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

Jul 2018

Project Reference Number

NIA_NGGT0127

Project Registration

Project Title

Valve Pits Insulation

Project Reference Number

NIA_NGGT0127

Project Licensee(s)

National Gas Transmission PLC

Project Start

July 2018

Project Duration

0 years and 6 months

Nominated Project Contact(s)

David Kerr

Project Budget

£221,250.00

Summary

Purpose is to reduce the noise coming from the valve pits using an alternative insulation material. The current (fibre glass) material used is not durable and quite expensive.

Third Party Collaborators

Centrotherm Insulations Ltd

Husht Acoustics

Nominated Contact Email Address(es)

Box.GT.Innovation@nationalgrid.com

Problem Being Solved

National Grid insulates all the covered unit pipework in the valve pits to mitigate the noise from compressors which affects the nearby community. The insulation used is fiberglass; this material can have adverse effects to the pipework and valves.

Fiberglass cladding is used to cover pipework; this is ineffective and very expensive. Over time the fiberglass insulation absorbs water so becomes completely ineffective, moisture is trapped against the steel pipework which then creates the perfect environment for corrosion. Once the gas in the pipework has been compressed it gets hot so the insulation around the pipework holds the heat in the discharge pipe which creates problems on the valves.

Method(s)

The proposed solution will undertake the following:

- Remove the existing sheet metal cladding and thermal insulation materials from pipes and valves in the pit area at the compressor station. The insulation will be removed using basic hand tools and battery drills.
- Fit new material in the gussets of the steelwork around the pits.
- Carryout a noise testing survey to compare against previous environmental assessments.

Scope

As the fiberglass is covering all the pipework, when maintenance is required, a section of the material must be cut out in order to inspect the pipework, however that does not give a true indication of the condition all the pipework. CM4 inspection.

When the fiberglass becomes inefficient it must be replaced and exchanging like for like does not solve the issue regarding the valves or corrosion. Furthermore does not mitigate the noise pollution as low frequency noises are continuing to be transmitted, as a result National Grid receives complaints from the neighbouring community.

Objective(s)

Replace the existing fiberglass with 4 cm thick plastic coated insulation sheets in the gussets of the steelwork about the pits and assess the effectives of the new material.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Demonstrate the low noise levels by assessing the frequencies and comparing level against previous assessments.

Establish the effectiveness of the new material

Project Partners and External Funding

Project Partner – Husht Acoustics

Potential for New Learning

Environmental learning to alleviate noise pollution.

Scale of Project

Trial in a working environment.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

National Grid site.

Revenue Allowed for the RIIO Settlement

None (to be confirmed RIIO Delivery).

Indicative Total NIA Project Expenditure

£178k

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)

Based on one site the potential savings are £550,979.00 over a ten year period.

Please provide a calculation of the expected benefits the Solution

The fiberglass material must be replaced around the pipework due to either heat dissipation, water damage and reduce noise pollution from impacting the community. The base costs are:
Base
Fibreglass material £220K (replaced every 10 years)
Noise pollution investigation 8,300 x 60 = £498,000.00 (this is based on six incidents reported per year over a 10 year period)
Total £718,000.00

Method
The new material will not be placed around pipework therefore it stops heat dissipation, water damage, potentially noise pollution and increase confidence in CM4 inspections.

Acoustic panels £112,779.00 (can last approximately 25 years)
Removal of existing £ 54,242.00
Total £167,021.00

The saving based on one site £550,979.00 over a 10 year period

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

Acoustic panels can be easily replicable and is likely to be used on approximately 5 sites within National Grid. This material has the potential to be used in the distribution network.

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

Based on the method costs, a cost of approximately £167,021 per site.

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

Learning will be used throughout National Grid, also across the distribution networks.

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

The challenges this will address are:
Reliability

- Heat dissipation affecting valves
- Corrosion, the lagging around pipework holds water which then leads to corrosion.

Environmental

- Low frequencies causes vibration the sounds leaves the pits become airborne and these noise levels affect the nearby community.

☑ 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.

Acoustic panels have never been used in the gas industry.

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

This method of using acoustic panels has not been used within the gas industry.

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

The project will not be funded as part as business as usual as acoustic panels have not been tested in the gas industry, therefore National Grid needs to conduct a trial to prove that the panels mitigate noise pollution.

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

There is a potential risk that the acoustic panels will not mitigate the noise impacting the community, therefore by trialing this solution National Grid can make informed decision as to which is the best material.

This project has been approved by a senior member of staff

☑ Yes