

Condition Monitoring of Surge Arrestors connected to Distribution Networks

The following problem statement has been developed by the innovation teams within the UK's Gas and Electricity Networks for the 2026 Energy Innovation Basecamp.

Theme: Maximising Use of Existing Infrastructure

Network Areas: Electricity Distribution

What is the problem?

Surge arrestors are used at the interface between underground cables and overhead lines where it is necessary to protect the underground cable from over-voltages caused by lightning and switching surges. There are various designs of surge arrestors on distribution networks ranging from legacy porcelain to Gapless Metal-Oxide Polymeric designs. If a surge arrestor fails it may cause a supply interruption. Porcelain surge arrestors have been known to shatter.

What are we looking for?

UK Power Networks is looking for a solution that allows the condition of the surge arrestor connected to 11kV networks to be assessed without having a pre-arranged interruption.

At 33kV and 132kV tests could be carried out as part of a planned outage. A different method of assessment could be considered.

What are the constraints?

The solution must be suitable for use outdoors in different weather conditions.

Application of higher test voltages is not acceptable for 11kV assessments.

The test must be of short duration as there is a risk that the surge arrestor may not be in a good condition.

Who are the key players?

Asset Management's Inspection and Maintenance team.

Operational staff involved in maintenance.

Does this problem statement build on existing or anticipated infrastructure, policy decisions, or previous innovation projects?

There is a possibility that NGET's Surge Arrestor Health Assessment by monitoring partial discharge (SAHARA) NIA2_NGET0040 may provide insights to possible solutions.

What else do you need to know?

N/A

Energy Innovation Basecamp 2026

Problem Statement EIP151

Innovator submissions to this problem statement will be open on the Smarter Networks Portal from 4th February to the 13th March, but we encourage you to submit your response as early as possible, as networks will be able to review submissions as soon as they come in.

You can also use the virtual Q&A on the Smarter Networks Portal to ask for more information about this problem statement. Questions may be answered online or at the ENA Problem Statement Launch on 4th February 2026. More information on last year's Basecamp programme can be found on the Smarter Networks Portal.