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

Apr 2024

Project Reference Number

NIA2_SGN0045

Project Registration

Project Title

Ancillary Components Product Suitability for Use with Hydrogen - Verification Evidence

Project Reference Number

NIA2_SGN0045

Project Licensee(s)

SGN

Project Start

October 2023

Project Duration

0 years and 8 months

Nominated Project Contact(s)

Houra Mozaffar

Project Budget

£39,270.00

Summary

This project is a critical end user project to seek independent third-party assessment of the suitability of various downstream ancillary components (e.g. pipes, fittings and devices) for use with hydrogen. This work is expected to focus on due diligence, evaluating the compliance of various product ranges with relevant standard(s) providing the required evidence on the suitability for use with hydrogen, and inform the need for further testing or evaluation to ensure safe and reliable gas installations. This study will support SGN decision making regarding the use of these components on SGN H100 Fife downstream pipework installations in customer properties.

Due to their extensive expertise in this field, BSI- a Notified Body for CE marking, an Approved Body for UKCA marking, and owner of BSI Kitemark certification, have been identified as a suitable partner for executing this project. BSI offers a range of testing and certification services including new product development, pre-assessment, gap analysis, batch testing and full compliance testing giving us confidence in their capabilities for comprehensively undertaking this investigation.

The project will consist of following 2 work packs and final reporting:

- Work pack 1 - Collect and Assess Evidence (32 product ranges)
- Work pack 2 - Investigate and Identify Alternatives (up to 11 product types)
- Reporting of findings (3 reports)

Phase 1 - Specifically, the primary objective of this work is to identify three specific brands or product ranges for each product type in various sizes (15mm, 18mm, 22mm, 28mm, and 35mm) that are compatible with 100% hydrogen gas while ensuring universal compatibility with natural gas.

Phase 1b - Aims to ensure the compatibility of these products with 100% hydrogen gas and natural gas, providing assurance for safe and reliable gas installations. The reporting of these findings will also help identify any evidence gaps and inform the need for any potential further testing or evaluation to ensure safe and reliable gas installations.

Nominated Contact Email Address(es)

sgn.innovation@sgn.co.uk

Problem Being Solved

Safety is paramount when dealing with hydrogen gas and ensuring that components meet the necessary standards is essential to prevent accidents and leaks. Furthermore, compliance with product standards and certification is crucial for regulatory approval and ensuring legal compliance.

Due to the limited published standards for evaluating hydrogen compatibility of some ancillary components, it is essential to gain assistance from an independent third-party specialist to evaluate suitability of various product ranges for use with hydrogen gas, enabling SGN to make an informed decision for ancillary product installation in the H100 Fife Neighbourhood trial domestic properties. The ultimate goal is to ensure the compatibility of these products with 100% hydrogen gas for this trial.

Method(s)

Evidence of suitability for use with hydrogen gas will be collected and assessed by BSI and the findings including the adequacy of evidence and any gaps, will be reported to SGN. H100 Fife Neighbourhood trial team will evaluate the findings.

For this purpose the following steps are undertaken:

1) Collect and Assess Evidence
 a- Request and gather evidence
 b- Assessment of evidence:
  - Natural Gas - confirm adequacy and identify any missing evidence
  - Hydrogen - confirm adequacy and identify any missing evidence
 c- Existing Natural Gas only certification:
  - Check for 'Hydrogen' applications to update certification and confirm status
  - Verify if brand / manufacture intends to update certification and timings

2) Investigate and Identify Alternatives
 For product type(s) where no hydrogen evidence and brands / manufacturers not committing:
  - Check other brands / manufacturers for live or pending BSI hydrogen certification
  - Obtain permission and report certification and contact details to SGN

3) Reporting of findings
 Interim reports and final reports

Scope

In this project, BSI will execute the following steps:

1. Request Product Information: BSI will contact brands and manufacturers to request available evidence for the products.

2. Confirm Product Natural Gas Status: BSI will gather and assess evidence of suitability for use with natural gas, ensuring compliance with relevant product standards and the presence of the UKCA mark where applicable.

3. Confirm Product Hydrogen Status: For products successfully confirmed suitable for natural gas, BSI will collate and assess evidence of their suitability for use with hydrogen gas. This includes evidence of compliance with relevant 100% hydrogen product standards and any additional evidence supporting use with 100% hydrogen.

4. Products Covered by Existing Certification: BSI will review existing product certifications and confirm if they cover use with 100% hydrogen gas. If not, they will work with brands to update the certificate scope accordingly.

5. No Hydrogen Evidence and Brands/Manufacturers Not Pro-Active: For product types with no hydrogen evidence and manufacturers not pursuing hydrogen certification, BSI will explore the possibility of other brands or manufacturers holding hydrogen certifications.

6. Consolidated Reporting: BSI will issue interim and final reports summarizing the findings from steps 2 to 5 at various stages of the project.

