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

Feb 2014

Project Reference Number

NIA_NGGD0025

Project Registration

Project Title

The impact of biomethane on odorisation in gas distribution networks

Project Reference Number

NIA_NGGD0025

Project Licensee(s)

Cadent

Project Start

February 2014

Project Duration

1 year and 2 months

Nominated Project Contact(s)

Ben Oldham – Project Manager, Andy Newton - Innovation Portfolio Manager

Project Budget

£31,973.00

Summary

The scope of this project includes a single phase for the collation of all relevant data and learning from European and UK gas networks whom have experience of odour masking; both biomethane and non-biomethane related.

If this project is successful this could result in potential further work to focus on the future technical work required to identify the biomethane components most likely to influence odour, quantify the effects and in addition produce a reliable rhinology procedure for biomethane/natural gas mixtures. This would also include advice on upgrading and clean-up techniques to minimize the impact of biomethane on odorized gas networks.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

Biomethane entry to the UK gas distribution networks is about to increase significantly. Biomethane can, depending on the biogas feedstock, contain components that are difficult and/or expensive to remove completely from the biomethane but have significant potential to influence the perceived odour of the gas in the local network. Some European countries have been accepting biomethane into their gas networks for several years and have experience of problems caused by biomethane components impacting on the odour of distributed gas. In the Netherlands, biomethane-to-grid projects have needed to be isolated from the gas network as a direct result of the presence of uncharacteristic odour in the local network downstream of the biomethane site.

The characteristic odour of natural gas serves as the prime means for detection of leaks by the general public, and in the UK is a requirement of the Gas Safety (Management) Regulations. The addition of biomethane to gas distribution networks has the potential to have serious implications for public safety. The degree and nature of the influence of biomethane components on gas odour is currently not fully known, and is likely to be complex given the variety of chemical species present.

Additionally in the UK all networks have some experience of unexplained odour fade/masking events that are not biomethane related. Examining the causes of odour masking from biomethane and finding solutions to the problem will assist in addressing future low odour problems in all UK networks.

Method(s)

This project will be undertaken collaboratively via the European Gas Research Group (GERG) and will include the collation of all relevant data and experience from the project participants including general odour masking events in natural gas networks.

DNV GL are the UK representatives for this GERG project and will be proposing that all testing on UK gas odorant is carried out at the DNV GL Rhinology Centre in the UK, thereby ensuring the project is appropriate to the UK gas industry. In addition, DNV GL will seek to include rhinologists from all UK gas networks in the odour chamber tests.

Scope

The scope of this project includes a single phase for the collation of all relevant data and learning from European and UK gas networks whom have experience of odour masking; both biomethane and non-biomethane related.

If this project is successful this could result in potential further work to focus on the future technical work required to identify the biomethane components most likely to influence odour, quantify the effects and in addition produce a reliable rhinology procedure for biomethane/natural gas mixtures. This would also include advice on upgrading and clean-up techniques to minimize the impact of biomethane on odorized gas networks.

Objective(s)

Gas distribution networks need to demonstrate that the gas they are transporting is GS(M)R compliant. This project aims to identify and quantify the influence of various components of biomethane on perceived gas odour and devise corrective actions as necessary to ensure distributed gas meets all statutory requirements.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

If successful, the project will determine which sources of biomethane are most likely to influence gas odour, allowing corrective measures to be applied as necessary in a targeted manner.

This will be an enabler for further work under the same initiative to identify the biomethane components most likely to influence odour, quantify the effects and produce a reliable rhinology procedure for biomethane/natural gas mixtures.

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The scale of this project includes research centered on both UK and European odour masking experience and data. This data collection is required in order to fully understand the extent of both biomethane and non-biomethane related odour masking.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL3 Proof of Concept

Geographical Area

Data will be collected from both UK and European gas networks.

Revenue Allowed for the RIIO Settlement

No Revenue Allowed for in the RIIO Settlement

Indicative Total NIA Project Expenditure

£31,973.33 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)

If the problem is solved this has the potential to avoid costs associated with isolating biomethane sites that produce offending biomethane components, from the gas grid. There would also be cost avoidance associated with network assessment, followed by remediation work, within areas of the network where the impact of natural gas odour has been impaired by biomethane components.

As this project focuses on a feasibility study it is difficult to quantify the potential financial benefits at this stage, and dependant on the outcome of this project, there may be further work, at which time quantification of financial benefits will be articulated.

Please provide a calculation of the expected benefits the Solution

Not required (Research only)

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

The Method could be applied to all biomethane entry points throughout the UK gas distribution networks.

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

There will be nil costs associated with the roll out of this project as the benefits will be knowledge based.

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

The learning generated by this project will be required by all gas distribution networks that accept biomethane into their network.

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

☑ 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.

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