

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Jan 2017

Project Reference Number

NIA_NGGD0088

Project Registration

Project Title

MEG Fogger Phase 5

Project Reference Number

NIA_NGGD0088

Project Licensee(s)

Cadent

Project Start

January 2017

Project Duration

3 years and 3 months

Nominated Project Contact(s)

Quentin Bahlmann

Project Budget

£1,065,588.00

Summary

The scope of work for the project includes:

- Redesign and repackaging of the existing design.
- Lifetime testing of the spray modules.
- Manufacture of the prototype modules for the field trials and CE mark certification.
- Installation and commissioning of the units in four trial sites, and monitoring for 12 months.
- Removal of the units on completion of the trial

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

The introduction of dry natural gas in the 1970s caused the yarn in these joints to dry out, creating leakage paths. For many years, National Grid has replaced the lost moisture by operating gas conditioning plant, which injects mono-ethylene-glycol (MEG) into the gas stream at selected system source points chosen because of high levels of lead yarn joints downstream. The MEG is adsorbed by the yarn causing it to swell and re-seal the leak path.

Method(s)

The spray head design developed in previous phase will be modified to be fitted to existing MEG Fogger units. Prototype units will be manufactured and fitted in four trial sites and monitored for a year. A final report will be produced to document the technologies effectiveness.

Scope

The scope of work for the project includes:

- Redesign and repackaging of the existing design
- Lifetime testing of the spray modules.
- Manufacture of the prototype modules for the field trials and CE mark certification.
- Installation and commissioning of the units in four trial sites, and monitoring for 12 months.
- Removal of the units on completion of the trial

Objective(s)

The objectives of the project

- Design and manufacture a prototype spray head that can be retro fitted to current MEG fogger units.
- Successful lifetime testing and CE mark certification prior to installation
- A demonstrated increase in MEG saturation levels as result of the operation of the new fogger head technology.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

- Demonstrated and documented increase in saturation levels as a result of the installation of the ne fogger head units.
- A reliable prototype unit capable of being produced to be installed on the network.

Project Partners and External Funding

Cadent £1,065,588 - NIA funding

The Technology Partnership – Nil external funding

DNV GL - Nil external funding

This project will be wholly NIA funded.

Potential for New Learning

Any methodology in testing MEG saturation Levels could be utilised by all GDNs.

Scale of Project

Design and laboratory work will be undertaken.

The project will install units on four trial sites on the NGGD network

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

The study and development work will be carried out in office in Cambridge, deployment of the test rig will be on the National Grid Distribution Network. The exact location for field trial is to be determined.

Revenue Allowed for the RIIO Settlement

There are no allowances regarding this project in the RIIO settlement, other than the Leakage Incentive mechanism.

Indicative Total NIA Project Expenditure

The total recoverable allowance will be 90% of the project costs shown below for each Licensee under the Network Innovation Allowance (NIA):

NIA expenditure will be £1,065,588, Internal £138,838, External £899,880 and contingency £26,870.

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)

In the GD1-RIIO period we forecast emissions to be reduced by 56 GWh (3700 Tonnes of natural gas) by 2020/21 by delivering improvements to our MEG processes through implementation of improved Fogger technology. GDNs are required to procure gas lost through shrinkage, this cost is passed to the customer in the form of the transportation charge, based on latest estimations of future gas price reference costs we expect to save ~£800,000 in gas costs. The benefits expected are equivalent of the annual gas consumption of 4,480 domestic properties based on an annual consumption of 12,500kWh. The emissions reduction (in CO2 terms) is the equivalent of planting ~320,000 trees or the annual emissions of ~30,000 cars

Please provide a calculation of the expected benefits the Solution

The financial benefits relating to this project are estimated above.

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

Each GDN could utilise the technology to manage the MEG saturation levels more actively and therefore reduce leakage in the system. This would be applicable to all areas of the network that are Cast Iron and hence have lead yarn joints.

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

An improved method of MEG fogging could be used by all GDNs

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

Not applicable – this issue is not confined to NGG therefore please refer to i) above.

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

Is the default IPR position being applied?

- Yes

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.

This project has not been carried out by any other Gas Transmission Group or Gas Distribution Group

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

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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

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

This project has been approved by a senior member of staff

Yes