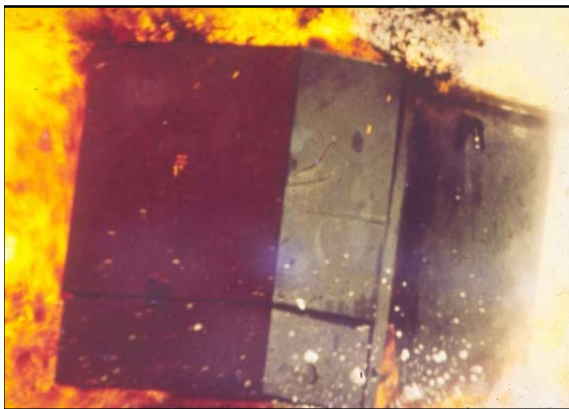


## ARC-BLAST MITIGATION and LINE-UP ARC-PROOFING

- Help meet NFPA70E requirements.
- Reduce available fault currents and time for Arc-Flash calculations.
- Minimize Arc-Blast Concussion.
- Help Arc-Proof your existing lineup.
- Instead of coping with fault energy – simply remove it!
- Reduce fault let-through energy to less than 1% from a breaker.
- Minimize equipment damage and get back in operation -- fast!
- Protect your electricians.
- Protect pedestrians & motorists in the metro environment.
- NFPA70E does not address the plasma, shrapnel or concussion.



**A KEY CONCEPT -- most protection techniques only attempt to cope with or redirect fault energy. Consider the Personal Protective Equipment or blow-out manifolds of arc-resistant switchgear. The CLiP is an extremely effective tool -- it simply eliminates most of the fault energy.**

### Having difficulties meeting codes?

One can design and build the best system using the finest equipment. This system can be well maintained and protected. But what would happen if an internal fault were to occur? Would the doors be blown off of sections in the lineup? Are you the one tripping the breaker, while standing in front of it? How about working on live gear? The NFPA70E calculations only consider radiated incident heat, not nearly the full energy spectrum. The CLiP does.

Fault currents, even seemingly modest ones of 5-10kA, can yield catastrophic results – arc flash/blast on live equipment, the rupture of oil-filled gear or explosion of faulty switchgear. Major damage or injury occurs well before a circuit breaker or recloser can clear the fault. And Personal Protective Equipment, the flame suits, only protect against heat and small particles.

What can be done to mitigate the potential of catastrophe? What does one do with limited funds and an aging lineup or equipment exceeding ratings?

The CLiP acts in a broader spectrum, not just thermal radiation - cal/cm<sup>2</sup>. It limits total energy. It is effective in reducing arc flash and arc blast exposure to personnel. The CLiP greatly reduces both the time and the current for applicable arc flash calculations. It can also provide a basic form of arcproofing to existing switchgear lineups. See our plots, or consult with G&W factory personnel on specifics. And one thing that most other techniques fail to do is simply -- **CONTROL THE ENERGY.**

*Come talk to us about your protection needs, and how we can assist you.*

The CLiP is not a replacement for the other devices, but a supplementary tool to extend their range and effectiveness.

## THE ARC-BLAST MITIGATION APPLICATION

Consider that the electrical arc may reach a temperature in excess of the surface of the sun. This causes vaporization of copper in the arc zone. Combined with the superheating of surrounding air, a deadly plasma mixture is explosively blasted from the fault zone with heavy concussive forces imposed on nearby personnel.

Arc-flash Personal Protective Equipment (PPE) can address the direct heat and subsequent radiative effects, which fall off dramatically with distance. But this equipment may not provide effective protection from the concussion of the explosion. Nor does it address the plasma or propulsion of superheated shrapnel and debris. This may even be intensified or focused away from the fault.

The CLiP® is a means of mitigating these effects by limiting peak fault current, and cutting-off most of the fault energy early in the process.

The CLiP may also reduce the effective exposure of personnel within acceptable PPE limits. It can radically



reduce the hazard of the explosive force and the flying debris.

As the explosive effects are more related to fault energy (therefore to  $I^2t$ ), and the thermal effects are related to current, time (and distance), the CLiP is extremely effective in both Blast & Flash measures. A typical case is demonstrated in the chart below. Rather than attempting to cope with fault energy, just eliminate it!

### I<sup>2</sup>t COMPARISON for a 25kA Fault

CIRCUIT BREAKER (5 CYCLE)  
**52 x 10<sup>6</sup> A<sup>2</sup> Sec**

TYPICAL G&W CLiP®  
**.4 x 10<sup>6</sup> A<sup>2</sup> Sec (Typ.)**

Protection is available to 120kA rms, sym. and beyond.

