INDUSTRY COMMENTS SUBMISSION (FORM TS/C/1A) IGEM/TSP/20/084

STANDARD: IGEM/GL/10 GAS QUALITY SPECIFICATION FOR CONVEYANCE OF GROUP H GASES OF THE SECOND FAMILY.

ISSUED FOR INDUSTRY COMMENTS ON: 24/04/2020 **DEADLINE FOR RESPONSES:** 30/07/2020

NAME: Julie Cox

COMPANY (If applicable): Energy UK

Are comments on behalf of you or your company?: company

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NO	CLAUSE	COMMENT	SUGGESTED CHANGE
1		The standard contains no reference to the governance arrangements detailed in IGEM/TSP/20/086	

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2	4.2	The Gross Wobbe index (WI) proposed limits of 46.5 – 52.85 MJ/m^3 will provide a range of 6.35 MJ/m^3 a significant increase in the current range of 4.21 MJ/m^3. This will cause issues for many users and particularly for gas turbines. The Evidence report at section 5.2 notes that variation of upto 100% of the new range are possible due to there being almost no potential for blending within the National Transmission System. Safe operation of gas turbines will not be compromised due to the design of the current control systems, however much of the current CCGT fleet will be unable to operate without the risk of trips and de-loads when there are deviations in the gas quality from that to which the turbines were tuned. This will lead to consequences for turbine operators and the electricity system with a potential impact on security of the electricity supply. Some gas turbines have automatic tuning systems fitted which allow operation on a wide range of fuel compositions, but they are not available for all turbines and many existing turbines cannot be economically upgraded, these can typically accommodate a WI range of upto +/- 5% around a midpoint. References: Combustion Challenges for Gas turbine Operators... The Challenges for Gas Turbine Operators of Changing Fuel compositions... The impact of Natural Gas Composition variations... These issues and risks need to be fully assessed in the impact assessment or the proposed standard amended	There are options for addressing this: 1. Limit changes to the WI limits so that the range is no greater than +/- 5% of the midpoint. 2. Consider a classification system as proposed by CEN which manages the gas quality range for sensitive sites. 3. Fully consider all the costs, benefits and risks that arise from the proposed change, making an informed decision in the best interests of all energy consumers ensuring the equitable distribution of benefits and costs.

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		CEN the European standards body has been working for many years to define a European gas quality standard. In 2015 EN16726 was published, but due to lack of consensus this did not include a Wobbe limits. Since then further work has been undertaken, the recommendations in its final report (which is available in draft format). This proposes a wide range for gas at entry points of 46.44 – 54. 00 MJ/m^3 along with a classification system for exit points which recognizes the limitation of what gases they can accept to a range of 3.7MJ/m^3 with set upper and lower WI limits. Other points can receive a wider range than 3.7 MJ/m^3. The classification system faces some challenges but this does acknowledge after three years work that not all offtakes can accept gas within wide WI range. This approach could be considered for the UK. SFGas GQS TF1 N 159_AhG WI Final re Storage sites may also experience problems setting up process burners to keep within emissions limits across a wider WI range, there may also be performance problems. A lower WI limit will reduce the total storage capacity of a storage facility, which is determined by volume, but storage products are sold by energy.	

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	4.2	Biomethane – Wider WI limits may also impact biomethane producers and the amount of propane necessary to meet the target CV set by the distribution network. Depending on the proximity of the biomethane plant to an entry point flowing gas with higher or lower WI gas this could increase or decrease the amount of propane that needs to be added to the biomethane before it can enter the network. This requires detailed assessment not only from a cost viewpoint but also from the impact on decarbonisation ambitions as it could be viewed as a backwards step.	Consider aligning the implementation of any increased WI range to the implementation of changes anticipated by the Future Billing Methodology work Revise the Gas (Calculation of thermal energy) Regulations, in particular the flow weighted average CV arrangements.
3		There are no emergency specification limits – if gas could be made available outside the proposed WI that could avert a gas deficit emergency then consideration should be given to including emergency specification limits, even accepting the potential consequences for gas fired generation. In such circumstances the safety and integrity of the gas supply takes precedence over the electricity supply.	Identify appropriate limits and include, amend note a
4		Relative density upper limit of 0.700 is acceptable, a lower limit of 0.555 should be included for consistency with BS EN16726. Whilst it is recognised that hydrocarbon mixtures absent hydrogen or helium cannot lead to relative density of <0.555, the lower limit should be included now so that this issue is given full and proper attention at the time that hydrogen blend requirements are considered. Allowing low fuel density increases the fuel volume and this could restrict future gas turbine upgrades and efficiency improvements	Add relative density lower limit of 0. 555, and remove note b
5		Removal of ICF and SF is acceptable	

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6		Total sulphur concentration, consider aligning the limits with BS EN 16726 and European best practice	Change the requirement for total sulphur concentration of ≤50mg/m^3 to a requirement of ≤20mg/m^3 for non-odorised systems and ≤30mg/m^3 for systems with sulphur containing odorants
7		Hydrogen content – support retaining at this level – this is an important parameter for gas turbines - limits are included in OEM specifications	

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8		Oxygen content - the pressure limitation of upto 38barg is missing. This is to be included to make the standard recognise the current class exemption for biomethane plant connected to the system at below 38barg. The associated note d mentions *oxygen content will continue to be specified and controlled separately.* It is not clear what this means, where, when, by whom Oxygen content upto 1 mol% may be a problem for some users; CCGTs and storage facilities. A CCGT example: the secondary combustion system (SEV) relies upon minimum O2 in the HP turbine exhaust gas entering the combustion system. There is a potential for excess O2 in the SEV burner as the EV burner will be tuned for the lower O2 content in the fuel gas. As a result, there could be higher than normal NOx and the requirement for combustion re-tuning. Gas Storage connected to the NTS will face increased corrosion risk of pipework and potential degradation of drying systems. UNC mods 0561, 0581, 0645 have facilitated an increase in the oxygen content to 0.02 mol% (200ppm) in the NEAs at BBL, Grain LNG and South Hook. The consideration of these proposals noted that any further increase would need a wider impact assessment given the potential risk of corrosion and operating costs, particularly as LNG imports increase and LNG penetrates further in to the grid.	Include oxygen limit of up to 0.2% with 1% limit at pressures below 38barg. Clarify note d

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9		Dewpoints - these vague requirements should be replaced with specific values from BS EN 16726 or NG Ten Year Statement, taking account of their application across the full range of pressures. This would make the standard less open to interpretation and clarify the situation for gas users	Include specific dewpoint values
10		Odorant – consideration should be given to mandating non-sulphur based odorants as those containing sulphur contribute to sulphur dioxide / trioxide emissions and may contribute to equipment corrosion	Mandate non-sulphur odorants
11			
12	Appendix 1	This section should include definitions that are relevant to this standard, IGEM/G/4 is extensive and mostly irrelevant to this standard. Google search for IGEM/G/4 finds the document but a search on the IGEM website does not	Include definitions relevant to this standard in Appendix 1
13		Wobbe Index and Relative Density definitions are not in IGEM/G/4	Include definition of Wobbe index and Relative density in Appendix 1
14		EASEE – Gas is not included in the acronyms	Add EASEE- Gas European Association for the Streamlining of Energy Exchange – gas

SIGNATURE: Julie Cox