Daniel R. Doan

IAS Open Journal Paper on Fire Safety Problems of Circuit Breakers

A recent technical paper in *IEEE Open Journal of Industry Applications* caught my attention. "Faulty Residential Circuit Breakers—A Persistent Fire Safety Problem," by J. Aronstein [1], is a very thorough study of fire hazards of residential-type circuit breakers. These circuit breakers are often used in office, shop, and other general buildings in our industrial facilities, so it is a topic of interest. The author has previously presented and published papers building up to this topic, including "Molded Case Circuit Breakers—Some Holes in the Electrical Safety Net" [2] and "Temperature Sensitivity of Residential Molded Case Circuit Breakers" [3] in *IEEE Access* in 2018 and 2019, respectively, and "Estimating Fire Losses Associated With Circuit Breaker Malfunction" [4] at the 2011 IEEE Industry Applications Society (IAS) Electrical Safety Workshop. This newest paper is worth reading; the author shows some excellent graphics of the response of a range of tested circuit breakers and makes a clear case that some manufacturers are using shortcuts to test their products.

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It is interesting to note that there is no easy way for users to test their installed circuit breakers; users must rely on the manufacturer to do a thorough test of each breaker. They must hope the breaker will work properly for many years to come, based on that initial test. However, the author makes a good point that if manufacturers are using shortcuts to save time during the testing process, then the user is the one who could suffer from potentially faulty equipment in the future. One example of a shortcut is that breakers are required to open at 135% of rated current after a prescribed period. Quoting from the paper, "The experimental results provided in this article … clearly show that calibration testing at 200% or 300% of rated current cannot be successfully employed to assure that a breaker will trip as required at or below 135% of its rating." The implication is that some manufacturers may be testing at 200% or higher to have a quicker test for each breaker instead of the longer time required to test at 135%.

This reminds me of discussions around counterfeit electrical equipment, where the testing is nonexistent or equipment that failed the proper testing is still labeled and sold for use in residential, commercial, or industrial facilities. Which is worse: counterfeit equipment that is difficult to identify and has not been tested at all or properly labeled equipment that has been approved and sold with inadequate testing? Both should be unacceptable when we are depending on the equipment to operate properly to protect people or facilities.

I learned a lot from reading this paper and referring to the previously published papers; especially interesting was the history of circuit breaker manufacturers and their progression toward improvements through the years. Many manufacturers are making excellent equipment that meets all the requirements, but, as the author shows, there are still some manufacturers that are marketing equipment that does not meet the standard testing requirements. All industrial, commercial, and residential users of this equipment should learn about this issue to ensure the use of quality equipment. Thank you to Mr. Aronstein for these efforts to bring this issue to the forefront and for a commitment to electrical safety!

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In Memoriam: Erling Casper Hesla

Erling Hesla, of Edmonds, WA, USA, passed away on 18 May 2023 at the age of 98.

Hesla was born in Regina, Saskatchewan, Canada. After receiving his bachelor of applied science degree from the University of British Columbia in 1947, he joined the Canadian General Electric Company. In 1951, Hesla accepted an offer from Companhia Brasileira aos Serviços Técnicos in Sao Paulo, Brazil, to provide electrical engineering support for a vast expansion of hydroelectric power generation facilities. He later worked for the Scott Paper Company and eventually established his own engineering consulting company.

Hesla was a Life Senior Member of IEEE and provided decades of leadership contributions spanning IEEE technical, regional, and educational activities. Hesla was an active member of the Seattle IAS Chapter, and as a member of the IAS Executive Board, he was a champion for IAS regional Chapters in Asia, Europe, South America, and the Middle East.

Erling Casper Hesla
(1924–2023)

In 1998, he received the IEEE Larry K. Wilson Transnational Award in recognition of his leadership and contributions to IEEE and IAS regional Chapter activities around the world. With decades of involvement in the technical activities of the IAS Industrial and Commercial Power System Department (I&CPSD), Hesla contributed to the IAS I&CPSD-sponsored IEEE Color Book standards on industrial and commercial power systems and served as the chair of IEEE Standard 902, Guide for Maintenance, Operation, and Safety of Industrial and Commercial Power Systems. Hesla authored or contributed to more than 79 books and texts on advanced engineering and emerging technologies. The IAS I&CPSD honored Hesla with its Outstanding Achievement Award in 2000. In 2017, he received the IEEE Richard Harold Kaufmann Award, with the citation, "For leadership in establishing the fundamentals for the protection and safe operation of industrial power systems."

Hesla was predeceased by his parents, Oscar Selmar and Pauline Caspara Hesla, his wife, Viola, and his son, Christopher Bruce. He is survived by his sons, Erik and Paul.

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The referenced papers are all available through IEEE *Xplore*, and I encourage you to look through the *IEEE Access* website [5] and at *IEEE Open Journal of Industry Applications* [6] for technical papers that may be helpful in your specialty. These are excellent benefits of IEEE and IAS membership.

References

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