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September 17, 2020 | Issue 5

## IEEE Power Electronics Magazine

Electric machines are undergoing a transformation driven primarily by the electrification of transportation. These changes are making electric machines and their adjustable speed drives smaller, lighter, and more efficient, resulting in the physical integration of the two units. In the cover feature of the September 2020 issue of *IEEE Power Electronics Magazine*, Prof. Thomas Jahns and Bulent Sarioglu of the University of Wisconsin, Madison, show that the transition to Integrated Motor Drives (IMD) has begun. Plus, the authors discuss the key benefits of WBG based current-source inverter for IMD application.

Read it today: <https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6570649!>

## 2019 TPEL Prize Paper and Letter Award Winners!

### ***IEEE Transactions on Power Electronics***

#### **First Place Prize Paper Award Winners**

[Performance Evaluation of Series-Compensated IPT Systems for Transcutaneous Energy Transfer](#)

Oliver Knecht, Johann W. Kolar

January 2019

[Dynamic ON-State Resistance Test and Evaluation of GaN Power Devices Under Hard- and Soft-Switching Conditions by Double and Multiple Pulses](#)

Rui Li, Xinke Wu, Shu Yang and Kuang Sheng

February 2019

[Switched Tank Converters](#)

Shuai Jiang; Stefano Saggini; Chenhao Nan; Xin Li; Chee Chung; Mobashar Yazdani

June 2019

[An Integrated SiC CMOS Gate Driver for Power Module Integration](#)

Matthew Barlow, Shamim Ahmed, A. Matt Francis, and H. Alan Mantooth

November 2019

#### **Second Place Prize Paper Award Winners**

[Investigating the EMI Mitigation in Power Inverters Using Delay Compensation](#)

Michele Perotti, Franco Fiori

May 2019

[20-kW Zero-Voltage-Switching SiC-mosfet Grid Inverter With 300 kHz Switching Frequency](#)

Ning He, Min Chen, Junxiong Wu, Nan Zhu, Dehong Xu

June 2019

[Minimum Active Switch Requirements for Single-Phase PFC Rectifiers Without Electrolytic](#)

## Capacitors

Sinan Li, Wenlong Qi, Jiayang Wu, Siew-Chong Tan and Shu-Yuen Hui  
June 2019

## [Dynamic Capabilities of Multi-MHz Inductive Power Transfer Systems Demonstrated With Batteryless Drones](#)

Juan M. Arteaga, Samer Aldhafer, George Kkelis, Christopher Kwan, David C. Yates and Paul D. Mitcheson  
June 2019

## [Three-Terminal Common-Mode EMI Model for EMI Generation, Propagation, and Mitigation in a Full-SiC Three-Phase UPS Module](#)

Sungjae Ohn; Jianghui Yu; Paul Rankin; Bingyao Sun; Rolando Burgos; Dushan Boroyevich; Harish Suryanarayana; Christopher Belcastro  
September 2019

## [Circuit Models and Fast Optimization of Litz Shield for Inductive-Power-Transfer Coils](#)

Ming Lu, Khai D.T. Ngo  
May 2019

## **IEEE Transactions on Power Electronics Letters 2019 Prize Letter Award**

### [500 °C SiC PWM Integrated Circuit](#)

Saleh Kargarrazi, Hossein Elahipanah, Stefano Saggini, Debbie Senesky, Carl-Mikael Zetterling  
March 2019

## IEEE Transactions on Power Electronics (TPEL)

The October 2020 issue presents 99 papers with the latest research in power electronics!  
<https://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=9127988&pnumber=63>

### **October Highlighted Papers:**

#### [Tunable Matching Networks Based on Phase-Switched Impedance Modulation](#)

Alexander S. Jurkov; Aaron Radomski; David J. Perreault

A novel concept for impedance matching at MHz frequency in the kW range.

#### [Resonant Current Estimation and Phase-Locked Loop Feedback Design for Piezoelectric Transformer-Based Power Supplies](#)

Zijiang Yang; Jack Forrester; Jonathan N. Davidson; Martin P. Foster; David A. Stone

PLL and controller design for piezoelectric transformer-based power supplies.

## IEEE Transactions on Power Electronics Letters

*TPEL Letters* continues its strong growth. In the October 2020 issues we published a record 12 letters! These letters cover the most recent development and concepts on power converter topologies, control, semiconductor devices, wireless power transfer, HVDC, as well as machine parameter estimation. Please take a look at those very interesting letters, which may help to inspire new ideas, while without taking much of your time to read.

<https://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=9127988&pnumber=63>

In a year when so many universities and labs have been closed, our letters submissions have skyrocketed! Their rapid review and publication time as well as their emphasis on new ideas and fundamental and emerging concepts make them the ideal submissions in our current publication climate!

