

# Avoiding Outages on Your HV Electrical Network:

## The UltraTEV<sup>®</sup> Plus<sup>2</sup> Solution

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### UltraTEV Plus<sup>2</sup> Brochure

Make partial discharge discovery simple

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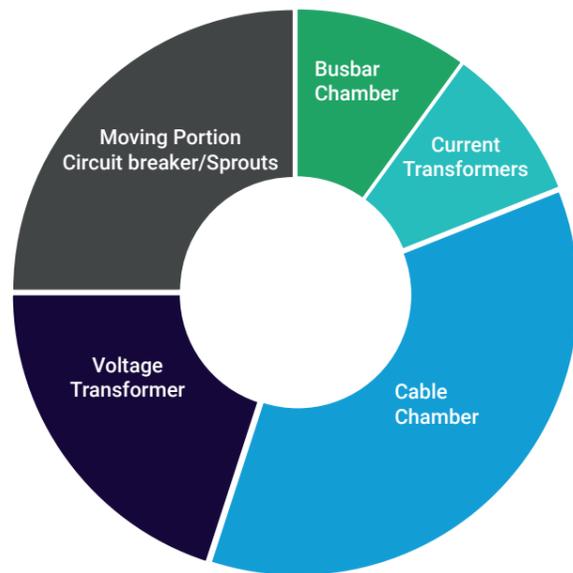
# The Imperative of PD Surveys

Regardless of whether you have encountered challenges with Partial Discharge (PD), it is crucial to understand its risks. Industry studies reveal that insulation degradation is the primary cause of failure in switchgear with 80-85% of disruptive failures stemming from insulation issues.

Through proactive PD detection, you can significantly mitigate risk through early detection and prevention of potential failures.

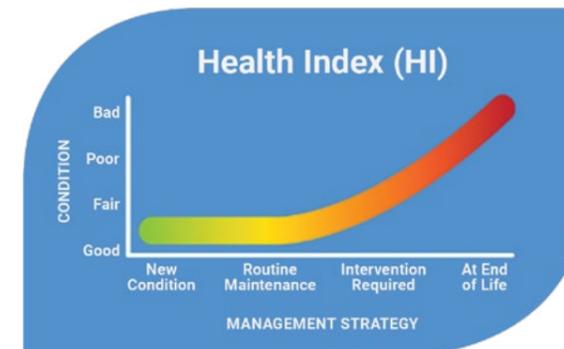


## Where PD is typically found in Switchgear



## Safeguarding Against Catastrophic Failures

PD activity in high-voltage assets can lead to serious issues such as sudden outages, costly repairs, and reputational damage. Proactive PD surveys provide advanced warning of incipient failures, allowing for timely interventions that prevent potentially costly and dangerous outages.



## Managing Asset Ageing and Degradation

The reliability of high-voltage assets declines significantly as they age. Taking proactive action informed by PD measurement at any stage of the asset's life will substantially mitigate the risk of failure.

## Supporting your Safety and Regulatory Compliance

UK Health & Safety Executive guidance document HSG230 highlights that PD measurements serve as a useful indicator of insulation condition in high-voltage electrical assets. By incorporating PD surveys into their proactive condition-based maintenance strategies, businesses can enhance operational integrity and safety.



## Why UltraTEV® Plus<sup>2</sup>?

### Prevent costly asset failures by using UltraTEV Plus<sup>2</sup>.

Our on-device prompts guide the user through the PD detection process. This approach delivers a step change in PD data quality, providing many operational benefits when compared to traditional survey methods.



#### Advanced PD Detection and Analytics

The device builds on generations of expertise to enable accurate decision-making at the site. Features such as our advanced ultrasonic analysis algorithms provide instant feedback on the presence of PD, whilst our unique 'guided mode' supports users throughout the entire measurement process.

Both operators and management can leverage comprehensive PD data to identify issues early and enhance efficiency, by making informed decisions on maintenance planning, regulatory compliance, and asset lifespan optimisation.

