



SAFETY AND LOSS PREVENTION

The Hydrogen Knowledge Centre, and developing policies for the network becoming hydrogen ready

16th June 2021

IGEM UPDATE

- **INTRODUCTION TO IGEM**
- **HYDROGEN COMMITTEE**
- **KEY STAKEHOLDER ACTIVITY**
 - BEIS HYDROGEN MANAGEMENT
 - RAENG UPDATE
- **STANDARDS ACTIVITY**
 - HYTECHNICAL STANDARDS UPSTREAM
 - HYDROGEN STANDARDS DOWNSTREAM
 - HYDROGEN QUALITY WORKING GROUP
- **POLICY AND RESEARCH HUB**
- **HYDROGEN KNOWLEDGE CENTRE**



nationalgrid

Cadent
Your Gas Network



Northern Gas Networks



About IGEM - Our Heritage

- Formed in 1863
- Awarded Royal Charter 1929
- Global Membership Individuals and Organisations
- Registered Charity
- Licensed by the Engineering Council for the award of professional titles
 - Engineering Technician (EngTech)
 - Incorporated Engineer (IEng)
 - Chartered Engineer (CEng)
- Standards for:
 - Transmission and distribution
 - Safety
 - Legislation
 - Measurement
 - Utilisation
 - General
 - Industry Guidance