Submit yours today: <https://www.ieee-pels.org/publications/ieee-power-electronics-letters>

## IEEE Open Journal of Power Electronics (OJ-PEL)

The *IEEE Open Journal of Power Electronics* has now published 29 papers in our first year with three more papers in Early Access! Have you read the latest?

[New Figure-of-Merit Combining Semiconductor and Multi-Level Converter Properties](#)

Jon Azurza Anderson; Grayson Zulauf; Johann W. Kolar; Gerald Deboy

Read all of OJPEL's Papers:

<https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8782709>

Submit your own! <https://www.ieee-pels.org/publications/ieee-open-journal-of-power-electronics>

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

The September issue of *IEEE Journal of Emerging and Selected Topics in Power Electronics* is now online! Our [Special Issue on Topologies, Modeling Methodologies, and Control Techniques for High-Frequency Power Conversion](#) features papers in:

Topologies for High-Frequency Power Conversion

Control and Modeling Techniques

Design Approaches for High-Frequency Converters

Characterization of Active and Passive Components for High-Frequency Applications

In addition, we published 71 regular papers across all areas of power electronics!

<https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6245517>

## IEEE Transactions on Transportation Electrification (TTE)

### Call for Papers: Special Issue on Novel Hybrid and Electric Powertrain Architectures

Hybrid and all-electric vehicles have gained significant market share and are expected to see rapid development over the next few years. Traction force in vehicles can be generated by powertrain units in different configurations. In spite of recent advancements, these traction units have not yet reached technical maturity or cost parity with the ICE-based counterparts.

From a vehicle point of view, it is always desired to achieve better fuel economy (in terms of higher km per liter or km per kWh) with the best cost and volume optimization. A novel powertrain architecture is key to achieve this without sacrifice for lifetime, functional safety, and meeting standards and regulations requirements. In addition, recyclability aspects such as second life of the batteries or material recycling for the powertrain unit need careful consideration and innovative solutions.

This special issue aims to provide the updated status in this field and to cover new aspects and new solutions. Topics of interest include (but are not limited to):

- Advancements in powertrain architectures
- Power electronic converters such as inverter, onboard charger, and dc/dc converter
- Reliability and lifetime estimation of the powertrain subsystems and components
- Thermal management solutions for the drive unit, onboard power electronics and battery modules
- System level optimization considering performance, cost, efficiency, and reliability
- Battery management system

- Electrical and mechanical sensing technologies
- Safety requirements and protection solutions (such as ASIL categories and functional safety)
- Recycling of powertrain components

### Submissions to the Special Issue:

All manuscripts must be submitted through Manuscript Central at <http://mc.manuscriptcentral.com/tte-ieee>. Submissions must be clearly marked “Special Issue on Novel Hybrid and Electric Powertrain Architectures” on the cover page. When uploading your paper, please also select the “Special Issue on Novel Hybrid and Electric Powertrain Architectures.”

**Paper Submission Deadline: February 28, 2021**

**Expected Publication: December 2021**

### Guest Editors:

Dr. Saeed Haghbin, Elbind Elektronik AB, Sweden

Dr. Amir Sajjad Bahman, Aalborg University, Denmark

Dr. Hao Chen, Tesla, USA

## Submit your next TPEL Paper with a Graphic Abstract!

With the surge in online and hybrid conferences this year we are all embracing new formats for sharing our research. Have you perfected your zoom presentations? Created videos of your talks for your conference papers? Take these skills and submit your next paper with a Graphic Abstract.

Images, videos, audio files, or a PowerPoint files can all be submitted as graphic abstracts. When published, these files can be viewed by anyone and attract more readers to your paper. All graphic abstract files must undergo peer review along with your paper; if your manuscript is accepted for publication with a graphic abstract your paper will receive priority for scheduling publication in upcoming TPEL issues!



*Example Graphic Abstract from N. Neverova et al., “Learning Human Identity From Motion Patterns,” in IEEE Access, vol. 4, pp. 1810-1820, 2016. doi: 10.1109/ACCESS.2016.2557846*

<https://journals.ieeeauthorcenter.ieee.org/create-your-ieee-journal-article/prepare-supplementary-materials/>

## Volunteers Needed: Digital Education Initiatives

IEEE Power Electronics Society (PELS) has several major initiatives to expand our web-based education material and provide more PELS membership benefits. A few of the larger, new activities include:

1. Creating a library of short video tutorials on various topics of PELS interest
2. Developing web-based power electronics courses and modules of longer length
3. Cataloging and describing existing web based power electronic education material

It should be enjoyable and have high impact to our PELS. If interested, please fill out the survey/sign-up sheet: [1-minute survey](#).

## Did you miss our past Newsletters?

We are posting all PELS Products Newsletter's on the PELS Products' Page. Check them out!

