



Adding Resilience and Engineering Efficiency via Condition Based Maintenance of High Voltage Infrastructure

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Time Based versus Condition Based Maintenance

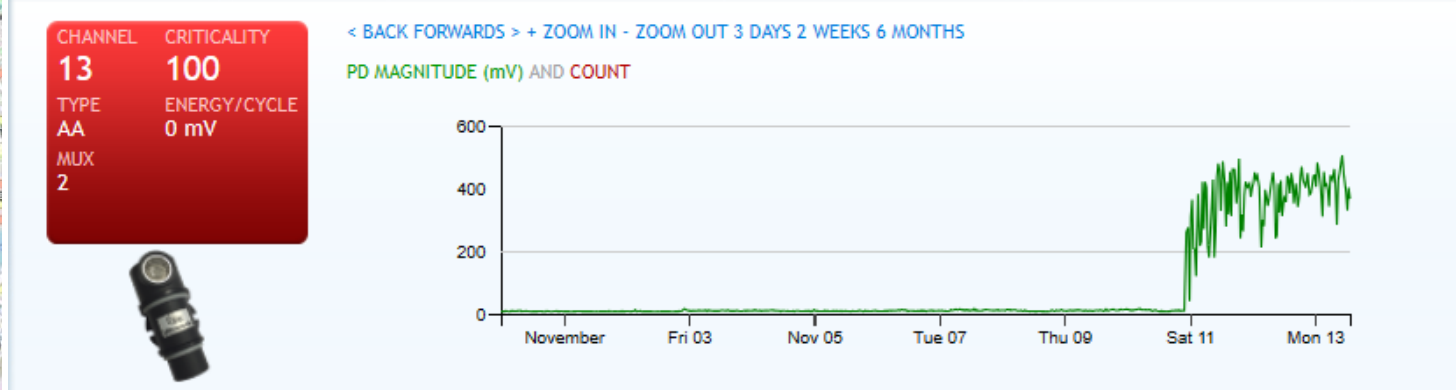
| Time Based Maintenance | Condition Based Maintenance |
|---|--|
| Maintaining assets based on age or interval alone | Maintaining assets when a problem or issue is identified |
| High Resource Requirement | Low Resource Requirement |
| Replacement of assets at end of design life | Replacement of assets when required |
| Remove potentially functioning assets | Remove defective assets only and maximise asset life |

Example 1: London

IPEC's online Monitoring system enables UK Power Networks to remotely assess the condition of thousands of Assets across the network.

Identifying defects before they lead to failure.

The system has been operating since 2006.

