

# UltraTEV® Plus<sup>2</sup> confirms and classifies partial discharge on Trinity Mirror HV network

Trinity Mirror Print, Watford Site, is the largest print site of Trinity Mirror's seven sites. By night it prints its national titles such as 'The Mirror', 'The Racing Post' and 'The Independent'. During the day it carries out regional and contract printing. Its presses can produce newspapers at 86,000 copies an hour, equating to approx 45 million newspapers a month.

The Watford site has a 11kV, 7MVA, 50Hz private network consisting of seven 11kV substations across the plant and twelve dedicated 11kV transformers for its twelve printing presses fed via fifteen circuit breakers.

## Background

In Feb 2016 EA Technology performed a site partial discharge (PD) survey using the UltraTEV® Plus and UltraTEV® Locator. The report highlighted PD activity in the substation switchgear.

Garry Crask, Engineering Production Manager and Senior Authorized Person on the site requested a demonstration of the UltraTEV® Plus<sup>2</sup> in order to firstly confirm the location and subsequently use it to confirm that the service provider had fixed the issue.

## Solution

An on-site demonstration was arranged for the UltraTEV Plus<sup>2</sup>. Using the magnetic ultrasonic contact probe the instrument found the PD associated with the HV cabinets, and determined the location of the discharge inside the cabinet. The on screen diagnosis and interpretation feature instantly identified the problem as ultrasonic discharge associated with degradation of the insulation surface.

## Findings

On opening the HV cabinet for rectification work a Current Transformer (CT) was found to have significant electrical treeing on its surface (see Figure 1).



Figure 1: Partial discharge identified.

## Results

The CT was replaced and the UltraTEV® Plus<sup>2</sup> was used to confirm that the PD source had indeed been eliminated.

## Benefits

If the CT had not been replaced, it would have failed; at best the failure could have been the single 11kV switch tripping resulting in many weeks of press down time while a new CT was sourced, at worst it could have led to a fire resulting in multiple presses being out of action due to substantial switchgear damage.

“ We were fortunate to find EA Technology who introduced us to PD technology, they surveyed all site HV switchgear within a day and submitted a detailed report, the survey was able to find failing CT which we have been able to change at our convenience rather than it fail in production.

EA Technology are now carrying out a PD survey at our Oldham printing plant. ”

**Garry Crask**  
Engineering Production Manager  
and Senior Authorized Person

# Making partial discharge measurements easy with the UltraTEV® Plus<sup>2</sup>



## Additional partial discharge detection and advanced analytics

The UltraTEV® Plus<sup>2</sup> has the ability to measure PD in cables and cable accessories using Radio Frequency Current Transformers (RFCT) as well as established techniques for surface PD (Ultrasonic) detection and internal PD (TEV) detection on switchgear.

The new advanced analytics allow PD measurements to be examined more precisely in real time or after the inspection:

Phase plots - helps to differentiate between noise patterns and real PD

Waveform capture - examines amplitude of individual pulses, for PD Characteristics

Histograms - assists with identification of multiple sources of PD and noise discrimination

## Interpreting the condition of your electrical assets

The UltraTEV® Plus<sup>2</sup> has been designed to make asset inspections easy. The instrument helps the operator understand what the results mean by interpreting the data and displays clear information and instructions.

## Range of kits and uses

The UltraTEV® Plus<sup>2</sup> is a multifunctional instrument that can be used to rapidly survey the condition of whole substations and check that working environments are safe. Changes in PD activity levels can be compared between assets and analysed over time, providing a clear indication of when further investigation is required.

To meet your need we offer the following instrument kits:

<b>Kit 1</b>	Metal clad Switchgear	Standard kit for Switchgear condition assessment includes headphones & battery chargers.
<b>Kit 2</b>	Metal clad Switchgear Cables	This kit has additional external sensors and includes an RFCT, allowing quick and easy condition assessment of your cables*
<b>Kit 3</b>	Metal clad Switchgear Cables Outdoor assets	With the UltraDish™ option included in Kit 3, PD activity can be measured in overhead assets, offering a comprehensive condition assessment package

\*Access to cable earth required.

# Global Footprint

EA Technology is an engineering and technology business that provides intelligent energy solutions for designers, installers, operators, and owners of power network assets.



Founded in 1966 we have over 50 years' experience in the industry and 5 regional offices around the world to support our global customer base.

We work with a lot of our clients on a long-term basis to help them safeguard their power networks.

We advise our clients on strategy and implementation of a range of technology solutions to manage power assets, delivering maximum life and minimising cost.

For further information and advice please contact us on +44 (0) 151 339 4181 or email [info@eatechnology.com](mailto:info@eatechnology.com) / [www.eatechnology.com](http://www.eatechnology.com)



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