



NSAI

2021 ANNUAL ACTIVITY REPORT

GAS TECHNICAL STANDARDS COMMITTEE

1 Introduction

In 2021, the GTSC welcomed 10 new members to the various committees and regretfully saw the departure of 3 member of the GTSC. This year, a total of 74 experts, including outgoing members, participated in the work of the GTSC.

In June 2021, the GTSC welcomed a Hydrogen standardisation expert, seconded from Gas Networks Ireland to NSAI for two years. The hydrogen standardisation expert has been working closely with the GTSC secretary and committee members on building knowledge on hydrogen related activities and increasing stakeholder engagement as interest in the use of hydrogen grows within industry.

The GTSC had 62 national meetings, reviewed over 78 Irish, European and International standards and continued developing 4 national standards.

The GTSC monitors and participates in the work of approx. 62 CEN¹ and CENELEC Technical Bodies, (including working groups) and 7 ISO Technical Bodies, (including sub-committees and working groups).

2021 saw the publication of I.S. 328, *Gas pipelines and pipeline installations*.

Work continued in the revision of I.S. 813, *Domestic gas installations*, produced by TC 2.

Work commenced on the revision of 2 standards, I.S. 329, *Gas Distribution – Mains*, produced by TC 1 and I.S. 3216, *Code of practice - Bulk storage of liquefied petroleum gas (LPG)*

2 Scope of the Gas Technical Standards Committee (GTSC)

The work of NSAI/TC 01 Gas Technical Standards Committee (GTSC) covers all aspects of the supply and usage of natural gas, liquefied petroleum gas (LPG), liquefied natural gas (LNG), renewable gas (biomethane, bio LPG) and hydrogen. The membership of the committee is composed of key stakeholders/collective bodies that provide an authoritative and representative voice or policy role in the gas sector. GTSC members contribute their knowledge and expertise on a voluntary basis and advises the NSAI on what Irish standards and Codes of Practice are necessary for products and processes used in the gas industry, with regard to safety. The GTSC also supports the development of European (CEN) and International (ISO) gas related standards. The role of the associated sub-committees is defined in NSAI P-ST-01 and can be summarised as follows:

- To advise the NSAI regarding Irish Standards and Codes of Practice necessary for the transmission, distribution and utilisation of natural gas, LPG, LNG, renewable gases (biomethane, BioLPG and hydrogen) with particular regard to safety and to make recommendations as required;
- To draft appropriate documentation including Standards, Codes of Practice, Amendments and Safety Recommendations as necessary;
- To ensure that interested parties are consulted in the drafting of these Standards and Codes of Practice;
- To liaise with similar bodies in other EU countries and in particular CEN (European Committee for Standardisation) and ISO (International Organisation for Standardisation); and

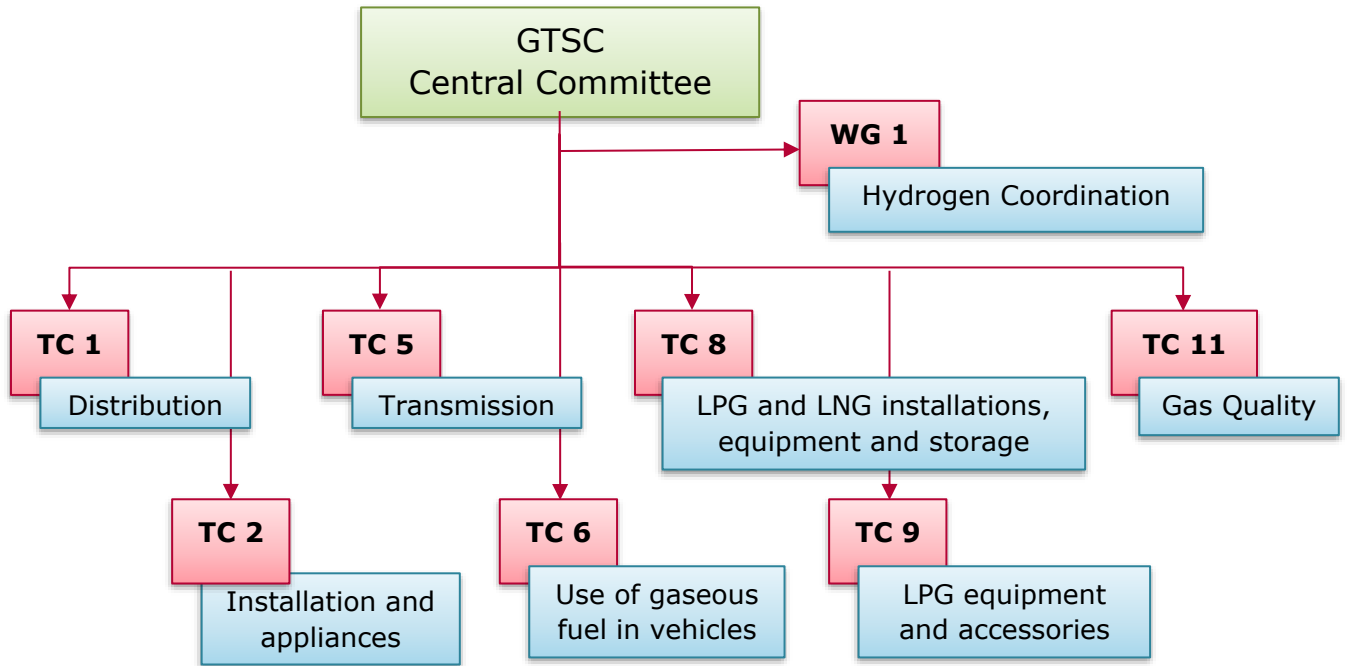
¹ The European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC) are two officially recognized European Standardization Organizations.

