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Contributions to the Electrical Safety Knowledge Base

Many committees in the IEEE Industry Applications Society (IAS) are making technical contributions to the knowledge base of electrical safety in industry. A year-end search of the 2019 *IEEE Transactions on Industry Applications* issues resulted in more than 20 articles published on topics closely related to electrical safety. Six of those have been highlighted previously in this column; the remainder of the articles are summarized here. To learn more, please search for these and other articles relating to electrical safety on the IEEE *Xplore* website—access is included with your IAS membership.

Power Systems Engineering Committee

- "Electrical Safety Analysis in the Presence of Resonant Grounding Neutral," by Mitolo, Musca, Tartaglia, and Zizzo, discusses safety challenges when using resonant grounded neutral designs in medium-voltage networks and proposes a procedure for ground grid design [1].
- "Grounding the AC Microgrid" and "Grounding the DC Microgrid," by Mohammadi, Ajaei, and Stevens, are thorough studies comparing the different grounding designs of microgrids [2], [3].
- "Induced Voltage and Current Simulations, Safety Criterion, and Mitigation for EHV Transmission Lines in Close Proximity," by Wu, Meisner, Stechschulte, Simha, Wellman, Thakur, Posey, and Dimpfl, explains the impact levels of multiple parameters relating to induced voltage and current on parallel transmission lines [4].
- "Approach of Voltage Characteristics Modeling for Medium-Low-Voltage Arc Fault in Short Gaps," by Zhang, Nie, and Lee, provides modeling of arc voltage to help understand arc flash [5].
- "Design of a DC Series Arc Fault Detector for Photovoltaic System Protection," by Gu, Lai, Wang, Huang, and Yang, proposes an arcing fault detector for photovoltaic systems [6].
- "On Electrical Safety in Academic Laboratories," by Araneo, Dehghanian, and Mitolo, analyzes safety issues in these laboratories and suggests training and other improvements [7].

Power Systems Protection Committee

- "Measures to Minimize Series Faults in Electrical Cords and Extension Cords," by Parise, Hesla, Mardegan, Parise, and Capaccini, gives recommendations to reduce the risk of faults in cords [8].

Petroleum and Chemical Industry Committee

- "Comprehensive Overview and Comparison of ANSI Versus IEC Short-Circuit Calculations: Using IEC Short-Circuit Results in IEEE 1584 Arc Flash Calculations," by Majd, Luo, Devadass, and Phillips, discusses the impact of the short circuit calculation method on arc-flash estimate results [9].
- "Considerations on the New Requirements for Electrical Installations in Hazardous Locations," by Rangel and Sanguedo, highlights the special attention needed to apply new requirements in IEC standards to hazardous locations [10].

Pulp and Paper Industry Committee

- "Arc Flash Hazard—When Overestimating Underestimates a Problem," by Ventruella, analyzes

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the effects of estimates in cable length and other variables on the arc-flash calculation [11].

Electrical Safety Committee

- "Effective Electrical Safety Program Training in Multilingual/Cultural Environments," by Kovacic and Cunningham, addresses challenges and suggestions for providing training in a workplace with language and culture diversity [12].
- "Current-Limiting Arc Flash Quenching System for Improved Incident Energy Reduction," by Burns, Baker, and Hrncir, focuses on an active arc-flash-limiting method used to reduce incident energy [13].
- "Factors Determining the Effectiveness of a Wind Turbine Generator Lightning Protection System," by Deshagoni, Auditore, Rayudu, and Moore, explains a procedure for assessing a lightning protection system using soil and electrode modeling [14].
- "Electrical Safety Considerations in Large-Scale Electric Vehicle Charging Stations," by Wang, Dehghanian, Wang, and Mitolo, explores safety issues, existing regulations, and suggestions for operating large electric-vehicle charging systems [15].

Thank you to these authors for their efforts to bring these documents into the IEEE knowledge base.

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from Student to Member by establishing a future graduated membership dues structure. The IAS is also working hard to assist in the transition from student to professional member by sending a letter to the former student's new employer outlining his or her contributions to the IEEE as a Student Member and encouraging continued involvement as a Member. The letter, signed by IAS President Georges Zissis, is a great way to ensure that active IEEE Student Members can continue building a new technical community in the working world. Contact Lynda Bernstein (l.m.bernstein@ieee.org) for details.

Be brave and embrace change! Get involved in the IEEE, and become part of a professional technical community. Doing so will keep you grounded and prepared to face rapid change throughout your professional career.