G&W CLiP® INFORMATION SHEET

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THE DISTRIBUTION NETWORK APPLICATION

Have you ever considered what would happen in the vaults of your critical metropolitan system if a fault should occur?

- Would a major explosion and fire occur?
- How would the outage affect your business clients?
- Could personnel be injured by explosion, fire or smoke inhalation?
- How fast could service be restored?
- How long would it take to rebuild the vault?
- Is contamination from PCB's involved?
- What would all of this cost the utility and its customers?

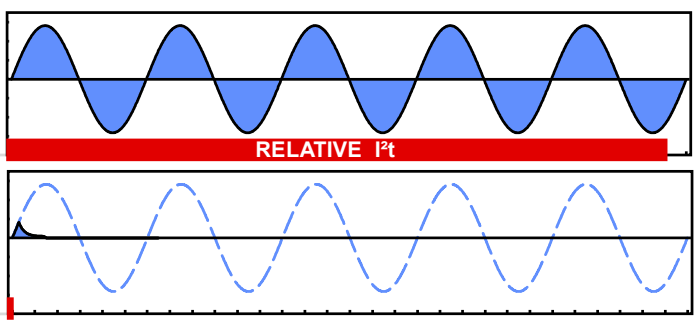
The 3 to 5 cycle response time of your present circuit protection devices may not prevent a secondary catastrophic failure.

The G&W CLiP® can handle the high continuous currents of network systems and can often reduce damage to less than 1% of traditional protection techniques. Minimize the effects of a fault. Use a CLiP.

I^2t COMPARISON
for a 25kA Fault

CIRCUIT BREAKER (5 CYCLE)
52×10^6 A² Sec

CLiP® & PAF®
$.4 \times 10^6$ A² Sec (Typ.)



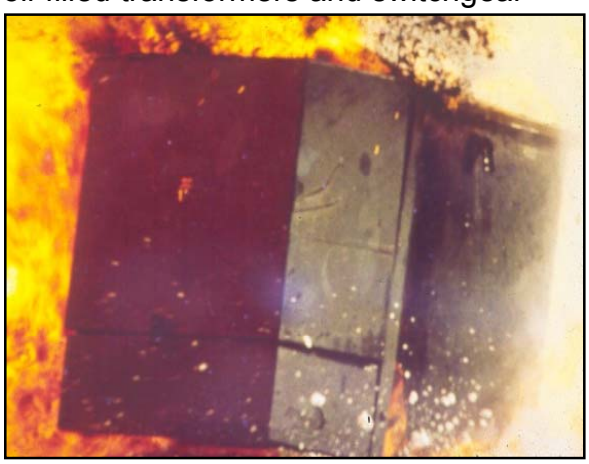
G&W Electric Co. • 3500 W. 127th St. • Blue Island, IL 60406 • 708-388-5010 • FAX: 708-388-0755 • website: www.gwelec.com

THE DISTRIBUTION NETWORK APPLICATION

The medium voltage network system is typically characterized by multiple sources from separate station transformers, each with a circuit breaker, and then interconnected, generally with a tie breaker. **The interconnected sources are a source of high reliability and voltage regulation, but also of high magnitude fault currents.** Medium voltage feeders (600A and 1200A are common) tap the network and provide service, often to a low voltage network.

The key concept is that even though all components in the system are within their ratings, the standard schemes do little to minimize the damage associated with a fault.

Fault currents, even seemingly modest ones of 5 - 10kA can cause rupture of oil-filled transformers and switchgear



well before a circuit breaker or recloser can clear the circuit. Equipment not containing oil may still explode and evolve huge volumes of smoke and toxic gases. This may be spread through the ventilation systems of a major office complex.

While careful evaluation of each piece of equipment, to determine if the fault can be contained, is not practical, current limitation can minimize the effects. Current-limiting fuses are not available in the continuous current values given above. Current-limiting reactors are not widely used on these circuits (due to size and regulating voltage drop), and still do not reduce the breaker operating times.

The CLiP® can handle the continuous currents and give very effective current limitation. They are set to coordinate with downstream gear, yet there is necessarily some overlap in their protection scheme as they are going to be set to intercept certain faults that are within the equipment's capabilities. The CLiP® is particularly flexible. It can be remotely disabled and act simply as a busbar, if necessary for some utility function. Also, by means of its indicating capabilities, the CLiP can be tied to SCADA or other schemes to initiate secondary responses in the utility function after a trip has occurred.

The CLiP - an ideal network protector.