Objective(s)

This program is to assess and identify specific brands and product ranges of pipes, fittings, and components suitable for use with hydrogen gas on SGN H100 Fife installations in domestic properties. This initiative aims to ensure the compatibility of these products with 100% hydrogen gas and natural gas, providing assurance for safe and reliable gas installations. The findings will also help identify any evidence gaps and inform the need for further testing or evaluation to ensure safe and reliable gas installations.

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

Safety of the H100 Neighbourhood trial, which is highly dependent on the findings and recommendations of this project are a priority for the go ahead of such projects. Hence, understanding the suitability of components and using the correct certified items in customer properties, which will ensure the safety of the users, can define the success of these trials which can result in the replacing NG with a green and potentially cheaper source of energy for all consumers including vulnerable customers.

Success Criteria

Finding will be delivered in regular meetings and interum reports over the project duration to inform SGN team of the developments as more evidence is gathered. The final project output is a comprehensive reports on product suitability and evidence for that, evidence gaps, and recommendations for further required certification if suitable products are not identified.

Project Partners and External Funding

While this project is led by SGN and is mainly funded through SGN and NIA, it is a collaborative work between all GDNs. All partners will share their relevant information to fill the gaps and assist with the effective delivery of the work.

Potential for New Learning

As well as specific hydrogen evidence, this assessment will also cover suitability for natural gas. For gas installation components, meeting the natural gas requirements of the relevant main product standard is useful evidence to help support use with hydrogen. Positive findings will also provide assurance that the same components can be used with 100% Natural gas, 100% Hydrogen, and typically all hydrogen admixtures in between.

Scale of Project

While this project will dentify suitable domestic ancillary components form various suppliers for the H100 Neighbourhood Trial which covers approximately 300 domestic properties, findings can be transfered to any other hydrogen trials. Hence the benefits of this project can assist much larger scale projects in the future.

Technology Readiness at Start

TRL5 Pilot Scale

Technology Readiness at End

TRL8 Active Commissioning

Geographical Area

The project aims to fulfil the whole of GB.

Revenue Allowed for the RIIO Settlement

Not applicable

Indicative Total NIA Project Expenditure

Recoverable through NIA (Innovation): £47,112
SGN Internal Net Cash Flow: £5,235

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:

Safety is paramount when dealing with hydrogen gas and ensuring that components meet the necessary standards is essential to prevent accidents and leaks. Furthermore, compliance with product standards and certification is crucial for regulatory approval and ensuring legal compliance. This work will ensure the compatibility of domestic pipework ancillary components with 100% hydrogen gas, providing assurance for safe and reliable gas installations which will play an important role in supporting SGN with progressing H100 Neighbourhood Trial. Feedback from this trial is one of the most importanct sources which will directly inform the government heat policy in 2026 and hence determine the UK government decision for the potential role out of hydrogen and decarbonising the gas network over the entire GB.

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)

N/A

Please provide a calculation of the expected benefits the Solution

N/A

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

If the H100 Neighbourhood is successful for rolling out 100% H2 as the replacement for NG across 300 properties, it can be replicated in the Town trial which is expected to cover 10,000 properties. Following the success of the town trial, roll-out of 100% H2 can be replicated across GB.

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

Findings of this project will directly feed into requirements of the H100 Trial which is an important case for all GDNs as it is the only running Hydrogen trial at this time and will produce vital evidence for the roll out of hydrogen accross the UK. K gainged will be shared with all GDNs. Also findings from the project will be available to all relevant stakeholders through the ENA Smarter Networks Portal at https://smarter.energynetworks.org/.

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

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.

Since there are no other 100% Hydrogen trials going ahead at this time this is the only project looking into suitability of domestic ancillary components for hydrogen. Details of the project has been discussed with the other networks with clear charts showing where each party stands to ensure there is no duplication of work. The findings from the project will be shared with all key stakeholders.

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

The H100 Tiral is the first of a kind project which will deliver 100% hydrogen to customer properties, hence there has not been the need to understand suitability of domestic ancillary componenets for 100% hydrogen in customer properties before. Furthremore, due to the limited published standards for evaluating hydrogen compatibility of some ancillary components, it is to evaluate suitability of various product ranges for use with hydrogen gas, enabling SGN to make an informed decision for ancillary product installation in the H100 Fife Neighbourhood trial. Hence this is the first time such investigation is taking place

Relevant Foreground IPR

N/A

Data Access Details

All the information and knowledge gained will be shared with other GDNs. Also, the information will be available to all relevant stakeholders to review through the ENA Smarter Networks Portal at https://smarter.energynetworks.org/.
However, if the project gathers any commercially sensitive information from any of the OEMs that information cannot be shared publicly and can only be released to relevant parties.

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

This work is deemed an essential part of the 100% hydrogen trials process which is a key step towards conversion of the existing gas network to 100% hydrogen which is yet not a business-as-usual activity for SGN or any other GDN.

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

The NIA framework is a robust, open framework which can support the work and ensure the results which play an essential part on the roll-out of Hydrogen, are fully circulated to all licenses. The conversion of the GB gas network to 100% hydrogen is a key step on the road to net zero.

This project has been approved by a senior member of staff

☑ Yes