

How can we Ensure the Quality of Hidden Pipework?

EIP059

28 February 2023

Background

- Ahead of conversion of internal gas installations to hydrogen, how can we assure the quality of pipework that is hidden in or behind the building fabric?
- The proposed hydrogen village trial will see current natural gas infrastructure repurposed for hydrogen service, particularly downstream of the gas distribution network, in people's homes and businesses. The process of conversion will require inspection into the condition of existing assets to ensure they are suitable for repurposing to carry hydrogen.
- Current practice in domestic properties with natural gas is to carry out a visual inspection of the pipework that is visible/accessible followed by a tightness test to ensure there are no leaks. Elevated pressure testing (strength testing) will be used in commercial/industrial premises as a means of providing additional assurance.
- The act of conversion naturally allows the industry to review current practices to assess whether there are areas that ought to be improved upon before a new gas is introduced. As an industry, one of the questions we are being asked is, "In properties due for conversion, what are we doing to assure the quality of pipework that we cannot access/see?". Currently, a successful tightness test is taken as sufficient evidence to assure the quality of a gas installation, however, this test is only an instantaneous measure of tightness and does not allow for detection of potential failure modes in the pipework which may be activated over time.
- Pipeline Inspection Gauges (PIGs) are used on the high pressure gas network today to inspect sections of underground pipeline for changes in ovality/corrosion/potential leak sources etc. The question here is, is there a similar technique that can be introduced to smaller diameter, smaller pressure pipework, that allows a non-intrusive visual inspection of pipework in properties that we cannot currently access/see?

Enablers and Constraints

- One of the key constraints is that this inspection will be carried out in people's homes and businesses and so must be suitable for implementation in those types of environments.
- Currently, an NIA funded project is underway to look at the downstream pipework conversion strategy for hydrogen, research is being carried out into the potential use of novel inspection techniques, however, there doesn't seem to be a 'ready-made' solution available.
- The Hydrogen Village Trial is a key enabler to this work and there is definitely appetite for an innovative inspection technique to be introduced if it can be proved to be feasible.

Involvement and Implementation

- Key Stakeholders
 - All UK GDNs (Cadent, NGN, SGN, WWU)
 - British Gas
- Target Market
 - Initially this will support the conversion of circa 2000 properties as part of the UK Hydrogen Village Trial. Depending on the UK Government policy decision in 2026, this could affect millions of customers who would be converted to hydrogen in the future.
- Target Implementation Date
 - If a solution is found and accepted, it will have to be incorporated into the overall conversion plan for the Hydrogen Village Trial. The conversion plan will dictate the required scale to enable 2000 properties to be converted in Spring/Summer 2025.

Energy Innovation Basecamp

28 February 2023
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