#### Simplified User Experience

The intuitive user interface leads operators of all levels through efficient data collection and analysis. Through the on-device and cloud-based algorithms, PD is separated from background activity, enabling maintenance decisions to be made with confidence.

#### Legacy of Excellence

With a history rooted in research excellence, we have evolved to become a leading provider of asset management solutions. Our UltraTEV Plus<sup>2</sup> already has an established global client base and continues to be recognised as delivering outstanding value. Our history gives us the experience to set action levels (Red, Amber Green etc).

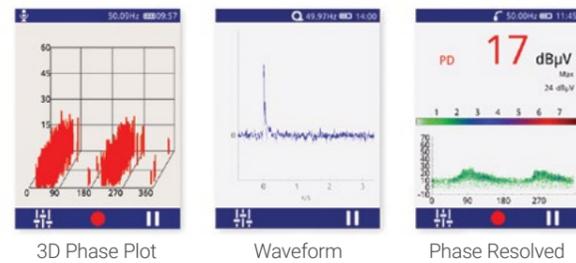
#### Flexible Detection Technology

This is a one-tool solution for online PD detection. The platform is supported by a range of advanced sensors that cover all HV network assets, including switchgear, cables, transformers, and overhead lines.



# Leveraging Data Insights: From Spot Measurement to Data-Driven Action

The UltraTEV Plus<sup>2</sup> has transformed from a periodic inspection tool into an integral part of proactive switchgear maintenance plans. It now delivers a structured approach to PD Detection, guiding users throughout the process and seamlessly transferring data to our cloud-based Managed Surveys platform.



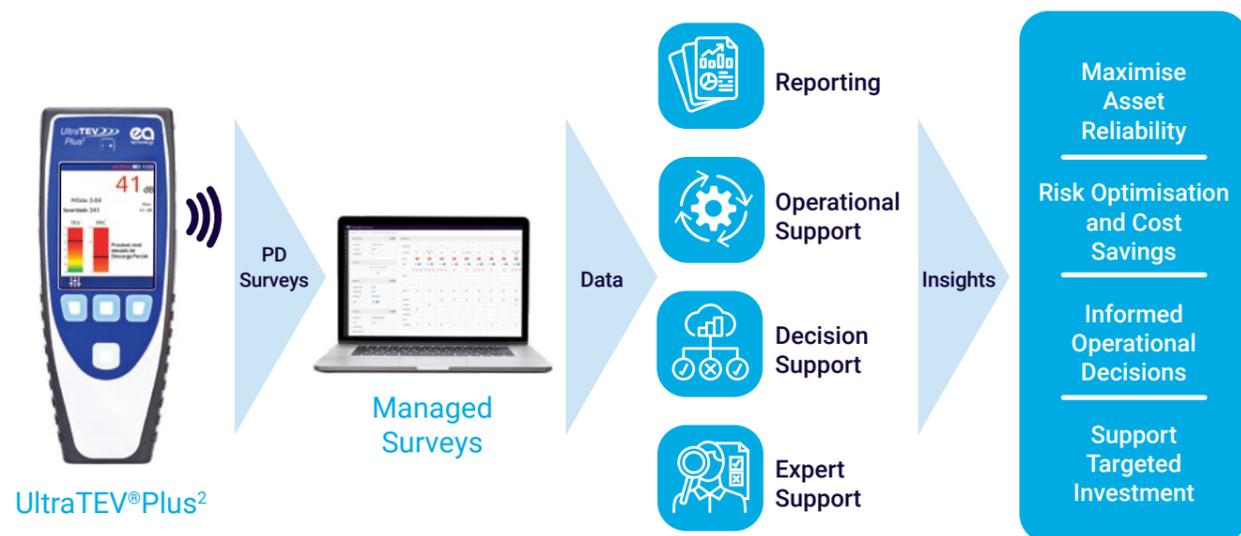
## Extracting Actionable Insights from Quality Data

This is a single solution for all HV assets, seamlessly integrating data from a wide range of sensors to provide a comprehensive view of PD activity.