- To advise NSAI on how to vote on draft European and International Standards.

3 Structure and Membership

3.1 Structure

The GTSC is made up of a Central Committee governing 7 sub-committees and a working group as illustrated in the Figure below:



3.2 Members

The list below are the members for the year:

The GTSC Committees

The members of the GTSC participate on the committees as voluntary experts representing their associations and companies.

| CENTRAL COMMITTEE (CC) | |
|---|---|
| <p>The Central Committee oversees the activities of each sub-committee.</p> <p>The Central Committee convened 4 Plenary Meetings in 2021.</p> <p>Number of committee members: 14</p> | |
| Chairperson: | Mr. Liam Nolan, Gas Networks Ireland |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ All Chairs of each of the GTSC sub-committees ➤ Department of, Environment, Climate and Communications (DECC) ➤ Department of Housing, Local Government and Heritage (DHLGH) ➤ Health and Safety Authority (HSA) ➤ Commission for Regulation of Utilities (CRU) |

| NEW - GTSC CC WG 1 – Hydrogen Coordination | |
|---|---|
| <p>WG 1 supports the coordination of Hydrogen standardisation related information to be raised at the relevant GTSC sub-committees and manages the resolution of resulting actions and gaps in standardisation.</p> <p>The Working Group held 4 meetings in 2021.</p> <p>Number of committee members: 11</p> | |
| Chairperson: | Mr. Liam Nolan, Gas Networks Ireland |
| Technical Secretary | Ms. Niamh Conroy, NSAI (Incoming) |
| Supporting Secretary | Ms. Alice Hanly, NSAI |
| Represented by: | <ul style="list-style-type: none"> ➤ All Chairs of each of the GTSC sub-committees ➤ Commission for Regulation of Utilities (CRU) |

GTSC TC 1 – Distribution

TC 1 supports the development of national and international standards in the areas of the distribution of natural gas, LPG and renewables (biomethane, bio LPG and hydrogen) up to 16 bar. This includes services, distribution, PE pipe and fittings, and regulators.

The Technical Committee held 11 meetings in 2021.

Number of committee members: 18

| | |
|--|--|
| Chairperson: | Mr. James Burchill, Gas Networks Ireland |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Gas Networks Ireland ➤ Liquid Gas Ireland ➤ Commission for Regulation of Utilities (CRU) ➤ Jacobs Engineering ➤ Calor Gas ➤ AEC ➤ Pipelife |

GSTC TC 2 - Installation and Appliances

TC 2 supports the development of national and international standards in the areas of installation and appliances for natural gas, LPG and renewables (biomethane, bio LPG and hydrogen) in domestic and non-domestic premises.

The Technical Committee held 13 meetings in 2021.

Number of committee members: 18

Number of observers: 4

| | |
|--|--|
| Chairperson: | Mr. Liam Doyle, LGI |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Gas Networks Ireland ➤ Liquid Gas Ireland ➤ Commission for Regulation of Utilities (CRU) ➤ Calor Gas ➤ Bord Gáis Energy ➤ Flogas Ireland Ltd ➤ Register of Gas Installers of Ireland (RGII) ➤ Installer Review Panel (IRP) ➤ MecTec Gas Ltd. ➤ Glen Dimplex ➤ Independents ➤ Department of Enterprise, Trade and Employment ➤ NSAI/ETC/TC 002 (Liaison representative) |

GSCTC TC 5 - Transmission

TC 5 supports the development of national and international standards in the areas of the transmission of natural gas, LPG and renewables (biomethane, bio LPG and hydrogen) through pipelines and pipeline installations from 16 bar upwards. This includes compressor stations.

