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

Nov 2013

Project Reference Number

NIA_NGGT0012

Project Registration

Project Title

Development of a new design vent silencer

Project Reference Number

NIA_NGGT0012

Project Licensee(s)

National Gas Transmission PLC

Project Start

August 2012

Project Duration

3 years and 1 month

Nominated Project Contact(s)

Russ Nattrass, box.GT.innovation@nationalgrid.com

Project Budget

£61,000.00

Summary

A noise expert, Industrial Noise and Vibration Centre, approached National Grid with a novel vent silencer design that requires further development. This is potentially a low cost, simple alternative, much more suited to a range of applications on the National Transmission System (NTS), in comparison to off the shelf solutions.

With the noise implications of National Grid's venting operations becoming more highly scrutinized, resulting benefits of this project would include:

- Reduction in noise levels – for all venting activity on a national basis. It is expected that such a device may take at least 20 dBA off the current noise level.

- Deduction in affected/notification zones for venting. This novel approach, in controlling the rate of gas/air mixing, has the potential to impact on the assumptions made as part of a risk assessment and the determination of hazardous areas.

- Reduction in health and safety issues for operatives – exposure times and noise levels.

- Possible reduction in operations timing – greater flows for similar noise outputs.

The proposed solution would therefore enable National Grid to reduce the impact of its operations on the environment and on customers and stakeholders in vicinity of gas transmission assets.

Third Party Collaborators

Industrial Noise and Vibration Centre (INVC)

Health & Safety Laboratory

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

The noise implications of National Grid's venting operations are becoming more highly scrutinized. At one of the national transmission system pressure reduction installations (PRIs), there is a planning condition imposed that requires a local resident notification process to be agreed with the local planning authority covering any noise event that would be auditable in the immediate vicinity. It is therefore National Grid's intention to not only agree a notification process, but if at all possible reduce noise levels for such operations. This study will focus on the feasibility of noise reduction.

Method(s)

The method will include a feasibility study prior to design and fabrication of a prototype and a series of small scale tests for proof of concept, followed by full scale tests and comparative evaluation. The method looks to investigate the possibility of ice formation and if tests are successful, investigation of impact on hazardous zones.

Scope

A noise expert, Industrial Noise and Vibration Centre, approached National Grid with a novel vent silencer design that requires further development. This is potentially a low cost, simple alternative, much more suited to a range of applications on the National Transmission System (NTS), in comparison to off the shelf solutions.

With the noise implications of National Grid's venting operations becoming more highly scrutinized, resulting benefits of this project would include:

- Reduction in noise levels – for all venting activity on a national basis. It is expected that such a device may take at least 20 dBA off the current noise level.
- Deduction in affected/notification zones for venting. This novel approach, in controlling the rate of gas/air mixing, has the potential to impact on the assumptions made as part of a risk assessment and the determination of hazardous areas.
- Reduction in health and safety issues for operatives – exposure times and noise levels.
- Possible reduction in operations timing – greater flows for similar noise outputs.

The proposed solution would therefore enable National Grid to reduce the impact of its operations on the environment and on customers and stakeholders in vicinity of gas transmission assets.

Objective(s)

The intention is to carry out the required research, development and testing of a proposed high pressure venting silencer with the Industrial Noise and Vibration Centre. The silencer has the potential to deliver reduced noise levels, reduced health and safety exposure and also improve public perception and reduce noise pollution during these necessary venting operations.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

To deliver a new design of vent silencer suitable for use at national transmission system (NTS) compressor sites and NTS pressure reduction installations (PRIs).

Project Partners and External Funding

n/a

Potential for New Learning

n/a

Scale of Project

The project will be trialed in both a small then a full scale at the Health and Safety Laboratory test facility prior to tests at a National Grid operation (either compressor site or pipeline operation).

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL7 Inactive Commissioning

Geographical Area

The vent silencer is intended to be used across a range of vent stack stacks on the gas transmission system.

Revenue Allowed for the RIIO Settlement

None

Indicative Total NIA Project Expenditure

IFI - £10k

NIA - £51k with NIA compliant contract

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)

Published government data values a reduction in noise due to health and amenity effects at £146 per decibel per household affected per year. The project design aims to reduce noise by up to 20db. An alternative "off the shelf" vent silencer solution identified as suitable for one particular PRI on the gas transmission system was costed at £100k. This solution is likely to be at least one tenth of that cost.

Please provide a calculation of the expected benefits the Solution

N/A - Research.

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

The Method could potentially be used for reduced noise from venting operations on compressor sites and PRIs across the NTS asset base.

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

Estimated to be in the region of £2,000 per silencer plus installation costs.

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

- [ ] 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 and knowledge gained from this research and development project could potentially be used for reduced noise from venting operations across other networks. The learning will be made available via the ENA Smart Portal as well as on http://www2.nationalgrid.com/uk/our-company/innovation/, NIA progress and annual reports will be available as required.

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

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

Is the default IPR position being applied?

- [x] 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