The rich dataset is class-leading, providing valuable insight for your maintenance actions, with centralised access to full measurement data, including waveforms, phase plots, and audio files.

Capture wider asset data with structured on-device question sets, helping provide a holistic view of your substation condition.

If you need assistance, our PD experts can remotely support data collection, review results, and provide advice on next steps, whether from a one-off reading or as part of a wider asset management strategy.



# Why Choose Managed Surveys?

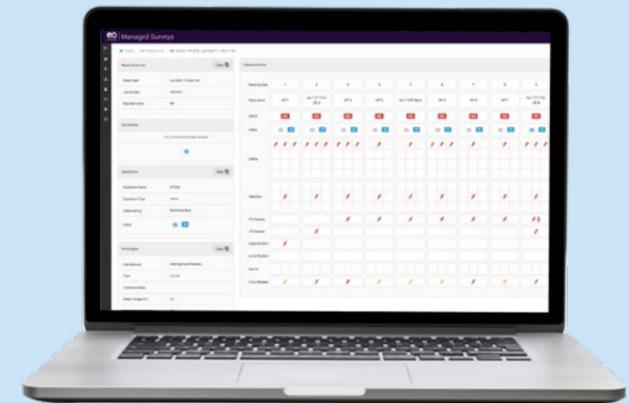
## On-device

Simplifying your onsite activities, UltraTEV Plus<sup>2</sup> guides you through the measurement process, reducing the demands on the user and improving overall data quality.



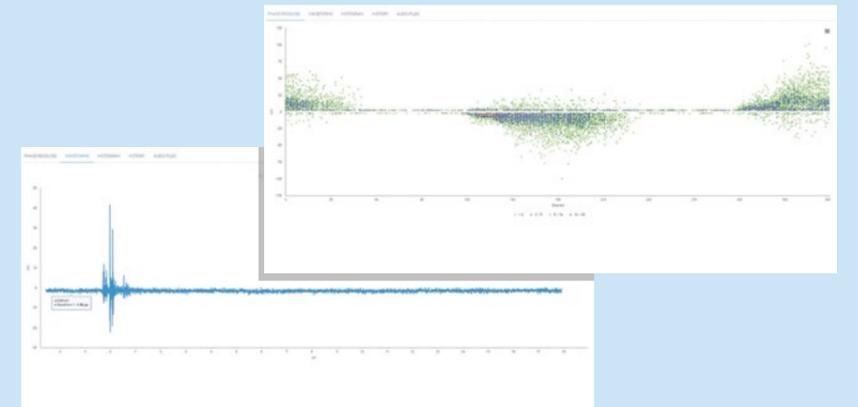
## Centralise your data

Our cloud-based system provides a central view of all PD activity, giving a clear indication of areas of increased concern.



## Confidence to act

Full technical data, waveforms, audio, PRPD provide the engineering certainty to act.



# Accessories for Evolving Challenges

The UltraTEV Plus<sup>2</sup>, with its built-in TEV, ultrasonic sensors and SMART-IO expansion, ensures comprehensive PD detection for all electrical assets in a single instrument.

Our range of accessories provides the ideal mix of sensing technologies, enabling confident decision-making while proactively preventing equipment failures.

Accessory	Air Insulated Switchgear	Gas Insulated Switchgear	Open Terminal Switchyards & Overhead Lines	Underground Cables	Power Transformers
Ultrasonic Flexi-Sensor	•				•
Ultrasonic Contact Probe	•	•			
HFCT	•	•	•	•	•
VPIS	•	•			
TEV Locator Probe	•	•	•		•
UHF Receiver	•	•	•	•	•
UHF Barrier Spacer Sensor		•			
UltraDish			•		•
UHF Directional Antenna			•		•
Wireless Phase Reference	•	•	•	•	•
UltraBolt	•				

Some of our accessories:



### Wireless Phase Reference

Sends phase reference reliably and securely to the UltraTEV Plus<sup>2</sup>.



### VPIS

Connects directly to VPIS/VDS terminals, providing whole panel coverage from a single measurement.

