Is any of your 3Ø 20-100 amp commercial kitchen equipment GFI-protected per recent NEC 2017 Sec. 210.8 requirements?

High Performance Current Sensing for Today's World

There's a very good chance it is not.

Per the updated code, three phase and/or high amperage electrically-operated commercial kitchen equipment now requires ground fault protection — not something readily available from most electrical suppliers for new installations or easily retrofitted into existing kitchens. Making a regulation is the easy part; making the solution can be more difficult and expensive.

That's where ground fault sensors from NK Technologies can help with a ready-made, one size fits all solution. Compatible with all makes of circuit breakers, NK ground fault sensors handle these larger 20 to 100 amperage, 208 – 240 V applications previously not required to provide GFI.

- Low cost
- 5 year warranty
- Direct access to our engineers

We encourage you to review the application report that follows. Our technical resource application engineering staff in San Jose, CA are available 8 am to 5 pm PDT, and welcome any questions regarding the NEC regulations, or to discuss any unique current sensing problems you are concerned about.

PROTECTING COMMERCIAL KITCHEN EQUIPMENT FROM FAULTS TO EARTH

APPLICATION NOTE

The NFPA NEC 2017 Sec. 210.8 edition has requirements for ground fault protection of electrically operated commercial kitchen equipment. Specifically, "single-phase receptacles rated 150 volts to ground or less, 50 amperes or less and three-phase receptacles rated 150 volts to ground or less, 100 amperes or less" will have GFCI for personnel protection installed.

Prior to this change, only 15 and 20 amps single-phase circuits of 125 volts or less needed this level of protection. Circuit breakers and receptacles with ground fault protection at these levels of power are readily available and quite common. Above 20 amps or three-phase protection becomes a more difficult issue.

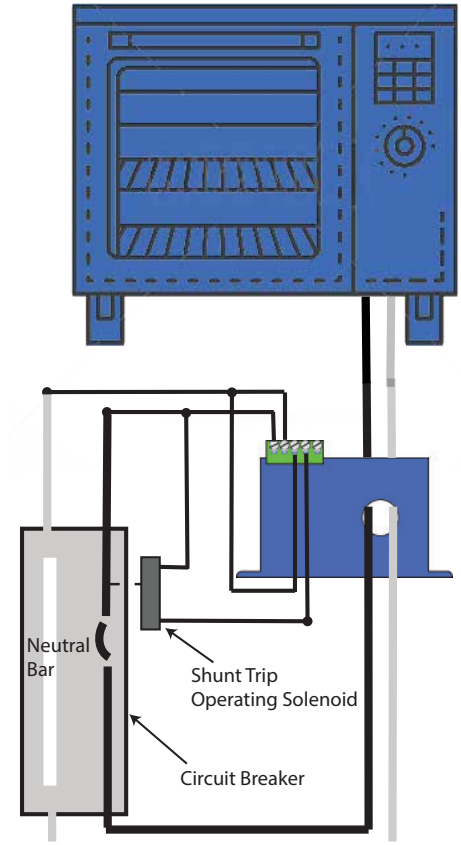
There are two ways NK Technologies' ground fault sensors can help.

- If the circuit breaker feeding the equipment can be fitted with a shunt trip operating mechanism, the AG or AGL series sensors with auto reset contacts will detect a fault, and close the circuit energizing the shunt trip solenoid.
- If the equipment is operated with a magnetic contactor, the sensor used should be the latching output type. The NK Technologies' sensor contact will be connected to de-energize the contactor coil when a fault is detected.

Case Example:

A major manufacturer of commercial kitchen steamers and grills reported that their equipment can sometimes retain humidity during storage prior to installation. To eliminate this, units should be "burned in" or energized for a minimum of two hours prior to normal use. To avoid nuisance tripping, the the ground fault sensor is set at 30 mA. Once the burn-in is complete and any moisture eliminated, the sensor trip point needs to reset to 5 mA.

The Solution: NK Technologies' tri-set sensor offers this capability as a standard feature. A range jumper is placed at the factory in the highest trip point, 30 mA, allowing the equipment to operate as required during the initial burn-in period.



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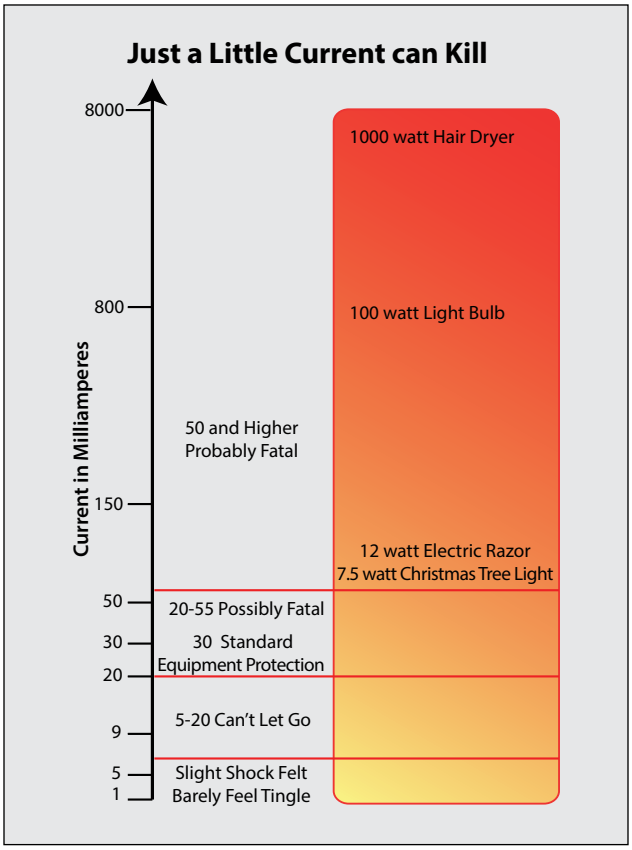

After the equipment has had time to dry out, the jumper is removed, and the trip point resets to 5 mA. With a fault to earth at this setting, the circuit will disconnect in a very brief period of time to provide the fastest protection. This is substantially faster than a conventional residential GFCI outlet in a bathroom that disconnects when a fault is detected at 4-6 mA, but takes several seconds to react. (As a reference, the human heart will stop beating when hit with 100 mA or more, as indicated in the graphic above.)

In conclusion and most importantly, when a fault to earth occurs, de-energizing the circuit as quickly as possible is critical. In commercial kitchens, workers are trained to deal with a number of inherent risks with the job. De-energizing a circuit as quickly as possible is not something they can be trained for. Adherence to the new NEC regulation will keep people working near electric kitchen equipment as safe from electrocution as possible.

AG and AGL Ground Fault Sensors

AG ground fault sensors monitor tup to 50 amps circuits; the AGL sensors are large enough to monitor circuits of 300 amps or more.

Both products have an extremely fast response time that will improve the safety of the workplace and are more sensitive than a GFCI outlet used in residential applications. The wide temperature range means that these sensors can be installed in very warm or very cold environments. The sensor is completely isolated from the monitored circuit and can be installed quickly on a DIN rail or mounted on a panel using screws.

Want to know more?

For more information on ground fault sensing, contact us or visit our website to download our 5-page Ground Fault Sensing White Paper.

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