

Arc Flash Hazard - Introduction to IEEE Std. 1584-2018 Guide for Performing Arc-Flash Hazard Calculations

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Abstract: Though electrical incidents represent a relatively small percentage of all work-related incidents; they are disproportionately fatal. In the case of burn injury, it may result in extended hospitalization and rehabilitation. Proper protection is the key to reducing casualties during these incidents. IEEE 1584 and NFPA 70E are developed to protect the safety of the workers.

For better understanding of the arc flash phenomena, the IEEE and the NFPA (National Fire Protection Association) have joined forces on an initiative to fund and support research and testing to improve the understanding of arc flashes. The results of this collaborative project will provide information that will be used to improve electrical safety standards, predict the hazards associated with arcing faults and accompanying arc blasts, and provide practical safeguards for employees in the workplace. The identified areas include but are not limited to 1) Heat and Thermal Effects, 2) Blast Pressure, 3) Sound, and 4) Light intensity.

This presentation will cover the heat and thermal related arc flash hazards. It will include the basic understanding of the arc flash, performing the arcing current and incident energy estimation, and introduction to IEEE Std. 1584–2018, IEEE Guide for Performing Arc-Flash Hazard Calculations.



Biography: Professor Lee received the B.S. and M.S. degrees from National Taiwan University, Taipei, Taiwan., and the Ph.D. degree from the University of Texas, Arlington, in 1978, 1980, and 1985, respectively, all in Electrical Engineering.

In 1986, he joined the University of Texas at Arlington, where he is currently a professor and the interim chair of the Electrical Engineering Department.

He has been involved in the revision of IEEE Std. 141, 339, 551, 739, 1584, 1584.1, 1584.2 3002.8, and 3002.9 development. He is the past president of IEEE Industry Applications Society (1/2021-12/2022), past chair of IEEE TAB (Technical Activity Board) Climate Change Program (3/2022-12/2023), past project manager of IEEE/NFPA Arc Flash Phenomena Collaborative Research Project (9/2008-12/2022), co-chair of IEEE Sustainable Development Ad Hoc Committee, member of IEEE TAB Hall of Honor, chair of IEEE Smart Grid Program, and a member of United Nations Council of Engineers for the Energy Transition (CEET).

Prof. Lee has been involved in research on Utility Deregulation, Renewable Energy, Arc Flash Hazards and Electrical Safety, Smart Grid, MicroGrid, Industrial Internet of Things (IIoT) and Virtual Power Plants (VPP), AI for Load, Price, and Wind Capacity Forecasting, Power Quality, Distribution Automation, Demand Response, Power Systems Analysis, Short Circuit Analysis and Relay Coordination, Distributed Energy Resources, Energy Storage System, PEV Charging Infrastructure Design, AMI and Big Data, On Line Real Time Equipment Diagnostic and Prognostic System, and Microcomputer Based Instrument for Power Systems Monitoring, Measurement, Control, and Protection.

He has served as the primary investigator (PI) or Co-PI of over one hundred funded research projects. He has published more than two hundred and twenty journal papers and three hundred and ten conference

proceedings. He has provided on-site training courses for power engineers in Panama, China, Taiwan, Korea, Saudi Arabia, Thailand, and Singapore. He has referred to numerous technical papers for IEEE, IET, and other professional organizations.

Prof. Lee is a Fellow of IEEE, International Artificial Intelligence Industry Alliance, and Asia-Pacific Artificial Intelligence Association, member of National Academy of Inventors, and registered Professional Engineer in the State of Texas.