The Technical Committee held 6 meetings in 2021.

Number of committee members: 14

Number of observers: 5

| | |
|--|---|
| Chairperson: | Mr. Fergal O'Mahony, Fingleton White |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Gas Networks Ireland ➤ Neodyne ➤ Commission for Regulation of Utilities (CRU) ➤ Fingleton White ➤ Independent (PIE) |

GTSC TC 6 - Use of gaseous fuel in vehicles

TC 6 supports the development of national and international standards in the areas of the use of CNG, LNG and hydrogen in vehicles and associated refuelling stations.

This excludes CNG, LNG and Hydrogen propulsion systems in vehicles.

The Technical Committee held 3 meetings in 2021.

Number of committee members: 15

Number of observers: 1

| | |
|--|---|
| Chairperson: | Mr. Emmet Cregan, Gas Networks Ireland |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Gas Networks Ireland ➤ Bus Eireann ➤ Commission for Regulation of Utilities (CRU) ➤ Meath County Council, Fire Service ➤ Dublin City Council, Fire Service ➤ Circle K ➤ Calor Gas ➤ Health and Safety Agency ➤ Air Products ➤ Ervia ➤ Independent |

| GTSC TC 8 – LPG & LNG installations, equipment and storage | |
|--|--|
| <p>TC 8 supports the development of national and international standards in the areas of LPG and LNG storage, LPG cylinder filling, LPG refuelling facilities and LNG onshore installations and equipment. This excludes LNG and LPG propulsion systems in vehicles.</p> <p>The Technical Committee held 9 meetings in 2021.</p> <p>Number of committee members: 12</p> | |
| Chairperson: | Mr. Tim Richardson, Calor Gas |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Flogas Ireland Ltd. ➤ Calor Gas ➤ Liquid Gas Ireland (LGI) ➤ Gas Networks Ireland ➤ Chief Fire Officers Association ➤ Dublin City Council, Fire Service ➤ Health and Safety Agency |

| GTSC TC 9 - LPG equipment and accessories | |
|--|--|
| <p>This committee monitors Irish participation in the pressure vessel and the Transport of Dangerous Goods area at CEN (particularly CEN /TC 286) and ISO meetings.</p> <p>The Technical Committee held 5 meetings in 2021.</p> <p>Number of committee members: 4</p> | |
| Chairperson: | Mr. Paul O’Connell, Flogas Ireland Ltd |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Represented by: | <ul style="list-style-type: none"> ➤ Flogas Ireland Ltd. ➤ Calor Gas ➤ Health and Safety Agency (HSA) |

GTSC TC 11 – Gas Quality

TC 11 supports the development of national and international standards in the areas of gas quality including the specification and analysis of natural gas, LPG, renewables (biomethane, BioLPG) and hydrogen.

The Technical Committee held 6 meetings in 2021.

Number of committee members: 14

Number of observers: 5

| | |
|--|--|
| Chairperson: | Mr. Michael Crowley, Gas Networks Ireland |
| Technical Secretary | Ms. Alice Hanly, NSAI |
| Hydrogen Standardisation Expert | Ms. Niamh Conroy, NSAI (Incoming) |
| Represented by: | <ul style="list-style-type: none"> ➤ Gas Networks Ireland ➤ Flogas ➤ Vermillion Energy ➤ Active Energy Control Ltd (AEC) ➤ Gas Analysis Services Limited ➤ Commission for Regulation of Utilities ➤ Ervia ➤ Renewable Gas Forum ➤ ESB |