Founded 1863
Royal Charter 1929
Patron: Her Majesty the Queen



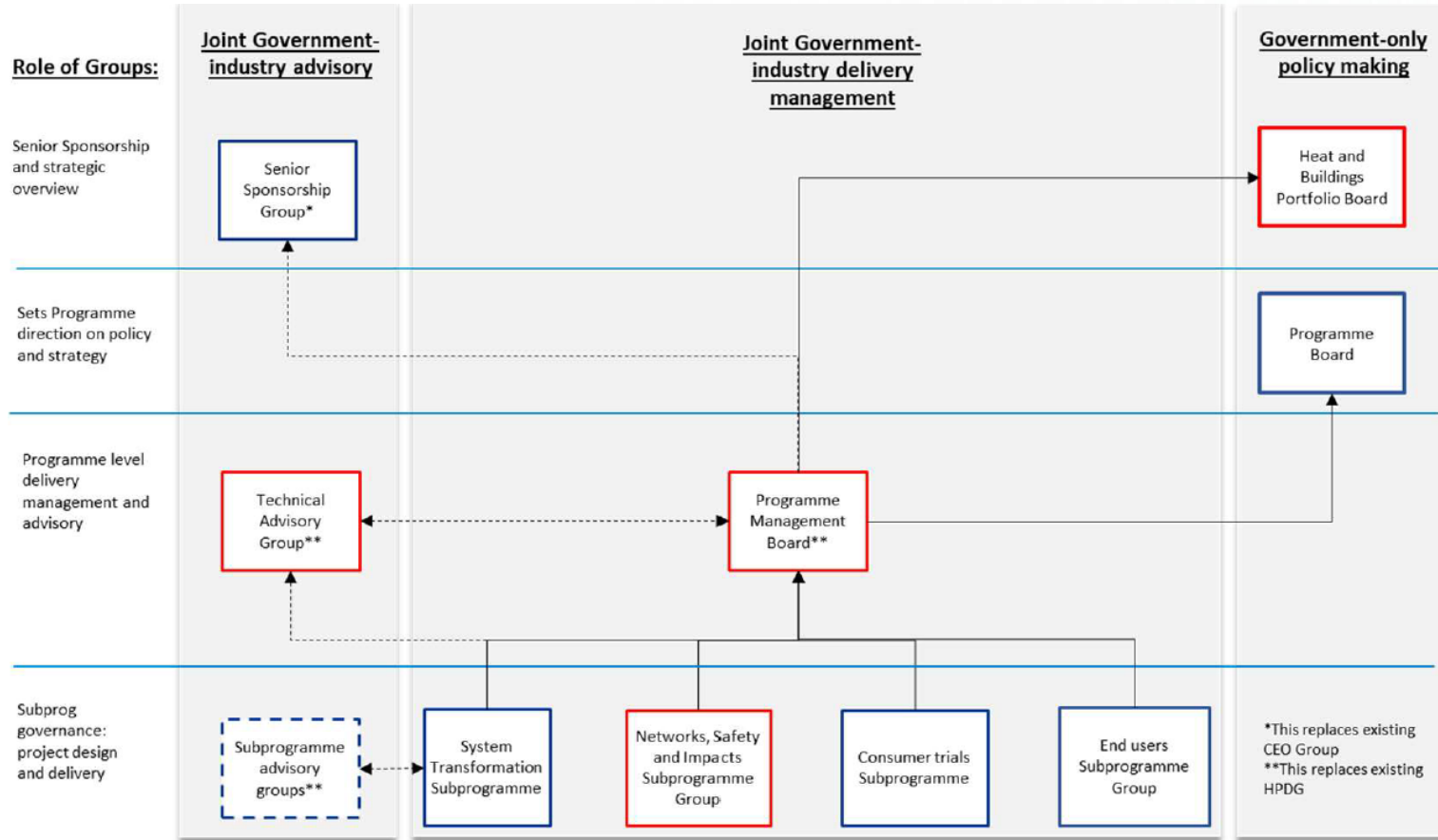
Hydrogen Committee



GreenFlame



BEIS HYDROGEN MANAGEMENT




 Department for
Business, Energy
& Industrial Strategy

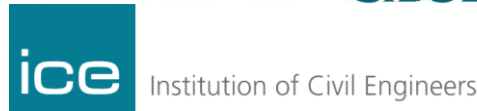
*This replaces existing
CEO Group
 **This replaces existing
HPDG

RAEng NEPC

NEPC and Net Zero

January 2020- ongoing

- Thought leadership and problem definition
- Applying systems thinking and methods
- Convening diverse stakeholders – not just engineering
- Working directly with government on policy challenges
- Raising cross-cutting issues: governance, infrastructure, digitisation, resilience & adaptation



HyTechnical - Standards for Hydrogen Transmission and Distribution



- **Workstream 1** – LTS Futures Work Packages Complete
 - Assessment of Operational Issues for PRIs and Other Installations for Hydrogen and Hydrogen/Natural Gas Service. Report Completed
 - Assessment of the Inspection, Maintenance and Repair Requirements for Hydrogen and Hydrogen/Natural Gas Mixture Pipelines. Report Completed
 - TD/1 BPDs and QRA plus Impact assessment on TD/1 parallel pipeline separation distances. Report Completed
- **Workstream 2** - Development of Supplements for Change of Use and New Build for Application of H₂ and NGH₂ Blends
 - TD/1, Steel pipelines and associated installations for high pressure gas transmission – Draft for Approval
 - TD/13 > 7 Bar Pressure regulating installations for natural gas – Draft for Approval
 - TD/13 < 7 Bar Pressure regulating installations for natural gas – Working Draft
 - TD/3, Steel and polyethylene (PE) pipelines for gas distribution – Working Draft
 - TD/4, Polyethylene (PE) and steel gas services and service pipework - Working Draft
- **Workstream 3** – Hazardous Area Assessments for H₂ and Natural Gas/H₂ Mixtures
 - SR/25 Supplement
 - Phase 1 report complete
 - Phase 2 – Kick off meeting 18th May completion November 2021
- **Workstream 4** – Venting
 - SR/23 Review of thermal radiation and noise for Hydrogen on going

Hydrogen Standards Downstream



Contents of IGEN/H/1 Hydrogen Reference Standard

Section 1 - Introduction

Section 2 - Scope

Section 3 - Legal and Allied Considerations

Section 4 – Background

Section 5 - Characteristics of Hydrogen

Section 6 - Effect on Materials

Section 7 – Effect on Application

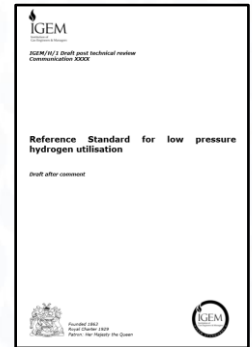
- Construction, flueing and ventilation
- Risk Assessment
- Hazardous Areas

Section 8 - Effect on Practices

- Metering
- Design and Installation of Pipework
- Appliance Installation
- Testing, Purging & Commissioning
- Detection & Response

Appendices

- Hydrogen Purity Standard
- Glossary, Acronyms & Symbols,
- References,
- Further detail,



