



Sensitive Voltage Detector

ENA Basecamp 2025 – Problem Statement EIP145

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What is the problem?

To achieve a safe method of working UK Power Networks uses a four-pin earth nest – compared to a single pin earth - to achieve a 50 Ω impedance for the circuit main earth (CME).

This value was established to ensure that a circuit breaker would trip when the CME is applied to the overhead line.

There have been a few occurrences where a point of isolation, involving a disc insulator, has failed and hasn't fully de-energised the circuit, resulting in the circuit breaker tripping. The lines-people were not able to identify this due to the sensitivity of the voltage detector being used. Existing HV detectors detect down to 3.5kV.

We need a more sensitive HV voltage detecting device that can reliably detect the presence of voltage below 1kV avoiding circuit breaker operation.



What are we looking for?

A device to reliably carry out voltage detection tests below 1kV with a more sensitive HV Voltage detector, or an innovator prepared to develop such a detector to an agreed specification.



What are the constraints?

The solution must:

- Be rated for use on Overhead lines rated upto 33kV
- Provide a visible and audible warning in the event it detects voltage.
- Be fully waterproof
- Meet IEC 61243-1 which is the standard for high voltage detectors.
- Be lightweight

The solution should:

- Attach to insulated rods using a castellated or Bowthorpe head
- A capacitive coupling device and not rely on a resistive earth reference

A solution will be used by UK Power Networks overhead line staff. In gaining approval for the method, we will also work closely with our Health and Safety and Standards team to ensure it can be safely deployed.