GAS QUALITY STANDARDS

UNC Transmission Workgroup
Meeting 7th December

Ian McCluskey
GAS QUALITY AND STANDARDS

• Overview
  – Drivers for a new gas quality standard
  – Why an IGEM standard?
  – Scope and work of the Gas Quality Working Group
    • Scope and objectives of the group
    • Who is involved
    • Progress on activities
    • Next steps
  – Summary
Drivers for a New Standard

- **Gas Quality is changing…**
  - 1970s, 1980s
    - Dominated by southern North Sea supplies
    - Relatively stable gas quality
  - 1980s, 1990s
    - Northern North Sea supplies, Morecambe bay supplies
    - Slightly wider ranges
  - Dutton
    - Drivers for interchangeability method
Drivers for a New Standard

• **Gas Quality is changing…**
  – Current and future
  – Significant imports
    • Pipeline
    • LNG
  – Biomethanes
    • AD-derived
    • Biomass gasification
  – Shale
  – Hydrogen

• **…a range of different sources**
Drivers for a New Standard

• Current limits are becoming restrictive
Current Prescriptive Regulation

- Gas quality is currently specified through the GSMR
  - hydrogen sulphide content ≤5mg/m³;
  - total sulphur content (including H2S) ≤50mg/m³;
  - hydrogen content ≤0.1% (molar);
  - oxygen content ≤0.2% (molar);
  - impurities shall not contain solid or liquid material
  - hydrocarbon dewpoint ;
  - WN (i) ≤51.41 MJ/m³, and (ii) ≥47.20 MJ/m³;
  - ICF ≤0.48
  - SI ≤0.60

(Schedule 3 – Part 1 Requirements under normal conditions)
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*(Exemptions currently in operation)*

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*(Exemption application pending)*
*(Exemptions currently in operation)*
*(Schedule 3 – Part 1 Requirements under normal conditions)*
Drivers for a gas quality standard

• **Climate Change Act**
  – Sets out a transition to a low carbon economy
  – UK GHG emissions reduced by at least 80% of 1990 levels by 2050
  – Alternative supplies from renewables and hydrogen are likely to be essential

• **Industry-led innovation projects**
  – Currently exploring innovative projects designed to support and meet our future energy needs
  – Mix of natural gas, renewable and low carbon sources

• **Schedule 3 of GSMR is a barrier to their introduction**
  – Parallel activity for development of enabling regulation
IGEM Gas Quality Standard

**Enabling regulation**
- Reference to a gas quality standard

**Why an IGEM standard?**
- IGEM has a long history in production of standards
- Enjoys the confidence of Industry and Government agencies at home and abroad
- Responsive to future changes…
- …whilst retaining strict governance through an industry peer-review process
- Benefits to the gas consumer
- Allows innovation and future proofing
- Supports safety without prescriptive regulation

**IGEM gas quality standard working group**
- Established early 2016 following discussions with BEIS, OFGEM & HSE
Gas Quality Standards Working Group

• **Scope**
  – Primary objective covers gas quality in the UK
  – Will initially examine the upper limit in Wobbe index
  – Examine prospects for further widening at the lower end of the Wobbe index range
  – Examine the case for change of other parameters

• **Process**
  – Examine previous and current studies
  – Commission further work where gaps exist

• **Funding**
  – Network innovation allowance project
Gas Quality Standards Working Group

- Current membership
Gas Quality Standards Working Group

• **Progress on activities**
  – First Meeting in June 2016 - 10 x meetings
  – 14 x Presentation Technical Papers
    • Review of Domestic Case Oban OGM
    • Dutton Revisited
    • Test Gases for Hydeploy
    • Pipeline Fracture Propagation
    • Siloxanes
  – Research Papers from Europe/America – 37 x Papers
  – GSMR Consultation – 28 x Responses on Gas Quality
  – Stakeholder Engagement
  – 1st Working Draft
  – Commissioned Industrial and Commercial research
Gas Quality Standards Working Group

- OBAN PROJECT OVERVIEW

1,100 gas properties

Self-contained network

2,500 gas appliances

Supplied with LNG by road truck

Statistically representative of Great Britain

“One small Scottish town is about to change the gas industry for the better”

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- **Oban project recommendations**
  - Increase in the upper WI limit from 51.40 MJ/m³ to 53.25 MJ/m³.
  - Proposed limit allows sufficient headroom for any deleterious unknowns in the field condition of appliances.
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• **Review of Oban and SIU projects**

  **Facts and figures for the 4 SIU’s:**

  7777 properties
  10,860 appliance inspections
  13,740 burner inspections
  9,578 combustion tests
  206 appliances replaced
  >97% were found to be correctly installed, serviced and operated.

  **Extensive data collected on the appliance health**

  Condition
  No of ID/AR appliances etc.
  CO monitor alarms (present/operational)

  Example opposite shows appliance populations in the 3 SIU’s proportionately similar to those found in Oban

*IGEM*

Institution of Gas Engineers & Managers

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- **Commissioned Industrial and Commercial research project**
  - Will explore the effects of a wider gas Wobbe Index including blended hydrogen mixtures (up to 20% H2)
  - Equipment examined will be greater than 1MW in size.
  - Range of Wobbe Index:
    - 45.67 MJ/m³ up to 53.25 MJ/m³
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• Industrial and Commercial research project
  – Phase 1
    • Collate types of Industrial and Commercial equipment and customers impacted
    • Review of prior work into gas quality impacts on these equipment
  – Phase 2
    • Exploration of mitigation
    • Engagement with customers/manufacturers to develop mitigation measures/costs
Next steps

- Peer Review of the New Approach Proposals
- Impact Assessment
- GSMR amendment process
- Parallel review of other GSMR clauses
  - HSE view the process will be led by the changes to gas quality
- Produce industry draft for comment of IGEM standard
- Amend GSMR to place general safety duties on gas conveyors
- Transfer the gas quality specification to an appropriately developed IGEM standard
  - Essential to reach agreed inter-related safety parameter
  - Essential for HSE control
GAS QUALITY STANDARD

• **Summary**
  – Future energy needs likely to be met mix of sources
    • GSMR Schedule 3 can be a barrier to change
    • Overwhelming evidence domestic safety is not an issue
  – Transferring schedule 3 to an IGEM Standard
    • Robust flexible and future proofed
    • Supports the change required to low carbon economy
  – Significant cost savings to the UK customers
  – Increased security of supply

www.igem.org.uk/technical-standards/working-groups/gas-quality.aspx
Thank you