Products Newsletter

Emerging Trends, Cutting-Edge Technologies, and Research Breakthroughs in Power Electronics

May 14, 2020 | Issue 1

While we all attempt to continue our work--whether teaching, research, or industry--from home as best as we are able, we hope our products and digital media offerings can help in a small way. We are producing webinars to help students, professors, and industry professionals alike continue to learn--wherever you are--from the basics to brand new breakthroughs in technology. Our publications continue to publish and post issues at breakneck speed so we can keep up-to-date on research from around the world. Society volunteers have embraced the latest challenges and are hard at work developing new online offerings to help each member of PELS--and the power electronics community at large--continue our work. Stay posted for more news to come on products to help you.

More information on the scope and purpose of each of our journals can be found on the Power Electronics home page (https://www.ieee-pels.org/publications) and all of our latest publications are posted on IEEE Xplore.

IEEE Transactions on Power Electronics (TPEL)

For June 2020 we published 86 new papers featuring the latest research in power electronics: from high power converters to lighting applications, renewable energy to controls. Leading out the issue are two papers with active content to enhance your reader experience!
https://ieeexplore.ieee.org/xpl/tocresult.jsp?isnumber=9014414&punumber=63

"Carrier-Based Discontinuous PWM for For a Five-Level Unidirectional Rectifier" by Debranjan Mukherjee and Debaprasad Kastha includes a MATLAB script file which generates the 3D plot of the Peak-peak ripple of the accumulated charge at the neutral point as a function of terminal pf angle and modulation index for DPWMA and DPWMB.

"Switched-Capacitor Voltage Boost Converter for Electric and Hybrid Electric Vehicle Drives" by Ameer Janabi and Bingsen Wang comes with a video that shows how the voltage reference singles changes as the boost factor A changes from 0 to 1.

In addition, this month's highlighted papers:

"Study of Thin-Film Magnetic Inductors Applied to Integrated Voltage Regulators"
William J. Lambert; Michael J. Hill; Kevin P. O'Brien; Kaladhar Radhakrishnan; and Paul Fischer

State-of-the-art development of thin-film integrated magnetics from Intel.

"On the Secondary Control Architectures of AC Microgrids: An Overview"
Yousef Khayat; Qobad Shafiee; Rasool Heydari; Mobin Naderi; Tomislav Dragičević; John W. Simpson-Porco; Florian Dörfler; Mohammad Fathi; Frede Blaabjerg; Josep M. Guerrero; and Hassan Bevrani

A timely overview of the secondary control architecture for ac microgrids.

IEEE Transactions on Power Electronics Letters

The TPEL Letters feature short articles with refreshing concepts and the most trending topics, with very quick review and publication. Published at TPEL, the *Letters* have the same impact factor as regular papers. In the June 2020 issue, there are 9 *TPEL* letters published. The topics of teh 9 letters include new converter control ideas, converter topologies, and semiconductor devices. 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=9014414

IEEE Power Electronics Magazine

In the March 2020 issue of *IEEE Power Electronics Magazine,* the cover feature, **"Electric Vehicle Batteries Eye Solid-State Technology"** by Ashok Bindra, investigates the developments in solid-state batteries for EVs and HEVs. Besides offering lower cost, lighter weight, higher energy density, and greater range, the solid-state version, with solid electrodes and electrolytes, is also expected to provide a higher degree of safety. Read this article to see the technology players who are joining forces to share knowledge and overcome challenges in commercializing solid-state batteries. Plus, learn about key automotive OEMs who have made substantial investments in companies developing solid-state batteries.
https://ieeexplore.ieee.org/document/9003586

The "Expert View" column, "*Gallium Nitride Integration: Breaking Down Technical Barriers Quickly*" by Alex Lidow of Efficient Power Conversion Corporation, in the same issue provides the progress in the state of GaN integration.
https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9003561

IEEE Open Journal of Power Electronics (OJ-PEL)

Our newest journal launched in January 2020 with the inaugural Editor-in-Chief, Alan Mantooth of the University of Arkansas! *The IEEE Open Journal of Power Electronics* covers the development and application of power electronic systems and technologies, which encompass the effective use of electronic components, the application of circuit theory and design techniques and the development of analytical methods and tools toward efficient electronic conversion, control and conditioning of electric power to enable the sustainable use of energy. As a fully open access journal publishing high-quality peer reviewed papers, the Society's aim is to publish novel developments as well as tutorial and survey articles including those of value to both the R&D and practicing professionals in the field.

Check out our first papers!

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

The rapid, peer-review process targets a publication time frame of **4 weeks** for most accepted papers.

Submit your article today and get published in the *IEEE Open Journal of Power Electronics*.

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

The June 2020 issue features 89 articles, including two Special Sections!

Special Section: Modeling, Topology and Control of Grid Forming Inverter

"Grid Forming Inverters: A critical Asset for the Power Grid": Apart from its accessibility, this invited paper is parsimonious in presentation and insightful from both theoretical and industrial viewpoints.

Special Section: Complex Vector Theory and its Application in Power Electronics

Systems

"Complex State Variable as Analytical Tool for Control System Design of Medium-Voltage Drives": A valuable tutorial and highly illustrated paper, it shows how the complex state variable representation can be used as a design tool for motor drives.

For motor drive specialists: "Enhanced Complex Space Vector Modeling and Control System Design of Multiphase Magnetically Levitated Rotary-Linear Machines." Delightfully readable, generously illustrated, and, above all, highly educative! Interested in expanding your understanding of space vector transformations, design and control of electromagnetic systems capable of rotary-linear motions? This paper is for you!

Call for Papers
1. Special Issue on Electric Machine Drives and Converters for Automotive Applications
2. Special Issue on Modeling and Analysis of Interaction between Grids and Grid Connected Power Electronics Converters in Distribution Networks
3. Special Issue on Smart Solid-State Transformers for AC/DC Hybrid Power Grids
4. Special Issue on Partial Power Conversion and its Emerging Applications.

IEEE Transactions on Transportation Electrification

The March 2020 issue features 29 papers in subjects ranging from components, sub-systems, systems, standards, and grid interface technologies 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!
https://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=6687316

We would also like to announce our new Editor-in-Chief and Deputy Editor-in-Chiefs! Dr. Mahesh Krishnamurthy of Illinois Institute of Technology took over from Ali Emadi as Editor-in-Chief of TTE on April 1, 2020. We would like to thank Ali for his tireless and dedicated work, which has made TTE such a success! Dr. Alireza Khaligh, University of Maryland at College Park will now serve as the Deputy Editor-in-Chief.

IEEE PELS: Video Tutorial Topics Survey

IEEE PELS is planning to make short, 5-15 minute educational videos on topics of interest to our members. Please give us your opinion about topics of interest by filling out this 1-minute survey.