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Partial Discharge

Keep Your Equipment Ahead of the Curve

What is Partial Discharge?

A Partial Discharge (PD) is an electrical discharge or spark that bridges a small portion of the insulation between two conducting electrodes in medium and high voltage assets. Over time this can degrade the insulation leading to failure if the proper precautions aren't taken.

What Causes Partial Discharge?

PD activity can occur at any point in the insulation system where the electric field strength exceeds the breakdown strength of that portion of the insulating material. PD is also affected by environmental factors such as temperature, atmospheric pressure and humidity.

Why Measure Partial Discharge?

Partial Discharge activity is the most reliable indicator of the true condition of insulation within live assets. Once present, PD activity always increases and if left undetected, will inevitably deteriorate towards a failure which can be sudden and catastrophic. **CONT**

Partial Discharge | Keep Your Equipment...



Partial Discharge Effects

PD activity provides clear evidence that equipment is deteriorating in such a way that it will likely lead to failure. Once PD activity is present, even if it is small, it will continue to increase. This will inevitably cause your equipment to fail. Deterioration will develop and continue until the insulation is unable to withstand the electrical stress, leading to flashover. Where there are protection systems present, there will be a trip out, causing outages.

Health and Safety Issues

Where protection systems are not fitted or are ineffective, the failure of high voltage or medium voltage gear is often sudden and catastrophic, causing major damage, injury or even death. Sudden failures on live gear often release large amounts of energy that can lead to devastating damages. PD that goes undetected can also pose a threat to personnel that work with or near the equipment as well.

What is a PD Survey?

A PD survey consists of four steps that will help reduce the risk of a potential outage due to an equipment failure. First, basic PD detection and measurement instruments are used to indicate the presence and severity of PD activity. Next, more sophisticated instruments are used to precisely locate, measure and record PD activity. The collected data is then presented to experts to provide valuable management reports. After that, PD monitoring systems are employed to provide the most detailed assessments of the gear's condition - particularly those where there have been histories of problems and failure would have unacceptable consequences. Finally, a final review of the data will be done to make sure all measures have been taken to prevent failure to equipment and proper monitoring provisions have been put in place.

Benefits

- Improve operator safety and reliability.
- Early identification of any deterioration will eliminate unexpected disruption and failure and provide accurate condition assessment.
- Eliminate the need to invest capital in survey instruments and staff training.
- Non intrusive - no shutdown required for survey.
- Provides compliance with recommendations in accordance with NFPA, IEEE and NETA standards. **NAT'L**