

case study

I-Gard Helps Packaging Corporation of America Protect its Employees

A constant issue facing our industry is electrical reliability. While significant focus, attention and capital are applied to backup power systems including generators, battery and UPS to protect critical processes and power factor correction equipment, an often overlooked issue is electrical ground faults.

unparalleled protection

Industry

Pulp and Paper

Need

Need to create competitive advantage

Benefit

Less equipment failure, run critical processes even with 2nd ground fault, safe environment for workers



About Packaging Corporation of America

Packaging Corporation of America (PCA) annually produces over 2.4 million tons of kraft linerboard for domestic and international customers. One of their facilities is located in Valdosta, Georgia. The Valdosta mill annually produces over 457 thousand tons of 100% virgin, high-quality linerboard annually. PCA is the fifth largest producer of containerboard and corrugated packaging products in the U.S. PCA operates four paper mills and 68 corrugated product plants in 26 states.

About I-Gard

I-Gard provides both industrial and commercial customers with the products and application support they need to protect their electrical equipment and the people that use them. Since 1982, I-Gard is committed to electrical safety and reliability.

According to the authors J.R. Dunki-Jacobs, F.J. Shields and Conrad St. Pierre of Industrial Power Systems Grounding Design Book, 95% of all electrical outages are caused by ground faults. A single electrical accident can cost the company up to \$1 million or more in lost productivity, equipment damage, lost time, medical expenses, as well as liability exposure.

Packaging Corporation of America experienced a ground fault at its Valdosta facility but with the foresight of selecting and deploying a high-resistance grounding system, it avoided a costly outage. The challenge was to locate and clear the fault before a second fault occurred. This could have led to unwanted process interruptions and a possible arc fault.

With training from I-Gard on the application of I-Gard's industry-leading DSP relay, which features assisted fault finding and pulsing capability, fault location is reduced from several shifts to a few hours.

As part of a further upgrade in electrical reliability, George Lavender, Senior Project Electrical Engineer at PCA, in consultation with Sergio Panetta, Vice President of Engineering at I-Gard, selected the I-Gard Gemini, the only fail-safe HRG system available.

“High-resistance grounding as a technology can be applied to industrial as well as commercial sectors in order to enhance its reliability and uptime of power distribution equipment. HRG significantly reduces the frequency and severity of arc flash accidents,” says Lavender. “We have a responsibility to our employees and our employer to operate a safe and reliable electrical distribution system. The fail-safe HRG system from I-Gard ensures peace of mind.”

GEMINI

GEMINI

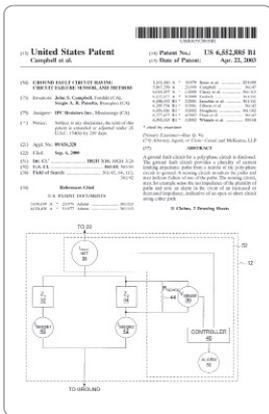


Patented fail-safe high-resistance grounding system with twin resistance paths

Only monitoring relay capable of discriminating between ground faults, resistor failure and open and short circuits

Eliminates nuisance tripping through adjustable time delay settings 60ms and up

Self diagnosis through built-in test circuitry



High-Resistance Grounding Resistor

This resistor is connected to the wye point of the transformer or generator supplying the facility. Its function is to limit ground fault currents to non-damaging levels under a single line-to-ground fault condition. In the case of the Gemini system there is a parallel resistance circuit comprised of two identical resistor paths connected from the neutral to the ground. The parallel resistance circuit is sized to limit any ground fault to predetermined levels. In the unlikely event that one resistor path fails, the second resistor path continues to limit the ground fault to half of the predetermined levels and still provides full ground fault protection and an alarm indicating resistor failure.

Ground Fault and Resistor Integrity Relay (GFR-RM)

In conjunction with a sensing resistor and a series current transformer, the GFR-RM measures current through the neutral grounding resistor, transformer neutral-to-ground voltage and NGR resistance for continuity. The GFR-RM compares the measured values against the field settings of relay and provides relay outputs and lighted signal when an abnormal condition is detected.

Automatic Pulsing System (optional)

Once the pulsing feature on the Gemini system is selected and activated, the system will cyclically limit the fault to 100%, 75% and 50% of the available ground fault current. The cyclical pulsing combined with the hand-held pulse tracing sensor empowers the user to trace the fault circuit to the point of the fault, even in complex distribution systems without de-energizing the load.

Ground Fault Sensing Transformer and Relay

This microprocessor based digital relay measures ground fault current using a 1:1 zero sequence current transformer. It maintains accuracy over a range of 45Hz to 65Hz and filters out harmonics to eliminate nuisance tripping.

GEMINI