5 Summary of 2021 Activities

5.1 National Work

5.1.1 National Meetings

| | Meeting | Date |
|-----|--------------------------------------|-------------|
| 1. | Central Committee | 23/02/2021 |
| 2. | Central Committee | 19/05/2021 |
| 3. | Central Committee | 24/08/2021 |
| 4. | Central Committee | 24/11/2021 |
| 5. | WG 1 Hydrogen Coordination | 23/06/2021 |
| 6. | WG 1 Hydrogen Coordination | 05/08/2021 |
| 7. | WG 1 Hydrogen Coordination | 07/10/2021 |
| 8. | WG 1 Hydrogen Coordination | 13/12/2021 |
| 9. | TC 1 Gas Distribution | 27/01/2021 |
| 10. | TC 1 Gas Distribution | 24/02/2021 |
| 11. | TC 1 Gas Distribution | 31/03/2021 |
| 12. | TC 1 Gas Distribution | 12/05/2021 |
| 13. | TC 1 Gas Distribution | 09/06/2021 |
| 14. | TC 1 Gas Distribution | 21/07/2021 |
| 15. | TC 1 Gas Distribution | 07/09/2021 |
| 16. | TC 1 Gas Distribution | 08/10/2021 |
| 17. | TC 1 Gas Distribution | 29/10/2021 |
| 18. | TC 1 Gas Distribution | 19/11/2021 |
| 19. | TC 1 Gas Distribution | 17/12/2021 |
| 20. | TC 2 Gas installation and appliances | 26/01/2021 |
| 21. | TC 2 Gas installation and appliances | 09/02/2021 |
| 22. | TC 2 Gas installation and appliances | 25/02/2021 |
| 23. | TC 2 Gas installation and appliances | 23/03/2021 |
| 24. | TC 2 Gas installation and appliances | 30/03/2021 |
| 25. | TC 2 Gas installation and appliances | 18/05/2021 |
| 26. | TC 2 Gas installation and appliances | 17/06/2021 |
| 27. | TC 2 Gas installation and appliances | 15/07/2021 |
| 28. | TC 2 Gas installation and appliances | 05/08/2021 |
| 29. | TC 2 Gas installation and appliances | 09/09/2021 |
| 30. | TC 2 Gas installation and appliances | 12/10/2021 |
| 31. | TC 2 Gas installation and appliances | 11/11/2021 |
| 32. | TC 2 Gas installation and appliances | 02/12/2021 |
| 33. | TC 2 Gas installation and appliances | 14/12/2021 |
| 34. | TC 5 Gas transmission | 04/02/2021 |
| 35. | TC 5 Gas transmission | 14/04/2021 |
| 36. | TC 5 Gas transmission | 03/06/2021 |
| 37. | TC 5 Gas transmission | 16/09/2021 |
| 38. | TC 5 Gas transmission | 03/11/2021 |
| 39. | TC 5 Gas transmission | 15/12/2021 |
| 40. | TC 6 Use of gaseous fuel in vehicles | 04/03/2021 |
| 41. | TC 6 Use of gaseous fuel in vehicles | 13/05/2021 |
| 42. | TC 6 Use of gaseous fuel in vehicles | 19/08/2021 |

| | Meeting | Date |
|-----|---|-------------|
| 43. | TC 8 LPG & LNG installations, equipment and storage | 16/02/2021 |
| 44. | TC 8 LPG & LNG installations, equipment and storage | 29/03/2021 |
| 45. | TC 8 LPG & LNG installations, equipment and storage | 20/04/2021 |
| 46. | TC 8 LPG & LNG installations, equipment and storage | 25/05/2021 |
| 47. | TC 8 LPG & LNG installations, equipment and storage | 22/06/2021 |
| 48. | TC 8 LPG & LNG installations, equipment and storage | 20/07/2021 |
| 49. | TC 8 LPG & LNG installations, equipment and storage | 10/09/2021 |
| 50. | TC 8 LPG & LNG installations, equipment and storage | 19/10/2021 |
| 51. | TC 8 LPG & LNG installations, equipment and storage | 25/11/2021 |
| 52. | TC 9 LPG equipment and accessories | 05/02/2021 |
| 53. | TC 9 LPG equipment and accessories | 21/05/2021 |
| 54. | TC 9 LPG equipment and accessories | 28/05/2021 |
| 55. | TC 9 LPG equipment and accessories | 16/07/2021 |
| 56. | TC 9 LPG equipment and accessories | 31/08/2021 |
| 57. | TC 9 LPG equipment and accessories | 26/11/2021 |
| 58. | TC 11 Gas quality | 10/03/2021 |
| 59. | TC 11 Gas quality | 11/15/2021 |
| 60. | TC 11 Gas quality | 13/07/2021 |
| 61. | TC 11 Gas quality | 18/10/2021 |
| 62. | TC 11 Gas quality | 18/11/2021 |

