IMPROVING ELECTRICAL SAFETY WITH SHORT CIRCUIT PROTECTION

LOW VOLTAGE MOTOR CONTROL CENTERS

KENDALL ELECTRIC
A MEMBER OF THE KENDALL GROUP

WHEN

DATES:

- **Part 1 (Course W101):** Tuesday, May 4, 11:00 am – 12:00 pm EDT
- **Part 2 (Course W104):** Wednesday, May 5, 11:00 am – 12:00 pm EDT

HOW TO REGISTER:

- keinc.info/Mersen21
- Classes are virtual and free to attend, but registration is required
- Questions? Contact marketing@kendallgroup.com

ABOUT THIS SEMINAR

Increasing concern for arc flash safety has grown to include both operators of electrical equipment as well as electrical workers. Internal arc faults can blow open doors of low voltage equipment including motor control centers (MCC) that have been properly installed. Should this occur when an operator is interacting with the equipment, the worker can very easily be exposed to the hazards of arc flash. To protect workers without arc-rated PPE, 'arc resistant' low voltage MCCs have been tested according to an IEEE standard to prove that the MCC contains the hazards of arc flash should an arc fault occur with the doors properly closed. Additionally, many companies are focusing efforts to get lower incident energy levels on equipment that has frequent worker interaction with the doors open. Many are seeking the lowest values that are economically feasible.

Maintaining continuity of power to critical loads requires a system view when deciding on overcurrent protective devices (OCPD) to protect against arc flash. Continuity of service requires that feeder OCPD allow MCC branch devices to clear faults within their zone of protection. If this requires that the upstream feeder OCPD has a delay added to its trip, incident energy levels at the downstream MCC will be increased. Thus, decisions about OCPDs within the MCC can indirectly affect the levels of incident energy at the MCC. Since current limiting fuses can be coordinated within their short circuit region without any intentional delay, it is possible to dramatically limit the energy delivered to arcing faults without compromising continuity of service because of a short circuit event. Class L and J fuses can limit incident energy throughout the MCC to well below the accepted 2nd degree burn threshold of 1.2 cal/cm^2. Properly sized Class J fuses can also minimize damage to faulted branch circuit equipment and provide the best protection of components in the fault path.

This training will provide background information on NFPA requirements regarding workers "exposed to the arc flash hazard." In addition to protection of workers, coverage of the selection of current limiting fuses for a long reliable life and optimum protection of the MCC will be provided. An 'Arc Resistant' low voltage MCC will be introduced with a focus on how a 'Device Limited' Arc Resistant LV MCC can provide maximum safety benefits.

THE PRESENTER

Mike Lang, Principal Field Engineer for Mersen, has trained electrical professionals for over 25 years. As leader of the Mersen arc flash team, he has participated in over 1,000 arc flash tests in Mersen's high power test lab. He has coauthored several prize-winning IEEE papers on arc flash and received 2018 Technical Award for Excellence in Prevention Through Design by the Electrical Safety Committee of the IEEE Industrial Application Society.

WEBINAR AGENDA

PART 1 (Course W101) - 60 MINUTES

Hazards of Overcurrents
- Electromagnetic Force
- Heat
- Arc Energy

Importance of Adequate Short Circuit Ratings
- SCCR
- AIR
- High Fault Current Ratings

Enhancing Short Circuit Safety with Current Limiting Fuses
- Current limiting fuse performance
- Fuses for optimum short circuit protection of equipment and components
- Dual Element, Time Delay, or Fast Acting?
- Fuses for minimizing arc flash hazards
- Choosing a U/L Class as a Standard

PART 2 (Course W104) - 60 MINUTES

Protecting Workers Who Could be Exposed to the Arc Flash Hazards
- Review of the hazards of arc flash
- NFPA 70E discussion on protecting workers interacting with energized equipment
- Introduction to AR (Arc Resistant) LV MCC

Overview of Overcurrent Protection Objectives for MCC
- Safety – minimize arc fault energy and power
- Continuity of service – achieving full coordination
- Optimum protection of equipment and components
- Long and reliable life

Design concepts to improve reliability of the short circuit protection
- Zones of Protection
- Fuse Selection for Power Circuits
  - NEC Considerations
  - Coordination Considerations
  - Achieving Type 2 Protection
  - Minimizing arc flash hazards
- Achieving Full Coordination for Safety

Introduction to the 'Device Limited' AR LV MCC
- Arc flash performance
- Additional features