

NIA Project Registration and PEA Document

Date of Submission

Mar 2013

Project Reference Number

IF10526

Project Registration

Project Title

PD Monitoring of Cables (11 & 33kV)

Project Reference Number

IF10526

Project Licensee(s)

SP Energy Networks Distribution

Project Start

April 2005

Project Duration

5 years and 0 months

Nominated Project Contact(s)

SP Energy Networks Innovation

Project Budget

£160,000.00

Summary

Partial Discharge (PD) monitoring technology is a tool often used for identifying High Voltage (HV) cable sections that are at risk of failing in the near future. There are two distinct methods of testing for PD:

- Long term monitoring to identify the degradation of the cable which signals the increase in risk of failure
- PD mapping which pinpoints the location of any discharge along the route of the cable.

Developing the technology to apply these methods gives a network operator the evidence required to assist in targeting investment / cable replacement, with a net improvement in network performance. This project will develop a portable PD monitoring product that can be moved around the network, as tool in the prioritisation in cable replacement.

Nominated Contact Email Address(es)

innovate@spenergynetworks.co.uk

Problem Being Solved

Method(s)

Scope

Objective(s)

This project will develop partial discharge monitoring hardware which will initially be tested on the SP 11kV network with the following aims:

- To develop a suitable portable monitoring solution with the ability to identify any cable sections which are emitting a level of discharge, which could lead to faults in the short term. The portable monitor will allow SPEN to test for a period of a few minutes to

many weeks.

- Following initial testing in 10 primary substations, partial discharge mapping of those cable sections, which are registering the highest level of discharge, will be undertaken.
- Based on the PD maps obtained, any areas of concentrated PD activity, which are identified as critical, will be subject to review and selected cable sections will be replaced. The cable/joints removed will then be tested to validate PD test results.

It is planned that the test results will be collated in a database, which, in conjunction with results from the testing carried out by other GB DNOs, will allow for advancements in the knowledge rules for future PD testing technology.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

n/a

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

n/a

Geographical Area

Revenue Allowed for the RIIO Settlement

Indicative Total NIA Project Expenditure

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

n/a

How the Project has potential to benefit consumer in vulnerable situations:

n/a

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

n/a

Please provide a calculation of the expected benefits the Solution

n/a

Please provide an estimate of how replicable the Method is across GB

n/a

Please provide an outline of the costs of rolling out the Method across GB.

n/a

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- A specific novel operational practice directly related to the operation of the Network Licensees system
- A specific novel commercial arrangement

RIIO-2 Projects

- A specific piece of new equipment (including monitoring, control and communications systems and software)
- A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is

unproven

- A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

n/a

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

n/a

- Has the Potential to Develop Learning That Can be Applied by all Relevant Network Licensees

Is the default IPR position being applied?

- Yes

Please demonstrate how the learning from the project can be successfully disseminated to Network Licensees and other interested parties.

Please describe how many potential constraints or costs caused, or resulting from the imposed IPR arrangements.<

Please justify why the proposed IPR arrangements provide value for money for customers.

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

n/a

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

n/a

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

n/a

Relevant Foreground IPR

n/a

Data Access Details

n/a

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

n/a

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

n/a

This project has been approved by a senior member of staff

Yes