

Case Study

Middle East State Owned Utility Company, Fault Prevented



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Overview:

The Middle East based State Owned Utility company use the IRIS Sonus PD instrument to test for Partial Discharge in their medium voltage Switchgear and accessories. In March 2014, high levels of discharge were detected on a Ring Main Unit using the Sonus PD and in response to this an offline investigation was carried out. Significant PD damage was found on the fuse holder, indicating that the asset was close to failure.



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Details:

Client Engineers carried out routine tests on MV switchgear and accessories using IRISS' Sonus PD instrument. High levels of Partial Discharge activity were detected in the fuse chamber of a ring main unit by the inbuilt TEV (Transient Earth Voltage) and Ultrasonic transducers.



The Sonus PD is a dual transducer PD detector for Switchgear. The instrument detects TEV signals generated by internal discharge, as well as acoustic discharge generated by surface tracking or corona. The Sonus PD is a quick and simple tool for PD detection; enabling regular asset assessment by all substation staff.

Investigation:

Following the detection of Partial Discharge activity, an offline investigation was conducted on the asset to locate the discharging component. Clear evidence of extensive burning and carbonisation was seen on the Fuse Holder within the Fuse Chamber, as shown in the Figure 1 and Figure 2 below.



Figure 1 Extensive carbonisation on the inside surface of the fuse chamber.



Figure 2 Evidence of water damage that would have led to the discharge activity.

Following the investigation, the defective components were replaced. On-line PD tests were carried out again and the discharge had ceased. It was clear from the extent of damage that the unit would have failed had it not been detected.