

Network Innovation Competition Full Submission

Supplementary Answer Form

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

Project code:	NGGDGN01	Question Number	12
Question date	27/8/13	Answer date	29/8/13
Submission section question relates to	2.3.3		
Topic	Test Programme		
Question	<p>The programme includes "Investigations into control of the gas quality to ensure reliable delivery of pipeline quality gas e.g. Wobbe Index, nitrogen, hydrogen content etc." What are the implications for plant performance of delivering gas to a wider range of gas quality limits than those currently permitted by GSMR such as the EASEE gas harmonised EU Gas Quality Specification?</p>		
Notes on question			
Answer	<p>Ensuring that the methanated syngas can be conditioned to meet gas injection quality specification requirements cost-effectively is a key element in this programme.</p> <p>The primary focus is on meeting specifications required for GSMR, given that this is the prevailing UK requirement. From the extensive work carried out to date, the consortium is confident that it is technically possible to achieve this specification, although the key issue is to ensure this can be done cost effectively. The aspects of the GSMR specification for this source of gas which require particular focus are Hydrogen, and Wobbe Index (the latter which is influenced significantly by the Hydrogen level and inerts such as Nitrogen). The other GSMR requirements are relatively straightforward to attain from this facility (note that, for example, oxygen control is straight forward compared with biogas from Anaerobic Digestion.)</p> <p>A technical scheme has been developed to meet these requirements, including upstream means of inert nitrogen control, in-methanation control of hydrogen level, and post processing of nitrogen and hydrogen removal, along with a novel approach for Wobbe Control if required. The pilot plant is designed to test and understand these approaches, and crucially refine the detailed specifications for the process elements and therefore finalise the commercial plant costs.</p> <p>Understanding the scope for derogation of key elements in the grid injection quality</p>		

	<p>specification is an important aspect of the project; the objective is to deliver value for money to the consumer. Given that much of the detail of the GSMR specification was based on the extant composition of the gas available from the North Sea, rather than as a purely ‘functional’ specification, it is expected that there is some scope for particular derogations, if it can be demonstrated that the gas remains functionally suitable for both the network and the consumer. This has the opportunity to reduce the cost of gas generation.</p> <p>The Consortium has reviewed gas specifications from key countries around Europe. With regard to the specific attributes under consideration, most other countries have wider specifications, compared with the UK. As a consequence, the proposed EASEE is not significantly more stringent compared with GSMR with regard to relevant components, and the Consortium is confident that they can be met technically, noting the slightly higher minimum Wobbe Index. However, due regard will be made to this specification during the course of the programme.</p> <table><tr><th></th><th>GSMR</th><th>Germany</th><th>France</th><th>EASEE</th></tr><tr><td>Hydrogen</td><td><0.1%</td><td><5%</td><td><6%</td><td>N/A</td></tr><tr><td>Wobbe</td><td>47.2-51.4</td><td>37.8-56.5</td><td>43.2-56.5</td><td>49.0-56.9</td></tr><tr><td>CO2</td><td><2.5%</td><td><6%</td><td><2.5%</td><td><2.5%</td></tr><tr><td>Nitrogen</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr><tr><td>Water dew point</td><td>-10C</td><td>Local Grid</td><td>-5C</td><td>-8C</td></tr><tr><td>H2S/COS</td><td><5mg/m3</td><td><5mg/m3</td><td><5mg/m3</td><td><5mg/m3</td></tr><tr><td>Density</td><td>N/A</td><td>0.55-0.75</td><td>0.555-0.700</td><td>0.555-0.700</td></tr></table>		GSMR	Germany	France	EASEE	Hydrogen	<0.1%	<5%	<6%	N/A	Wobbe	47.2-51.4	37.8-56.5	43.2-56.5	49.0-56.9	CO2	<2.5%	<6%	<2.5%	<2.5%	Nitrogen	N/A	N/A	N/A	N/A	Water dew point	-10C	Local Grid	-5C	-8C	H2S/COS	<5mg/m3	<5mg/m3	<5mg/m3	<5mg/m3	Density	N/A	0.55-0.75	0.555-0.700	0.555-0.700
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