

# The service that could have saved a DNO \$300,000+

## The Customer

The UK has fourteen Distribution Network Operators (DNOs) based on the historic utility regions that existed before privatisation in the early 1990s. They are responsible for providing and maintaining the electricity infrastructure (cables, towers, meters) that allows the generation companies and private electricity providers to deliver power to homes and businesses.



## Background

A DNO was concerned that one of its substations was at risk because of its riverside location. The DNO requested the installation of **EA Technology's UltraTEV® Monitor** to perform a long-term soak test to pick up any irregularities between routine services. The most vulnerable assets were identified and we installed the system in November 2014.

Crucially, the DNO opted not to use **EA Technology's Astute HV Monitoring™ Service**, taking only the hardware option. That meant that any regular or continuous monitoring of the power system would be the DNO's responsibility.

## Actions

Because the soak test was to ascertain the system's performance under typical load over time, the operator decided that continuous analysis of data would not be necessary. The plan was to download the data and analyse it at the end of the soak test.

However, on 28 July 2015 – eight months after the monitor was installed – the DNO contacted **EA Technology** telling us the switchgear had blown, leaving a large part of the local city without power for eight hours. We went to investigate.

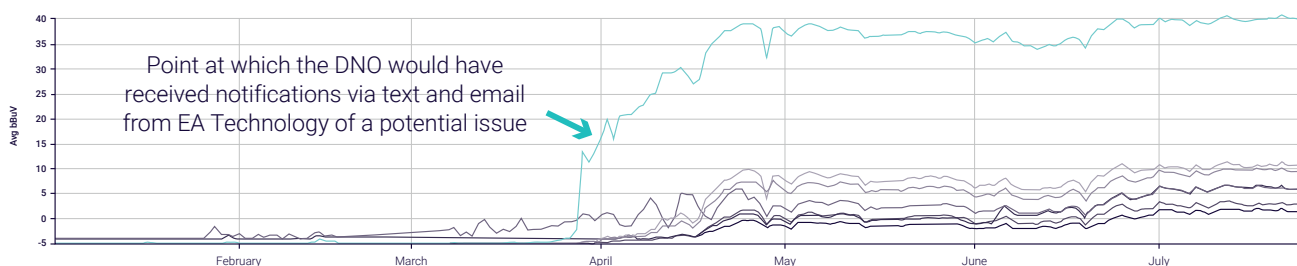
The graph below was retrieved and the findings were clear. The system was running normally for several months, but towards the end of March 2015, partial discharge



*Failed circuit breaker truck*

(PD) readings leapt. Had the **UltraTEV® Monitor** been communicating with **EA Technology**, we would have automatically alerted the DNO right then and they could have investigated. With faults detected, the DNO could have replaced or repaired the relevant components without interrupting the power flow to customers.

In the event, the DNO was oblivious to the impending fault, and the catastrophic failure was all but inevitable. It received fines of over \$300,000 for Customer Minutes Lost and Customer Interruption, and incurred further repair and replacement charges.



*The graph below shows the results recorded at the DNO's site*

## The System

As the graph illustrates, PD provides an early warning sign of problems to come they should not be ignored. That is why **EA Technology** often recommends that customers take the **Astute HV Monitoring™ Service**, which relays data to our offices 24/7 and triggers automatic alerts should certain criteria be met. We can also send monthly or quarterly reports for peace of mind or to identify trends.

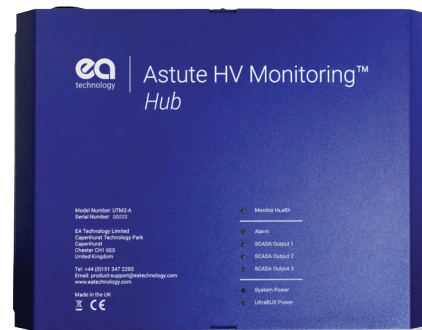


EA Technology's Astute HV Monitoring Centre

It's impossible to guarantee 100% reliability in any electrical system as failures do occasionally come out of the blue. However, the vast majority of failures are predictable if the warning signs are recognised. Our analysis points to 99.999% reliability when 24/7 **Astute Monitoring™** is used.

## Conclusion

This case showed the importance of regular monitoring of partial discharge and other critical factors. Even without 24/7 monitoring, this failure could have been avoided had the DNO downloaded the data weekly or (in this case) monthly. Some PD can indeed be tolerated for months between routine services, but the more knowledge you have at your disposal and the sooner you can recognise faults, the better the decision you can make on remedial actions.



**Astute HV Monitoring™** removes the guesswork and puts you back in control of your assets. For a relatively small cost, it can prevent immeasurable damage to your bottom line and your reputation.



Safer, Stronger, Smarter Networks

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