Hydrogen Standards Downstream

The Competence Framework includes:

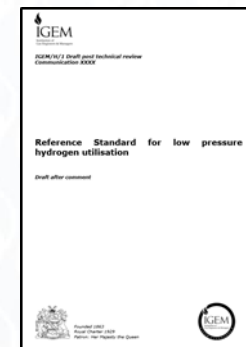
- Mapping of Hydrogen properties in comparison with familiar natural gas and LPG
- Identification of aspects that require changes to current installation, maintenance and repair practice
- Recognition of additional Skills, Knowledge and Understanding required for hydrogen installations
- A Training Specification aligned to IGEM/IG/1
- An ACoP Assessment Module approved by SMB
- Development of an **Interim** Technical Standard Needed to underpin both Training and Assessment
- Agreed and commissioned in November 2020
- Joint approach involving EU Skills and IGEM
- Two Stage consultation exercise due to completed in February
- Final Interim Standard scheduled for delivery to BEIS at the end of March
- Training Specification and Assessment Module to be referenced to that Standard

- Next Steps – post March Hy4Heat project has ended

Hydrogen Standards Downstream

Activities and Deliverables

Item	Activity	Description	Deliverable
1	Research Gap Definition and Closure Support	Defining research/required evidence (i.e., Questions to be answered) working with Mott MacDonald. Support to R&D Organisations and Evaluate Research. Includes latest learnings from the HKC	Updated Gaps in Standard
2	IGEM/H/1 Reference Standard Update	Assessment of new requirements for inclusion for commercial activities. Update references with latest reports. Close gaps. IGEM Committee oversight and approval.	New Version of the IGEM/H/1 Reference Standard
3	IGEM/H/2 Enabling Standard Domestic	Updated version of the interim standard with research and gap closure learnings. IGEM Committee oversight and approval	New IGEM/H/2 Enabling Standard for Domestic
4	IGEM/H/3 Enabling Standard Commercial	A comprehensive standard comprising elements of IGEM/UP/2 (pipework), IGEM/UP/1 (Test & Purge), IGEM/UP/16 (DSEAR) and Metering (IGEM/6,8,7b - Installations & Hazardous Areas). IGEM Committee Oversight and approval	New IGEM/H/3 Enabling Standard for Commercial
5	Training Specification	Supporting the content for the training and assessment specification and alignment with IGEM/H/1; IGEM/H/2 and IGEM/H/3	Training Specification (completed by EUS) including industry stakeholder workshops



HYDROGEN QUALITY WORKING GROUP

NEW IGEN WORKING GROUP

The scope of the group is expected to cover hydrogen impacts quality on :

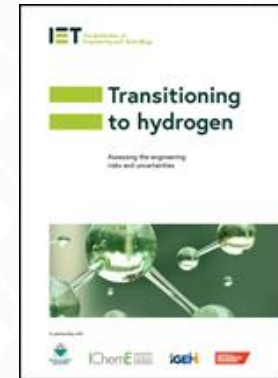
- production considering all manufacturing process of the gas. This will include, but not limited to, hydrogen produced from methane reforming, electrolysis and nuclear
- transmission and distribution systems including storage,
- consumer applications and connected to the local distribution and transmission networks converted to hydrogen.
- Transport (both Internal combustion engines and fuel cells) including refuelling stations connected to the gas grid
- Safety in all aspects of the production to consumption and how consumers are affected

Response to N1306 Draft CEN-TC 234 DEC 03/2021 - CIB NWIP for EN Hydrogen quality in converted natural gas systems

Policy and Research Hub

The Policy Research includes :

- Upcoming Publications and Events
- Policy Responses
- Industry Consultations
- Research Library



[Policy and research hub - IGEM](#)

Hydrogen Knowledge Centre

- A digital resource for everything related to Hydrogen energy.
- Searchable repository of over 2,100 hydrogen records
- Wide range of sources including
 - public agencies,
 - gas network companies,
 - academic and research institutions,
 - supply chain organisations and
 - Energy and engineering experts
- Launched on 17th March



[Hydrogen Knowledge Centre Launch Video](#)

Email: hydrogen@igem.org.uk

www.h2knowledgecentre.com

- **QUESTIONS?**