5.1.2 National Standards

The national work activities carried out by each of the GTSC sub-committees in 2021 included the following:

| Committee | Work item |
|--|---|
| TC 1 Gas distribution | <ul style="list-style-type: none"> Revision of I.S. 329:2015, <i>Gas distribution mains</i> – Work commenced on revising I.S. 329. Public enquiry is envisaged to be launched in 2022. |
| TC 2 Gas installation and appliances | <ul style="list-style-type: none"> Revision of I.S. 813, <i>Domestic gas installations</i> – Work continued on revising I.S. 813. Public enquiry is envisaged to be launched in 2022 |
| TC 5 Gas transmission | <ul style="list-style-type: none"> Revision of I.S 328, <i>Gas Transmission Pipelines and Pipeline Installations</i> - The comments received from the public enquiry were addressed and the revised document was published in July 2021. |
| TC 8 LPG & LNG installations, equipment and storage | <ul style="list-style-type: none"> I.S. 3216, <i>Code of practice for the Bulk Storage of Liquefied Petroleum Gas</i> – Work commenced on revising I.S. 3216. Public enquiry is envisaged to be launched in 2022. |

5.1.3 Secondment of a Hydrogen Standardisation Expert from GNI to NSAI

Currently, NSAI has several standards committees working in climate action related areas such as wind energy, solar energy, alternative fuels in transport, electrification of heat and transport, and the circular economy. More recently, the area of hydrogen energy is one in which NSAI is supporting new cross-disciplinary standards work. In June 2021, NSAI and Gas Networks Ireland started a two-year secondment to work on standardisation activities relating to hydrogen. Recognising the fuel as a relatively new area with great potential to be adopted nationwide, a Hydrogen Standardisation Expert was appointed, Ms. Niamh Conroy. Ms. Conroy has over 13 years' experience in Gas Networks Ireland, predominately in the area of Transmission Operations.

This role is to increase Ireland’s pool of knowledge relating to hydrogen standardisation, drawing on the widest possible panel of experts including Irish academia, industry experts and research bodies. Collaborating with NSAI’s counterparts across Europe, these experts will then work to create a new and improved suite of hydrogen Standards. This new venture aligns with the Government’s commitment to invest into the research and development of hydrogen energy, and ultimately, it will facilitate informed decision making around standards for the use of this new fuel in Ireland and beyond, helping to drive climate-neutral policies.

Key Activities of Hydrogen Standardisation Expert:

1. Following all international work and national areas of interest

As well as participating in the GTSC sub-committees, the Hydrogen Standardisation Expert has participated on the following international committees following all hydrogen related standardisation activities:

| Committee Reference | Committee title |
|---------------------|---|
| ISO/TC 197 | Hydrogen technologies |
| CEN/TC 234 | Gas infrastructure (and all working groups) |
| CEN/CLC/JTC 6 | Hydrogen in energy systems |

2. Formation of Hydrogen Working Group

A Hydrogen working group was formed, which reports directly into the GTSC Central Committee. This working group provides a dedicated platform for the hydrogen standardisation expert to update members on the ongoing hydrogen related activities and allow for discussion on this specific area. The working group predominantly consists of the Chairs of each GTSC sub-committee with a growing number of members with an interest or expertise in hydrogen. The working group is chaired by Mr. Liam Nolan and Ms. Niamh Conroy is the supporting secretary.

The current activities of the working group include:

- Monitoring the progress of the EC-CEN/GERG Pre-normative research project on hydrogen/natural gas blends (see 5.2.1.1) where information is identified for circulation and discussion with relevant GTSC sub-committees;
- Information gathering from Ireland, relating to H2 projects and studies, including engagement with stakeholders working in area of hydrogen and recruitment of experts onto the appropriate GTSC sub-committee.

3. Promotion of Hydrogen standardisation

The Hydrogen Standardisation Expert helps NSAI with identifying events of interest to attend whether it is to learn, network or promote hydrogen standardisation.

Work has also been done on hosting national webinars relating to promoting the work of NSAI and hydrogen standardisation.

4. Recruitment of New Experts / Increasing Collaboration

There will be a number of calls for experts, as the hydrogen standardisation activities progress. By facilitating collaboration between Ireland’s policy makers, researchers and industry experts, the Authority can support Ireland’s pursuit of climate neutrality by getting ‘ahead of the curve’ and ensuring best international practice through standards.

5.2 International Work

5.2.1 International Meeting Attendance

GTSC members closely monitored and attended the following CEN and ISO Technical Committees in 2021. These delegates reported back to the appropriate GTSC committees. The members attended the Plenary meetings as Irish Delegates representing the Irish position and voted accordingly. The members attended the Working Group meetings as Experts and represented the position of the GTSC and their company in the drafting of standards.

