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# Webinars: Equity in Education Through IAS Digital Citizenship

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The IEEE Industry Applications Society (IAS) has long been investigating and implementing mechanisms on linking theory and practice in a variety of topics, including industrial and commercial power systems, electric safety, electric machines, motor drives, and power conversion systems, among many others. Accommodating a live interaction of individuals irrespective of where they are and facilitating knowledge transfer beyond boundaries, online technical webinars provide an opportunity for a wider and more dispersed audience, i.e., the digital citizens of the IEEE IAS, to learn from state-of-the-art advances in technologies either through a live session or via the archived recorded lectures (free for IAS members) at the IEEE IAS Resource Center (<https://resourcecenter.ias.ieee.org/>). With our library of more than 50 archived webinars plus new ones organized approximately each month, you will find insightful information on the hot topics you care about the most in IAS fields of interest.

In meeting the challenges related to different time zones around the world and individuals' availability

and working schedules, the archived webinars available at all times constitute a virtual library covering most aspects of the work performed within various IAS domains. The opportunity for learning through such informative sessions, which are detached from a single geographical proximity, will bring added value to the educational process in the digital era and an efficient knowledge transfer, both of which are among the core values of IAS missions.

Stay tuned. The IEEE IAS technical webinar series offers a plethora of topics: next-decade strategic plans in coordination with sister Societies IEEE Power & Energy Society and IEEE Power Electronics Society, solutions for improving the resilience of various sectors within industrial and commercial power systems against environmental stressors and natural extremes, cybersecurity challenges of power electronics and electric machinery in industrial systems, the electric safety of critical industrial infrastructures, electrified aircraft propulsion (EAP), and the impacts of pandemics on industrial sectors, among many others. CEU credits can be obtained for past webinars when an evaluation form ([\[atwork.ieee.org/ias/\]\(http://atwork.ieee.org/ias/\)\) is filled out and the appropriate webinar from the list on the form is selected. PDH credits are made available from the IEEE Education Department. For more information, please contact \[eabceuadmin@ieee.org\]\(mailto:eabceuadmin@ieee.org\). A brief summary of 2021 webinars follows.](https://innovation</a></p>
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## 2021 Webinars

### *Electrical Safety (February)*

The 2021 webinar series was launched with “Verifying the Absence of Voltage—What You Need to Know and How to Avoid Common Testing Traps,” which was presented by Rachel Bugaris (Panduit Corp.). De-energizing and verifying the absence of voltage before accessing electrical equipment was introduced in this webinar as one of the best ways to prevent electrical incidents. Recent advancements in technology have used prevention through design to make this process safer and more efficient. Whether you use portable testers or a permanently mounted absence of voltage testers, it is important to know how to recognize and avoid common testing traps. This webinar provided an overview of relevant standards and best practices as well as testing tools and processes.

### EAP (March)

“Cryogenic Power Electronics for Electrified Aircraft Propulsion” was presented by Dr. Zheyu Zhang (Clemson University). The webinar provided an introduction to cryogenic power electronics, which can enable the highly efficient, ultradense power conversion systems critical for EAP. Several key steps in the development of cryogenic power electronics, from the component up to the converter level, were discussed. Accordingly, the characterization of critical

components, including power devices and magnetics, at cryogenic temperatures was first introduced to establish the basic knowledge necessary for cryogenic design and optimization, followed by some considerations specific to cryogenic design, and trade and design studies for the cryogenic power stage and filter electronics.

### Power Electronics (April)

The April webinar, “Partial Power Processing Converters: A Way to Go Beyond the Limits,” was given by Prof. Peter J. Grabović (University

of Innsbruck, Austria). The webinar highlights the role of power electronics and power conversion as a pivotal part of every segment of our life. Any piece of electric equipment we

have today is somehow based on power electronics and converters, including home appliances, industrial equipment, renewable energy, automotive, and avionics. The webinar gives a novel solution to ultrahigh efficiency and specific dc/dc power converters, based on the fact that the entire dc bus voltage and output

current are not required to be processed in most applications. Processing a fraction of the dc bus voltage and/or the load current, the concept of partial power rated converters (PPRCs) is introduced, with the typical target applications being photovoltaic boost converters, energy storage (batteries and ultracapacitors) interface converters, isolated ac/dc power supplies, electric drives, and so forth. The PPRC approach promises several advantages, such as a significant reduction of the input/output filter size and weight, the

voltage rating of power devices, and conduction/switching losses.

### Electrical Safety (May)

The webinar scheduled for May is “Expanding Workplace Electrical Safety to Non-Electrical Occupations Previously Presented at IEEE Electrical Safety Workshops 2020” by Brett Brenner and Daniel Majano of the Electrical Safety Foundation International. The webinar starts with highlighting the fact that, between 2011 and 2018, 64% of workplace electrical fatalities occurred in occupations outside the electrical field, with many of the fatalities happening to construction laborers, general laborers, and tree-trimming workers. To be highlighted is an analysis of the Occupational Safety and Health Administration’s Fatality and Catastrophe Investigation Summaries, which has found that 38% of all electrically related workplace fatalities occurred due to contact with overhead power lines. The webinar will discuss the trends related to workplace electrical fatalities and provides recommendations on how to raise awareness of electrical hazards on the worksite to nonelectrical workers.

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