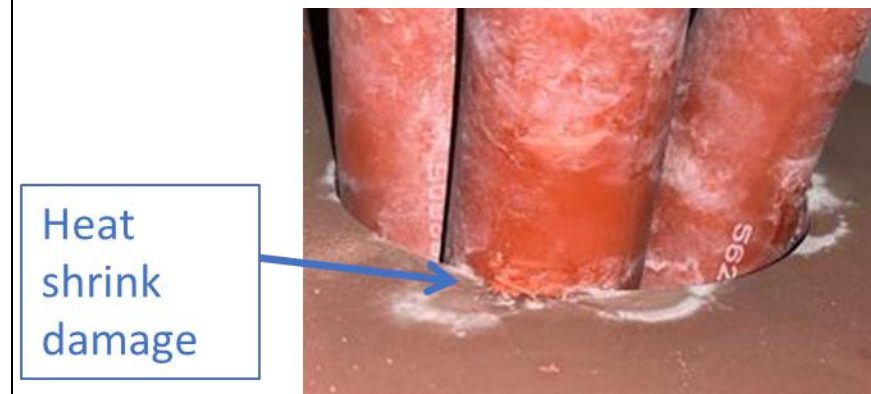
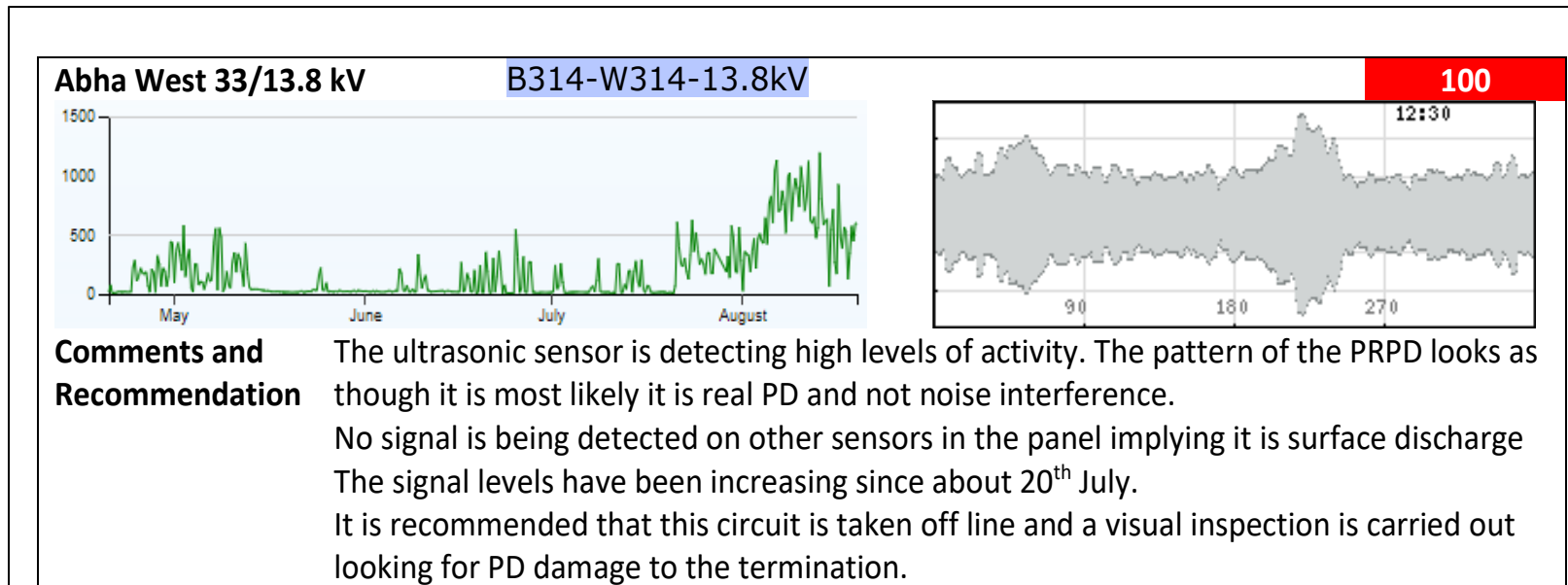
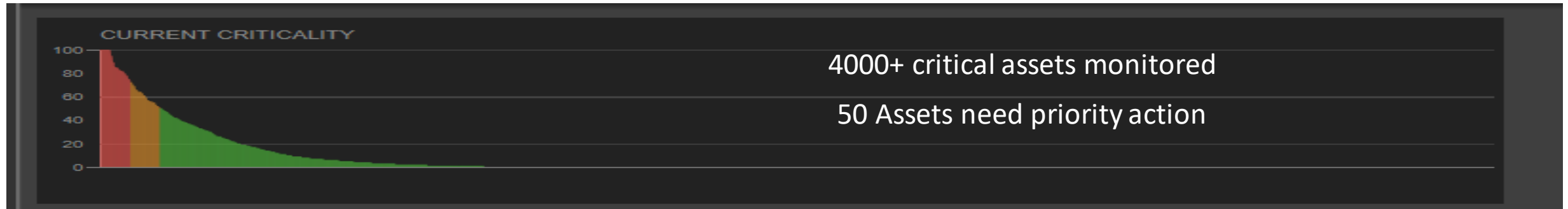


Identification of defective assets immediately before failure.

24/7 remote monitoring, Alerts and Alarms.

Example 2: Saudi Arabia

From a network of 4,000+ assets, IPEC's monitoring system identifies around 50 assets of high priority. Optimising maintenance teams and directly addressing problems before failure.



Easily Deployable Now

Easy to fit Hardware Installation

Cost per substation roughly \$100k USD

Hardware installation is very simple.

Monitoring systems inside substations connect to sensors at each measurement point

4G or wifi or intranet communications

- Enhanced network visibility
- Enhanced resilience
- No modifications to infrastructure
- Efficient use of engineers
- Proven and tested



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