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_NGN_055

Project Registration

Project Title

Gas PTii

Project Reference Number

NIA_NGN_055

Project Licensee(s)

Northern Gas Networks

Project Start

February 2014

Project Duration

4 years and 5 months

Nominated Project Contact(s)

Ben Hanley

Project Budget

£239,758.00

Summary

NGN want to encourage development and competition within the gas chromatograph market by testing GasPTi to UK industry standards and proving it is fit for purpose.

As a result of this project we will be working with OFGEM, SGS, Orbital and GL to produce a technical document advising the GasPTi can be used to measure gas quality on all Ofgem directed sites. All lessons learnt and knowledge will be shared throughout the following stages:

- The device will go through testing at GL Noble Denton Loughbrough adhering to the testing criteria as detailed by Ofgem
- The device will be installed on an NGN Ofgem Directed Offtake alongside an existing Daniel 500 Gas chromatograph to begin gathering data for the field trial.
- Data from the flow trial will be submitted for review by Ofgem
- Ofgem will advise if the testing has been successful and if they will be issuing a formal letter of approval

Third Party Collaborators

Orbital Gas Systems

NBSP

GL Noble Denton

nDash

Societe Generate de Surveillance

Nominated Contact Email Address(es)

innovation@northerngas.co.uk

Problem Being Solved

Currently there are only 3 devices approved By Ofgem for CV determination on directed Offtakes and Bio-methane entry Points. Since the beginning of FWACV there has also been very little technological development in this area only one new device has come to the market which hasn't made for competitive pricing.

Under the RIIO price control period NGN have stated they will replace all their Daniel 500 gas chromatographs as they are now obsolete, when looking at replacing them NGN are limited to two devices both of which are chromatographs.

The GASPTII is an entirely unproven new technology which can reduce the long sample times currently experienced with chromatographs meaning we are able to have live volume and Gas quality measurements ensuring we have accurate energy accounting protecting customers from mis-billing.

This solution also provides another viable option for the Bio-methane/New network entry units driving down costs helping to facilitate new network entries, this is key to ensure that we are able to deliver a sustainable low carbon network.

Method(s)

NGN and the owner of the device, Orbital Gas Systems (OGS) will carry out a field trial at one of NGN's Offtakes where the GasPTi will be installed and run alongside an existing approved Gas chromatograph. The results from the field trial will be collected monthly and will be compiled into a report. Upon completion of the project a technical report will be complied and published by OGS to demonstrate the accuracy and reliability of the new equipment which should prove the suitability to install on any Ofgem directed site.

The GasPTi will also go through a full regime of laboratory tests by an Ofgem approved laboratory (GL Loughbrough) to ensure that the device meets the requirements set out by Ofgem.

Scope

NGN want to encourage development and competition within the gas chromatograph market by testing GasPTi to UK industry standards and proving it is fit for purpose.

As a result of this project we will be working with OFGEM, SGS, Orbital and GL to produce a technical document advising the GasPTi can be used to measure gas quality on all Ofgem directed sites. All lessons learnt and knowledge will be shared throughout the following stages:

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Extend to Nov 17 - Extension required due to delays in the testing and approval process. This phase of the project has taken longer than forecasted. This is now in progress and has a forecasted completion of the end of November.

Objective(s)

- To develop a technical report which proves the devices suitability, accuracy and stability from the field trial which can be used to support the Ofgem approval and be compiled into a report to be issued by OGS.
- Gain approval as an Ofgem directed CV measurement device for use on any site under direction from Ofgem.
- To provide GDNs with a completely new alternative to Daniel 500 Chromatograph

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

n/a

Success Criteria

Enable cost savings to the customer as new gas pti is as accurate as the gas chromatographs we currently use but available at a significantly reduced cost.

Produce a report and gain approval by Ofgem that GasPTi is a directed CV measurement device fit for use on Ofgem directed distribution sites.

