



# Technical Diagnostic Services

PARTNERING WITH

## No-Outage Electrical Testing

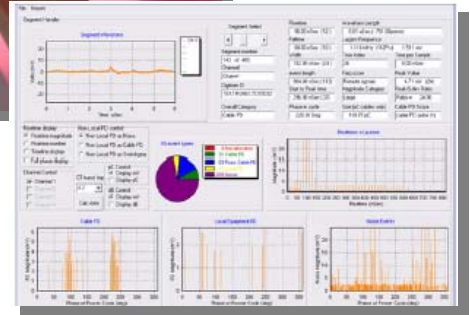
### LEVEL I & LEVEL II PARTIAL DISCHARGE SURVEYS

#### Level I Partial Discharge Survey

This survey can safely detect medium voltage equipment problems without a shutdown. It is a very efficient method to detect potential insulation problems within switchgear, switches, dry-type transformers, busduct and other equipment. This technology allows for a large amount of equipment to be checked in a short amount of time. These surveys provide early warning for impending failures and allow time to schedule repairs.

The bus duct has suffered severe insulation damage and would soon fail completely. Our Level PD I survey program detected this problem and a repair outage was scheduled to complete repairs.

The picture to the right represents the results of a recent survey that detected a defective surge arrester. Three different sensor technologies are used to detect insulation problems and Level I surveys can typically rule out 90% of the equipment as "good". Detailed Level II testing can then focus on the remaining "suspect" equipment to determine problem location and intensity.

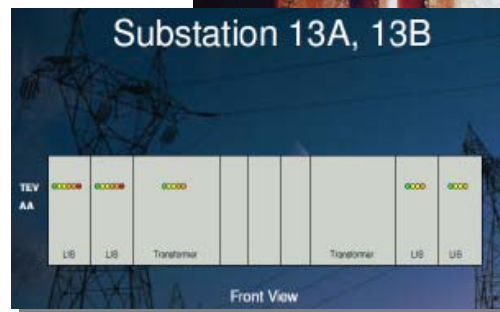


#### Level II Partial Discharge Analysis

This provides a detailed assessment of medium voltage cables and equipment without a shutdown. It is used to identify and quantify partial discharge activity that was detected during Level I Surveys and is the best method to determine the condition of cables and rotating apparatus. This technology detects the electromagnetic pulses associated with partial insulation failure and can effectively determine the problem location and intensity. This valuable information provides an early warning for impending failures and allows time to schedule repairs and to prioritize maintenance activities.

This switchgear insulation has suffered severe tracking damage and would soon fail completely. Our Level PD II service detected the intensity and location of this problem before catastrophic failure occurred.

The report page above represents the results of Level II cable testing that detected a splice problem about 300' away. Detailed Level II testing is conducted while your equipment remains in service and utilizes a variety of advanced methods to provide insulation condition so that failures can be avoided.



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