

Alternative Fusing

Non-Expulsion and Current-Limiting Approaches



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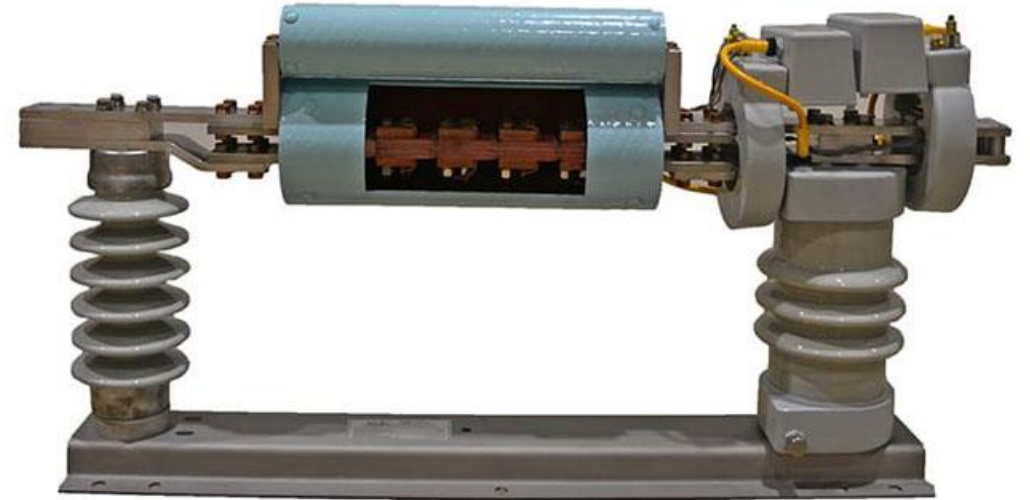
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G&W CLIP device

- Remote enable/disable
- Outdoor duty
- Threshold current sensing
 - Consistent peak let-through values, regardless of fault asymmetry level
- Field-selectable trigger levels
- Allows a smaller CLF to be used

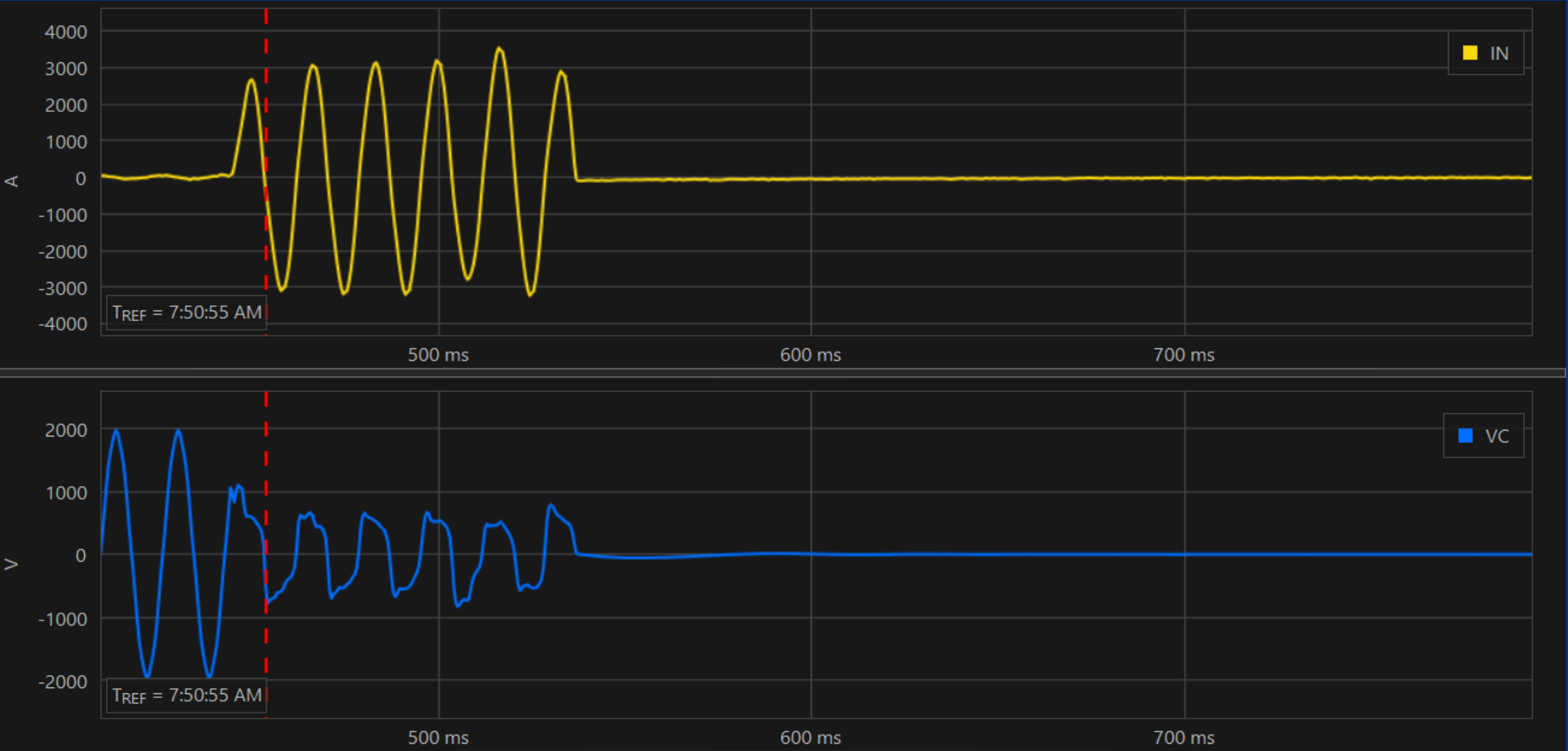


G&W CLiP - Current Limiting Protector





Current and Voltage





Current and Voltage with a CLiP



Results / Observations

- Current-limiting fuses can prevent expulsion fuses from operating
- The CLIP device must be re-engineered for this use case
 - The current limiting fuse must be small enough to limit the current
- Without reclosing, inrush may be ignored when sizing the current limiting fuse.
 - The current limiting fuse must be placed into service after everything is energized.
 - Example, bypassing an in service recloser with a current limiting fuse.

Functionality loss with a current limiting fuse

- The ability to fault locate may be loss
 - All normal coordination is loss.
 - Fault magnitude / impedance matching is impacted
 - Existing fault indicators may not target
 - Even small transformer fuses may not operate
- From a wildfire perspective, if the fault causing material (limb) is ignited before the fault arc, then limiting the current is not effective.
 - Good for balloons and conductor to conductor faults.
 - May hinder dispatch for semi conductive material such as vegetation.

EPRI in person workshop project offering

- Dedicated onsite workshop to have EPRI and the utility's SMEs discuss video demonstrations and have debates associated with protection and operating policies.
- Topics
 - Understanding and debating strategies for temporary and sustained faults.
 - Examples of how different faults occur.
 - AMI and arc detection for down conductor identification
 - Reclosing practices
 - Impact of additional reclosers. Lateral and main line.
 - Reclosing intervals
 - Operating practices when reclosing is disabled.