Society (PELS) held its eleventh biannual long-term strategic outlook meeting the Future of Electronic Power Processing and Conversion (FEPPCON XI) in Reykjavik, Iceland.

FEPPCON is a forward-looking, crystal ball type of meeting of invited participants to assist PELS foresee where power electronics technologies and applications are heading over the next 5–10 years so that the Society can best position itself in terms of organization, programs, and member services to meet those emerging and growing elements of the field. In the December 2022 issue of *IEEE Power Electronics Magazine*, the article "**FEPPCON XI: Powering Global Progress**" by H. Alan Mantooth reflects on PELS evolution and progress. Topics covered in Part I include Brainstorming for Game-Changing Ideas, AI/ML and Cybersecurity in Power Electronics, and Smart Efficiencies Enable the Internet of Everything.

Free for All
Visit the magazine **website** for various open access columns and society news stories. And the new look.

IEEE Transactions on Power Electronics (TPEL)

❶ The March 2023 **issue** of TPEL is now available online. Be sure to check out these highlighted articles selected by TPEL editors.

- "**Steady-State Indeterminacy in Lossless Switched-Mode Power Converters**" by Luca Corradini and Dragan Maksimović. In this article, it is shown for the first time that lossless switched-mode power converters may not possess a unique steady-state solution. Rather, they can exhibit an inherent indeterminacy in their steady-state behavior, and a unique solution is only found when losses are included in the analysis.
- "**A Nonisolated High Step-Down DC–DC Converter With Low Voltage**

Stress and Zero Voltage Switching" by Phan Nhat Truong, Nguyen Anh Dung, Yu-Chen Liu, and Huang-Jen Chiu. This article introduces a general method to modify the traditional buck converter to become a high step-down dc–dc converter, which has a lower voltage gain without changing the voltage stress of switches.

❷ TPEL Special Sections

TPEL will have three special sections published in October of 2023.
1. Advanced WPT Systems with High Efficiency and Misalignment Tolerance Characteristics
2. Multilevel Converters as an Enabler for Grid Modernization
3. Switched Capacitor Converters (SCCs)

The Call for Papers can be accessed on the TPEL **website**. March 31, 2023 is the manuscript submission deadline.

IEEE Power Electronics Letters

In the February 2023 **issue**, 14 articles are featured that explore the latest advancements in various fields, from components to converters, including CHB fault tolerance, matrix converter modulation and topology, advanced DC-DC converters, innovative wireless power transfer systems, etc. Here are two interesting Letters with unique applications.

- "**A 434-MHz Bootstrap Rectifier With Dynamic VTH Compensation for Wireless Biomedical Implants**," by Muhammad Abrar Akram and Sohmyung Ha. This interesting application of power electronics techniques features enhanced power conversion efficiency for implantable medical devices and can be realized in standard CMOS processes.
- "**Wireless Power and Data Transfer System Using Multidirectional Magnetic Coupler for Swarm AUVs**," by Yingqin Zeng, Conghui Lu, Renzhe Liu, Xiangrui He, Cancan Rong, Minghai Liu. Leveraging the novel multidirectional magnetic coupler, this talkative power conversion system shows some good potential for simultaneous wireless information and power transfer for autonomous underwater vehicles.

IEEE PELS-Tube: Educational Videos on Power Electronics

- Are you a professor making videos related to power electronics for courses?
- Are you an expert interested in teaching what you know through videos?
- Are you a practicing engineer with an educational hardware demonstration to share?

If you answered yes to any of the above, consider **submitting** a video to IEEE Power Electronics Education Videos (PELS-Tube).

Recent Updates

- The maximum video length has been extended to 25 minutes.
- Authors of accepted videos will be presented with a *Certificate of Excellence in Video Teaching* from IEEE PELS.

Please visit our **website** for more information.

IEEE Open Journal of Power Electronics (OJPEL)

For its next collection of papers, **OJPEL** is featuring papers based on control systems.

- "**A Mode Switching-Based Decentralized Secondary Control for Microgrids With Hybrid Droop and Master-Slave Structure**" by Jiazhi Wang, Zeng Liu, Jinjun Liu, and Teng Wu.
- "**Switched PI Control Based MRAS for Sensorless Control of PMSM Drives Using Fuzzy-Logic-Controller**" by Zhao-Hua Liu, Jie Nie, Hua-Liang Wei, Lei Chen, Xiao-Hua Li, and Ming-Yang Lv.
- "**A Robust Controller Design Methodology Addressing Challenges Under System Uncertainty**" by Yunpeng Si, Nikhil Korada, Qin Lei, and Raja Ayyanar.
- "**Constant Delay-Line Repetitive Control Analysis for Variable Frequency Operation**" by Alessandro Faro, Marco di Benedetto, Alessandro Lidozzi, and Luca Solero.
- "**On the Partitioning of MMC Control Systems Using Graph Theory**" by Ilka Jahn, Geraint Chaffey, Eduardo Prieto-Araujo, Melanie Hoffmann, Rodrigo Alvarez, and Antonello Monti.

IEEE Transactions on Transportation Electrification (TTE)

The *IEEE Transactions on Transportation Electrification* (TTE) is focused on components, grid-interfaced technologies, standards, sub-systems, and systems related to power and energy conversion, propulsion, and actuation for all types of electrified vehicles, including on-road, off-road, off-highway, and rail vehicles, airplanes, and ships. Interested in submitting a manuscript? Click **here**.

IEEE Journal of Emerging and Selected Topics in Power Electronics (JESTPE)

JESTPE is currently seeking submissions for its upcoming *Special Issue on Advanced Charging Technologies for Next-Generation Electric Vehicles*. The manuscript submission deadline is March 31, 2023. For more information about this special issue, please consult the **Call for Papers**.

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