



## **What Makes the OPTimizer+ Perform these Tasks Better than Digital Relays?**

We appreciate that digital protective relays offer some limited breaker wear and condition monitoring. They are certainly a step-up from electro-mechanical relays with regard to any type of monitoring. But they do have their limitations. As much as these digital relays can supply limited information about the wear and condition of a breaker, the OPTimizer+ supplies much more information, gathered and processed the proper way, and puts it in a format readily understood by the Operations Maintenance personnel.

But my Digital Relays can monitor breaker wear, right???

- 1) Mechanism Speed is usually NOT recorded
- 2) Restrike Detection is usually NOT implemented
- 3) Number of Operations DOES NOT adequately track wear (no-load, load break, fault)
- 4) Arc Duration is usually NOT recorded
- 5) I<sup>2</sup>T DOES NOT reflect ANSI C37.04 methods of calculating current effects (I<sup>2</sup>T)
- 6) Relays eliminate DC offset, which adversely affects the I<sup>2</sup>T calculation (C37.09)
- 7) Relays can have slow sampling rates that cannot adequately account for harmonics that are present during the arcing interval (sampling rate divided by 2 equals highest harmonic).
- 8) Relays may contain anti-aliasing (low pass) filters, which attenuate harmonics that are present during the arcing interval, recording less contact wear than actually occurring.
- 9) Due to periodic testing, relay wear logs may be corrupted by the inclusion of test currents.
  - ▶ Eliminating the test current values may either not be possible, or may require programming intervention to the relay
- 10) Certain relay current input arrangements preclude recording wear for a unique breaker
  - ▶ Parallel CTs; breaker and 1/2, ring
- 11) Do relays offer alarm setpoints, as well as danger setpoints???
- 12) Do relays supply an analog output proportional to wear???
- 13) Do relays supply digital access to the logs???
  - ▶ (I<sup>2</sup>T), Mechanism Speed, Arc Time, Restrike)

**Digital Relays may be great for System Protection, but they are not the complete answer for Breaker Wear Monitoring. The OPTimizer+ properly performs all of the above functions!**