



## I-Gard Provides Innovative Solutions

### case study

The Narmco Group is an automotive parts manufacturer with many operations of which five are clustered in Southwestern Ontario. The electrical maintenance for all five of the facilities is undertaken by Collins Electrical Company, Inc (CECI). Narmco, like the majority of automotive industrial facilities, operates on an ungrounded electrical system.

# unparalleled protection

#### Industry

Automotive

#### Focus

Reliability

#### About Collins Electrical Company, Inc.

Collins Electrical Company, Inc. (CECI) is one of the leading electrical construction and engineering firms in Northern California with approximately \$80 million in annual revenues. As an IBEW Union contractor, CECI has maintained a long-term reputation for unmatched quality and excellence in design, construction, and project management since 1928.

#### 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.

However, ungrounded systems offer no advantage over high-resistance grounded systems in terms of continuity of service. A disadvantage is the inability to locate the first ground fault without shutting down the entire system and excessive over-voltages that cause insulation failure and equipment damage. During these incidents, there is a high potential for a second fault to occur before the first one is removed leading to severe burn downs. (See *IEEE Standard 242-1986 7.2.4.*)

The answer lies with the Turbo Sleuth from I-Gard. The Turbo Sleuth is an industry first, a robust portable unit that temporarily and easily connects to an existing electrical system. It converts the faulted system to high-resistance grounding and utilizes an integral pulsing circuit to facilitate fault finding where and when required while ensuring system continuity. The Turbo Sleuth contains the fault-limiting resistor, the pulsing circuitry and, if required, an artificial neutral in a single-wheeled enclosure that can be readily moved throughout any manufacturing facility.

“One of the reasons behind choosing this product,” states Vic, “was the ease of installation; we simply installed welding plugs at convenient locations throughout the five facilities. Once we knew from the ground detectors that we had a fault, we moved the portable unit to the closest available outlet, connected the unit, converted the system without de-energizing an impacting production and started the pulse. We then used the current sensor loop provided with the unit to trace and follow the fault, dividing the plant into sections to enable us to quickly zero in on the fault. With five separate facilities, we were also able to use one Turbo Sleuth by throwing the unit in the back of the pickup and transporting it wherever we need it.”

With full understanding of the possible consequences of a second ground fault on an ungrounded system, the maintenance personnel at CECI committed to removing faults as quickly as possible but were faced with two vital roadblocks. The first issue was the lack of time required to locate a fault in an ungrounded system. The second issue was that full-scale conversion to high-resistance grounding would take capital, time and resources at such a large facility. While this was being reviewed and a budgetary request was submitted, the situation of equipment damage and time-consuming fault finding continued.

“We needed to temporarily convert to a high-resistance system,” says Vic Galamb of CECI. “I-Gard had the solution where we were able to locate the fault quickly without taking down the system or disrupting production.”

# TURBO SLEUTH



NEMA 3R enclosure containing current-limiting resistor and ground fault relay

Available with artificial neutral for use on delta systems

Visual indication of system normal, active ground fault and pulsing active

Available for 480V, 600V and 4160V distribution systems

A portable neutral grounding device used for fault detection in ungrounded or high-resistance grounded, wye or delta power systems. The portability of the Turbo Sleuth allows one unit to be moved from system to system for the purpose of locating faults, thus eliminating the cost of installation of pulsing units on all systems. Operations can continue with the faulted system while the Turbo Sleuth is connected, maximizing productivity and preventing unwanted downtime.

An ideal tool for sensing and locating ground faults quickly and easily. Ground faults are the most common form of electrical fault, accounting for a minimum of 85% of all electrical faults in a distribution system. When a ground fault occurs: Turbo Sleuth is connected to the system at a convenient location and plant electrical personnel may then follow a simple sequence to locate and isolate the fault without interrupting or opening circuit breakers. Connection is made by cables supplied with the unit, which are provided with rugged, outdoor plugs and/or un-terminated conductors. Control power requirements are 120VAC.

Turbo Sleuth confirms the ground fault by means of lights on the panel front. In addition, it provides auxiliary relay contacts, which may be wired to alarm or annunciation devices, such as the optional TS-AH horn.

Turbo Sleuth is available in either 480V or 600V types and provides pulsing currents in three incremental levels of 5A, 3.75A and 2.5A when in operation. This 3-stage current pulse maximizes visibility of the detection system eliminating false indications. The Turbo Sleuth is enclosed in a NEMA 3 outdoor enclosure with caster wheels providing mobility. The unit can be left connected outside at a substation if necessary. Note that if high-resistance grounding is already used, the currents will add to the continuous ground current.

Turbo Sleuth pulsing system, when activated, will cyclically limit the ground fault current to 100%, 75%, and, 50% of the available ground fault current. The user modifies the duration of this pulse to suit the requirements of his sensing device.

The cyclic pulsing, combined with the hand-held current sensor and a single-line diagram, can be used to rapidly locate a ground fault even in a very complex power distribution system.



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