CV

PERSONAL INFORMATION

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EDUCATION

Apr. 2020 – Mar. 2024 **Bachelor of Engineering**
Department of Electrical Engineering, Electronics, and Information Engineering
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Apr. 2024 – Present **Master of Engineering**
Department of Electrical Engineering
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Paper ID: 458

Paper Title: Modeling of Short-Circuit Faults and Estimation of Arc Discharge Energy in Motor Drive Circuits

Abstract: The electrification of vehicles has increased the operating voltage of automotive electric compressors, raising concerns about the self-decomposition of HFO refrigerants. This study models the current and voltage waveforms of arc discharges during phase-to-phase short circuits and quantitatively evaluates the resulting discharge energy. Compressor parameters obtained through teardown were incorporated into a motor drive circuit model including overcurrent protection (OCP). Short-circuit tests conducted at 300 V and 400 V with motor speeds ranging from 850 to 3500 rpm showed that discharge energy increases with voltage but remains unaffected by motor speed. Simulation results were consistent with experimental data, confirming the validity of the model.