Leading the GDN market in development of new type of technology and sharing knowledge amongst other GDNs that another type of gas chromatograph is available

Project Partners and External Funding

Orbital Gas Systems- is a specialist gas engineering company delivering integrated instrumentation and

engineered solutions to the gas utilities, industrial process and environmental industries. They are the owner and developer of GasPTi.

GL Noble – Independent technical Experts who have the facilities to test the GasPTi in a laboratory

SGS- Technical authority acting on behalf of Ofgem who will test the device and provide the device approval notice once complete.

Potential for New Learning

The GasPTi is an entirely new concept for CV determination, if this project is successful the way all UK DN's gather gas quality data could be made more efficient.

It will provide a faster and more representative composition than is currently available from existing technologies and will open the CV determination market reducing network entry costs. Resulting in potential savings to the customer.

Scale of Project

The project manager will work alongside the Key stakeholders over seeing the following areas;

Field trial

This project will test the GasPTi at one location in the NGN network for a period of 12 months. During this trial data will be collected at 4 minute intervals so it can be compared against the existing Daniel 500 chromatograph. There will also be data collected at a faster rate (min 15 seconds) which will be confirmed during a preliminary site survey. This will give the best spread of data and will demonstrate the benefits of the reduced sample times. The field trial will start in 2014 and is expected to run for 9-12 months to satisfy Ofgems data requirements.

There will also be a period of testing as required by Ofgem, this is expected to last for several weeks commencing in early December.

Technology Readiness at Start

TRL6 Large Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The field trial will take place in the NGN network at a location to be determined (expected to be Pannal Offtake) to give the desired output from the field trial and at GL Noble Dentons facility at Loughbrough.

Revenue Allowed for the RIIO Settlement

£1.2M

Indicative Total NIA Project Expenditure

£150,000, field trial, installation of associated equipment and report including update to NGN policies & procedures

£30,000 Ofgem approval laboratory tests and report. Testing to be conducted at GL Noble Denton facility.

Payment Dates

06/01/14

£49,613.15 - External

£16,471 - Internal

17/02/14

£39,226.30 - External

£13,023 - Internal

17/03/14

£32,688.58 - External

£10,852 - Internal

28/04/14

£39,226.30 - External

£13,023 - Internal

06/01/2015

£19,245.67 - External

£6,389 - Internal

Total External - £180,000

Total Internal - £59,758

Total Project Cost - £239,758

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)

It is estimated that this could reduce replacement analyzer costs by approx 50% - and associated Opex costs due to the reduction in required maintenance.

Please provide a calculation of the expected benefits the Solution

If all twelve sites were replace the savings would be

Capex £45k per site

Opex £4.5K per site

Totex £49.5k per site

As a whole est £500k saving.

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

Once the device has been proven and Apporved by Ofgem it can be rolled out across the 175 Offtakes in the UK along with power stations, Biomethane entry facilities and other onshore production facilities such as shale gas.

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

Once the letter of approval is issued Ofgem will inform all the DN's and produce a functional specification. This is at no cost to NGN

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

This is a unique piece of equipment never before deployed on a gas network. This piece of equipment will be capable of replacing the existing Daniel 500 Gas chromatographs which are now Obsolete and will need to be changed in this price review period. Once the device is approved for use by Ofgem all DN's and other interested parties will be informed by Ofgem and Orbital Gas Systems.

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

.This device will enable NGN to lower its Capex and Opex costs.

The Capex saving on changing the Calorimeters as identified in the RIIO business case would be approx £500k saving. The running cost mean that we could reduce the annual Opex costs on these sites by around £4.5k each.

The device will reduce the costs for all Grid entry units ultimately making network entry easier for all interested parties allowing instantaneous CV measurement. The Gas PTII also uses far less carrier gas and uses less natural gas so will reduce NGN's carbon footprint.

☑ 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.

No other project exists which aims to gain Ofgem Approval for the GasPTi.

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