Energy Innovation Basecamp 2024
Problem Statement EIP116

Artificial Intelligence for Calorific Value

The following problem statement has been developed by the innovation teams within the UK's Gas and Electricity Networks for the 2024 Energy Innovation Basecamp.

Theme: Maximising Use of Existing Infrastructure

Network Areas: Gas Distribution

What is the problem?

The UK gas distribution network has a flow weighted average billing regime to ensure end gas consumers pay for the energy content of the gas they consume. Biomethane has a slightly lower calorific value (CV) than natural gas so to bring this up and to meet the average of the area there is a requirement to inject propane (which has a higher CV than natural gas). Propane is not a green gas, is increasingly contaminated and is expensive to buy. Moreover, the complexity of running the propane system and the likelihood to flare gas due to not hitting the CV target required is bringing increased OPEX into the industry. To reduce/remove the need to add propane we can run analysis to see if the ratio of biomethane to natural gas is high enough to be able to blend to achieve the correct CV. We then currently need to install and maintain instrumentation to measure the CV at certain points in the network to ensure the correct CV is being maintained.

What are we looking for?

We are looking for an AI solution that can take the average weighted CV every 15 minutes of the network along with the natural gas flow weight to ensure the biomethane being entered into the system is at the right ratios to maintain the target CV. If not, a signal needs to be sent to the biomethane developer to add propane. This AI analysis will prevent the need to install monitoring posts across the network for this purpose.

What are the constraints?

The solution must comply and demonstrate compliance with the flow weighted average regime here in the UK for gas calorific value.

Who are the key players?

The gas distribution networks will adopt this solution and the biomethane developers will benefit. Ofgem and DESNZ are also key stakeholders ensuring the flow weighted average regime is maintained.

Does this problem statement build on existing or anticipated infrastructure, policy decisions, or previous innovation projects?

No. We are looking to replace physical monitoring posts reading calorific value with AI that can calculate this from the offtake CV, flow of gas and CV of injecting biomethane.

What else do you need to know?

N/A

Innovator submissions to this problem statement will be open here during March and April, but we encourage you to submit your response as early as possible, as networks will be able to review submissions as soon as they come in.

Energy Innovation Basecamp 2024
Problem Statement EIP116

You can also use the virtual Q&A on the Smarter Networks Portal to ask for more information about this problem statement. Questions may be answered online or at the ENA Problem Statement Launch in March 2024. More information on last year's Basecamp programme can be found here.