Application Brief

CCI's TRC Division has worked with a prominent public utility in the northeast United States to provide ground fault solutions for their nuclear power plant to enhance their safety program, ensure employee safety, reduce risk and liability and adapt to changing OSHA requirements. As part of this program, in the first year over $150,000 in ground fault products were sold for use in their facility through a variety of electrical wholesalers. We know that the needs at other utilities mirror those of this operation and we intend to be the provider of choice for the industry.

Safety and Regulatory changes:

Safety engineers for utilities, including nuclear power plants such as this one, have to be more conscious of Ground Fault Protection with the changes to the OSHA General Industry Electrical Standard S29CFR1910, Subpart S, effective October 2008. These OSHA changes are to provide personnel safety protection that is more extensive than the construction industry; 120V, 240V (15/20/30A) and all voltages higher than 150V to ground. It is proven that many lives have been saved with OSHA regulation in the construction industry which warrants the changes in general industry.

HD-PRO Solutions:

TRC engineers designed their HD-PRO models specifically for high current, rugged environments and are field-proven in all kinds of tough applications. The entire HD-PRO family (120V/30A to 600V/100A) is designed to trip within 25 milliseconds after ground fault detection at an adjustable selected trip level of 6, 10 or 30 mA.

During a nuclear power plant power outage and clean-up or for general maintenance and operation, TRC GFCIs and HD-PROs are preferred for personnel and equipment ground fault protection because of their ruggedized design. They are used with all types of equipment; fans, welders, lights, air compressors, HEPA filters, pumps and heaters just to name a few. TRC's HD-Pro design allows the flexibility to select and lock in a trip level, thus customizing each application for that specific type of equipment to maximize protection while avoiding unwanted (nuisance) tripping. With certain equipment like air compressors, for example, a 6mA trip level cannot be achieved. HD-PRO products have an adjustable trip level (6ma, 10mA or 30mA) and can be changed to avoid nuisance tripping (unwanted interruption of power) during operation.

This nuclear power plant utilizes two HD-PRO models, 24672-001 (a 480V/60A three phase device) and 24646 (a 480V/30A three phase device) to meet their 480V ground fault needs.

Specialty GFCI Cord Solution:

In addition to working with the safety team at this facility to fulfill their 240 and 480V ground fault requirements, we also worked closely with them to develop a specialty GFCI cord solution for 120V/15A cords that plug into a Hessel receptacle, a special receptacle utilized at various nuclear power plants and facilities in the northeast. Many facilities, including nuclear power plants that have secure power usage requirements, require special plug and receptacles such as the Hessel receptacle to ensure safety. The inline GFCI cord set incorporates a molded male Hessel Plug on the input side and a NEMA 5-15 receptacle on the other. This design eliminated the need for adapters, assured safety engineers that personnel would be using GFCI protection, and also allowed the plant to reduce inspections because the GFCI was integral to the cord.

Before the development of the HD-PRO Series, facilities with high current-high voltage equipment or three phase systems employed expensive ground fault breakers at the source of the branch circuit, or went without ground fault protection, leaving personnel and equipment unprotected.

Circuit breakers can withstand high current levels but have short mechanical lives and were not designed for switching duty. Localized ground faults, with circuit breakers, either shut down the whole branch circuit or were overloaded because the available devices were not portable and often too costly.

The HD-PRO Series utilizes contactors that are fully rated for motor switching demands, and in addition to being far less expensive than 3 phase breakers, the HD-PRO models protect expensive high current – high voltage equipment at the point of use while offering substantial shock protection for personnel.