### UHF Receiver

Connects to pre-installed internal PD couplers and our wide range of UHF antennas.



### Barrier Spacer Sensor

Detects PD externally at insulated barriers.



### TEV Locator Probe

Works with the UltraTEV Plus<sup>2</sup>'s built-in TEV sensor to pinpoint internal PD sources using time-of-flight measurements

### Directional Antenna

Quickly identifies internal PD while ignoring corona in various switchyards.



### Ultrasonic Flexi-Sensor



Detects surface PD activity in hard-to-reach or limited access areas.

### UltraDish

Detects ultrasonic Surface PD activity in overhead assets.



### Ultrasonic Contact Probe

Identifies surface PD in sealed chambers.



### HFCT

Split core CT allows easy application and visibility of local and remote PD activity.



**BRAND NEW accessory!**



### UltraBolt

A bolt housing an Ultrasonic sensor providing consistent, accurate surface PD detection, without the need for air vents. Connect to your UltraTEV Plus<sup>2</sup> and take a reading in seconds.

# Real stories. Real results.

“ We were very 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 (using UltraTEV Plus<sup>2</sup>) was able to find a failing CT which we have been able to change at our convenience, rather than it fails in production. ”

**Gary Crask,**  
Engineering Production Manager,  
**TRINITY MIRROR PRINT**

## Preventing Failure

In a recent case study, Lightsource, a global leader in solar PV projects, utilised the UltraTEV Plus<sup>2</sup> during routine maintenance. Technicians swiftly identified elevated PD readings in substation switchgear cells, allowing for prompt rectification. The device confirmed the elimination of the PD source, preventing potential flashovers that could render the switchgear unusable and necessitate costly cable re-termination. Without the UltraTEV Plus<sup>2</sup>, the issue may have gone unnoticed, leading to significant operational disruption.

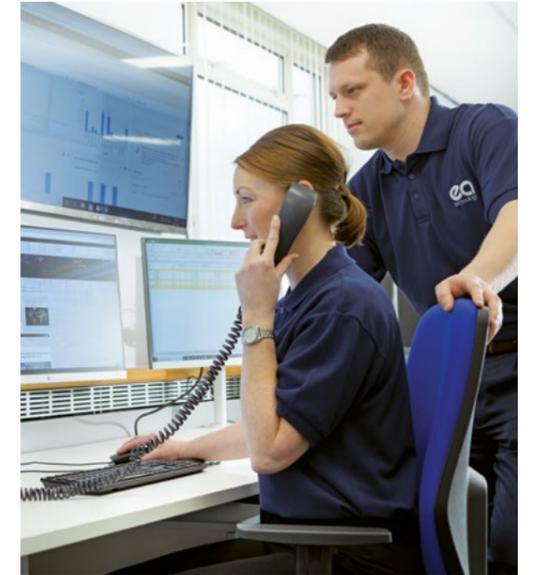


## Transitioning Maintenance

Tenaga Nasional Berhad (TNB), Malaysia's leading electricity provider, transitioned from time-based to condition-based maintenance that integrates EA Technology's UltraTEV handheld devices to tackle switchgear failures. This shift resulted in a 71% decrease in failures over five years. Leveraging a Health Index approach, TNB streamlined asset management, meeting regulatory standards efficiently. EA Technology's solutions empowered TNB to pinpoint faults, undertake maintenance tasks proactively and achieve cost savings effectively.

# Tailored Solutions for Specific Challenges

At EA Technology, we recognise the complexities and challenges of high-voltage asset management. That's why we offer a comprehensive suite of solutions and services designed to empower you at every step of your journey.



## Product Solutions

**Astute HV Monitoring<sup>®</sup>:** By watching your cables and switchgear, EA Technology's Astute<sup>®</sup> HV service can alert you to early PD activity and pinpoint which parts of your HV system should be investigated.

## Power System Analysis

Gain actionable insights and recommendations to optimise your network's performance and improve security of supply through our thorough system analysis.

