
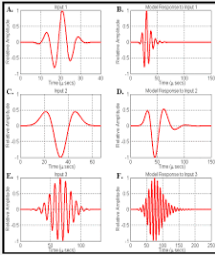




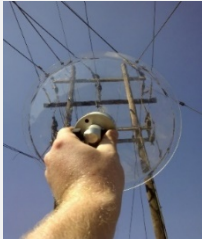



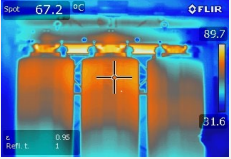
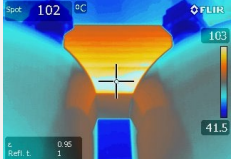



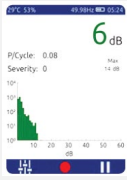
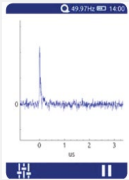
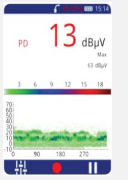






Handheld PD Detection and Scanning Devices

Compiled by James Cowling | April 2020

Handheld technologies are used to warn substation operators of electrical discharge activity for safety reasons and/or as early warning of potential failures to maintenance personnel.

RF Sniffer	Method	Advantage	Detection
 <p>RF/EMI signals produced by electrical discharge, can be detected with RF sniffers.</p>	 <p>The sniffer is a broad band signal detector that will detect broad band RF signals generated by electrical defects.</p>	 <p>The RF sniffer is a low cost detector that can be used as a safety device to detect discharges when entering substations.</p>	 <p>The RF sniffer is configured to detect and locate fast transients such as those created by arcing, corona and internal partial discharge.</p>
Ultrasound Detection	Method	Advantage	Detection
 <p>All forms of electrical discharge produce air borne ultrasound. This can readily be detected, located and pinpointed.</p>	 <p>The technology is designed to locate surface electrical discharges. The technology is also used for other applications.</p>	 <p>Diagnostics can be performed to determine the type of discharge. Certain types of contact defects produce partial-arcing that is readily detected.</p>	 <p>Various type of surface discharges can be detected as - arcing, corona, tracking and internal partial discharges between phases .</p>

Infra-Red Thermography	Method	Advantage	Detection
 <p>Emissions in the infrared spectrum are most useful for measuring temperature of industrial plant and identifying hot spots.</p>	 <p>The technology is used for detection of high resistant connections / contacts and to detect temperature differences in electrical networks.</p>	 <p>Infrared images permit a visual representation of the thermal profile of the object/s in the image to identify hot spots, poor contacts, unbalanced phases, cooling issues</p>	 <p>Abnormal thermal gradients or 'hot spots' identify issues such as high resistance joints or overloading, unbalanced phases or design defects.</p>
Ultra TEV Plus ²	Method	Advantage	Detection
 <p>Is a multifunctional instrument which detects partial discharge and can be used to survey substations and verify that the working environment is safe</p>	 <p>The instrument uses different sensors to detect Ultrasound and Transient Earth Voltages (TEV) within switchgear. A HFCT can also be used if the cable earth connection is accessible</p>	 <p>Discharge levels can be trended over time to provide information on when to maintain or investigate or to use more advance PD technologies to determine the risk of failures.</p>	 <p>Has the ability to detect and trend PD using ultrasound, transient earth voltages (TEV) and possible cable discharges using a HFCT if there is access to the cable earths.</p>
PDS Insight™	Method	Advantage	Detection
 <p>Is a multifunctional instrument which detects partial discharge and can be used to survey substations and verify that the working environment is safe</p>	 <p>The instrument uses different sensors to detect Ultrasound and Transient Earth Voltages (TEV) within switchgear. A HFCT can also be used if the cable earth connection is accessible</p>	 <p>Discharge levels can be trended over time to provide information on when to maintain or investigate or to use more advance PD technologies to determine the risk of failures.</p>	 <p>Has the ability to detect and trend PD using ultrasound, transient earth voltages (TEV) and possible cable discharges using a HFCT if there is access to the cable earths.</p>