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# Contributions to the Electrical Safety Knowledge Base

Committees within the IEEE Industry Applications Society (IAS) make significant technical contributions to the IEEE knowledge base of electrical safety in industry. A year-end search of the 2021 *IEEE Transactions on Industry Applications* provided 16 articles published on topics closely related to electrical safety. Four of those articles 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.

## Electrical Safety Committee

- “Electrical Safety Considerations of Neutral Blocker Placements for Mitigating DC,” by Nazir, Burkes, and Enslin, proposes a risk management framework that provides guidance on the safety implications of neutral blocker devices [1].
- “Complacency Is Your Enemy: Anatomy of an Arc Flash Incident and Lessons Learned,” by Martinez and Trujillo, shows the importance of incorporating the principles of

human performance improvement, risk assessment methodologies, and active thinking in an electrical safety program [2].

- “Leveraging Prevention Through Design Principles (PtD) in Electrical Installations,” by Floyd and Valdes, discusses the connection between PtD and industrial accidents and how PtD concepts applied to electrical infrastructure can improve the safety and productivity of modern facilities [3].
- “A Real-Time Fault Localization in Power Distribution Grid for Wildfire Detection Through Deep Convolutional Neural Networks,” by Zhao and Barati, proposes an algorithm that determines the fault type and potential fire localization in power distribution systems by using a classification model with information from distribution system measurements [4].
- “Considerations for Adapting IEEE 1584-2002 Arc Flash Study Results to a Post IEEE 1584-2018 Risk Assessment,” by Valdes and Floyd, provides some strategies that help identify when a 2002-based study may be sufficiently conservative, or not, and when updated calculations may be needed to properly identify the potential need for higher-rated

personal protective equipment (PPE) [5].

## Power Systems Engineering Committee

- “Multilabel Classification Model for Type Recognition of Single-Phase-to-Ground Fault Based on KNN-Bayesian Method,” by Lian, Li, Ma, and Lee, presents a classification model for recognizing types of single-phase-to-ground faults and shows some conclusions and a plan for further research [6].
- “A Basic Assessment of Arc Flash in Low Voltage AC,” by Parise and Scarpino, explains a tentative criterion that evaluates incident energy and arc-flash boundary and selects adequate PPE for low-voltage (<600 V) AC systems, consistent with IEEE Standard 1584-2018, *Guide for Performing Arc-Flash Hazard Calculations* [7].
- “Preemptive Medium-Low Voltage Arc Flash Detection With Geometric Distribution Analysis on Magnetic Field,” by Zhang, Tang, Huang, and Lee, explores a methodology for monitoring the transient dynamics of arcing current in the early-initiating stage

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## Conclusion

When an IAS volunteer opportunity presented itself, Yao did not waste time and acted quickly. Her expeditiousness was rewarded as one volunteering opportunity led to another, and she became increasingly involved in the IAS. During her IAS journey, she has had opportunities to travel internationally, meet peers from around the world, grow personally and professionally, and

make lifelong friendships. Yao's dedication and hard work led to her election to the IAS Executive Board, giving her a say in the direction of the Society.

There are plenty of volunteering opportunities for IAS members. They could be at a local Chapter or Section, at any of the IAS-sponsored conferences, and in one of the four IAS departments. Additionally, the IAS Executive Board is always look-

ing for new members to take a role in running the Society. Every year, there is at least one or two open member-at-large positions. As an IAS member, you are welcome to volunteer for any of the available positions. Embracing an IAS volunteering position could be a first step toward joining the Executive Board. Who knows, you could become a future IAS president!



## ELECTRICAL SAFETY *(continued from page 7)*

of an arc and shows the reliability and accuracy of fast detection [8].

- “Modeling and Assessment of Short-Term Electromagnetic Interference on a Railway System From Pole-to-Ground Faults on VSC-HVDC Cable Networks With Sea Electrodes,” by Charalambous, Dimitriou, Gonos, and Papadopoulos, provides a simulation methodology that measures the impact of HVdc pole-to-ground faults on a railway system and considers the safety thresholds where transient signals can have an effect on human beings in the vicinity [9].

### Power Systems Protection Committee

- “A Novel Voltage Clamping-Based Overvoltage Protection Strategy to Avoid Spurious Trip of Inverter-Based Resources and Eliminate the Risk of Wildfire Following the REFCL Operation in Compensated Networks,” by Jalilian, Muttaqi, and Sutanto, discusses a method used to help avoid some protective device trips and to reduce wildfire risks due to transmission systems [10].
- “Investigation of Seasonal Variations of Tower Footing Impedance in Transmission Line Grounding Systems,” by Wang, Liang, Adaiar,

and Loewen, describes a year-long study of seasonal variations of grounding impedances and includes a discussion of seasonal effects on lightning calculations [11].

### Industrial Drives Committee

- “Ground Fault Detection Method for Variable Speed Drives,” by Guerrero, Navarro, Mahtani, and Platero, presents a method for detecting ground faults in drive circuitry [12].

### References

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