## Condition Assessment Services

Includes both remote monitoring and on-site options with everything from predictive monitoring to interrogating failures. Expert engineers provide detailed reports and recommendations for you to take remedial action. Our services include:

**Switchgear:** Our experienced engineers work worldwide, drawing on their expertise to safely complete site-based work producing management-friendly reports and recommendations.

**Cables:** Use our Cable Condition Assessment service to understand the condition of your cables – even when they're buried – so that you can pre-empt early failures and take remedial action.

**Transformers:** Power transformers are among the most valuable assets in any network, making precise insights into their condition essential. Discover how we can help you detect potential faults before they cause failures, enabling you to troubleshoot and plan proactively.

## Training

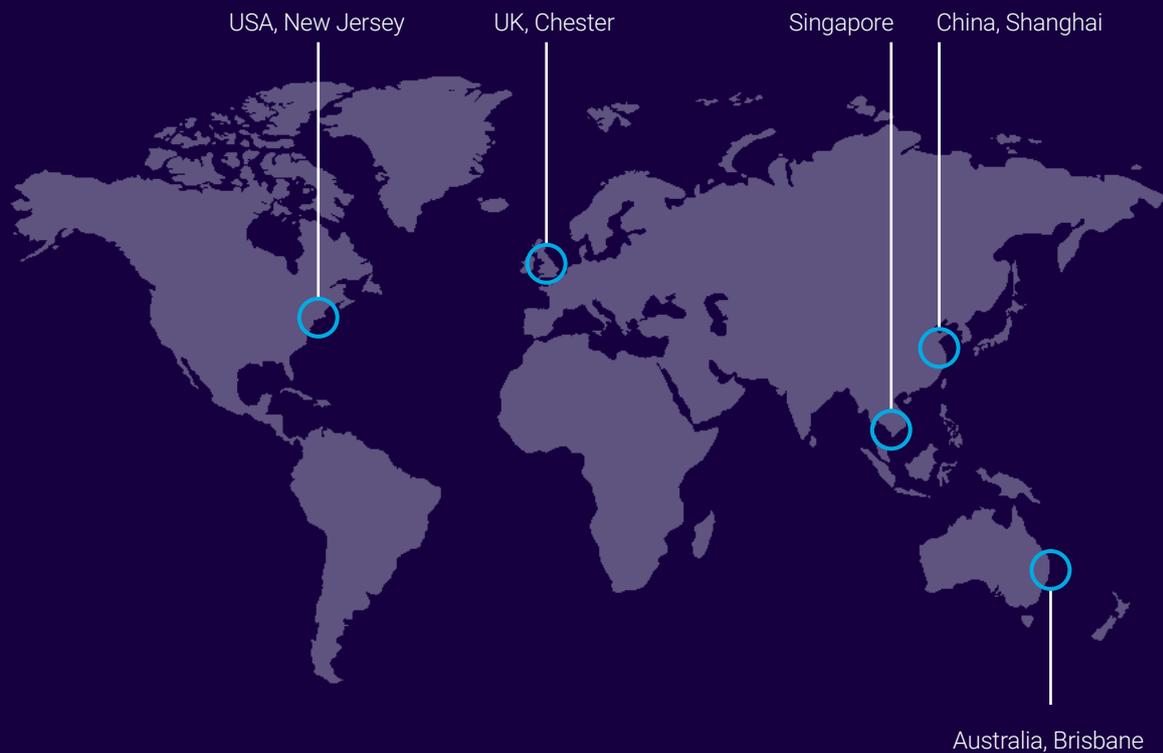
Enhance your team's skills with our industry-leading High Voltage Electrical Engineering training at the EA Technology Power Skills Centre.

## Software Solutions

**Invest:** A powerful online tool for asset management and investment decision support.

# 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 minimise cost.

Schedule a personalised demo of the UltraTEV Plus<sup>2</sup> tailored to your organisation's needs by booking via <https://eatechnology.com/book-a-demo>

For more information, or to book a FREE demo, scan the QR code.



## Safer, Stronger, Smarter Networks

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