The GTSC reviewed a total of 135 out of 304 ballots (44%). 19 of the 135 votes were cast with comments.

The GTSC participate and monitor, at various levels of engagement, 34 CEN and ISO Technical Committees:

| Committee Reference | Committee title |
|---------------------|---|
| CEN/TC 19/WG 23 | Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin - Specification of automotive LPG and related test method |
| CEN/TC 23/SC 1 | Cylinder design |
| CEN/TC 23/SC 3 | Operational requirements |
| CEN/TC 48 | Domestic gas-fired water heaters" |
| CEN/TC 49 | Gas cooking appliances |
| CEN/TC 58 | Safety and control devices for burners and appliances burning gaseous or liquid fuels |
| CEN/TC 62 | Independent gas-fired space heaters" |
| CEN/TC 106 | Large kitchen appliances using gaseous fuels |
| CEN/TC 109 | Central heating boilers using gaseous fuels |
| CEN/TC 131 | Gas burners using fans |
| CEN/TC 155 WG 12 | Pressure systems of polyolefin material for gas supply, water supply and drainage and sewerage |

| Committee Reference | Committee title |
|----------------------------|---|
| CEN/TC 181 | Dedicated liquefied petroleum gas appliances |
| CEN/TC 219 | Cathodic protection |
| CEN/TC 234 | Gas infrastructure |
| CEN/TC 236 | Non industrial manually operated shut-off valves for gas and particular combinations valves-other products" |
| CEN/TC 237 | Gas meters |
| CEN/TC 238 | Test gases, test pressures, appliance categories and gas appliance types (mirror to ISO/TC 193/SC 01) |
| CEN/TC 268 | Cryogenic vessels |
| CEN/TC 268/WG 5 | Cryogenic vessels - Specific hydrogen technologies applications |
| CEN/TC 282 | Installation and equipment for LNG |
| CEN/TC 286 | LPG equipment and accessories |
| CEN/TC 296 | Tanks for the transport of dangerous goods |
| CEN/TC 299 | Gas-fired sorption appliances, indirect fired sorption appliances, gas-fired endothermic engine heat pumps and domestic gas-fired washing and drying appliances." |
| CEN/TC 326 | Natural Gas Vehicles - Fuelling and Operation |
| CEN/TC 408 | Natural gas and biomethane for use in transport and biomethane for injection in the natural gas grid |
| CLC/TC 216 | Gas detectors |
| CEN/CLC/JTC 006 | Hydrogen in energy systems |
| CEN/CLC/JTC 014 WG 5 | Guarantees of Origin related to energy" |
| CEN/CLC/JTC 017 | Gas Appliances with Combined Heat and Power |
| ISO/TC 058/SC 02 | Gas cylinders - Cylinder fittings |
| ISO/TC 058/SC 04 | Gas cylinders - Operational requirements for gas cylinders |
| ISO/TC 067/SC 02 | Pipeline transportation systems |
| ISO/TC 067/SC 09 | Liquefied natural gas installations and equipment |
| ISO/TC 138/SC 04 | Plastics pipes and fittings for the supply of gaseous fuels |
| ISO/TC 193/SC 01 | Analysis of natural gas |
| ISO/TC 197 | Hydrogen technologies |

As part of the GTSC's ongoing review, each sub-committee reviewed its participation on international committees, where individual committee members were nominated to participate and represent NSAI.

5.2.1.1 International study in standardisation

EC-CEN/GERG PNR project '*Removing the technical barriers to use of hydrogen in natural gas networks and for (natural) gas end users*'

The European Commission and CEN commissioned a pre-normative research (PNR) study, contracted to the European Gas Research Group (GERG). The aim of the study is to provide a final report on the status of knowledge for 8 identified priorities for the introduction of hydrogen, as blended H2NG or as 100% hydrogen. A Supervisory Body was established under CEN/TC 234 Gas infrastructure (WG 13) acting as a steering group to ensure the appropriate inclusion of the project results into standardisation.

The objectives of the study are as follows:

- To perform detailed knowledge surveys on the 8 priorities
- To develop a detailed understanding of the state of the art relating to hydrogen injection in the gas networks based on international information sources
- To understand gaps in knowledge and develop proposed plans for mitigation
- To develop recommendations which include planned PNR activities to lower or remove barriers
- To understand the benefits of these actions versus business as usual and to establish costs of removal of barriers wherever possible

The 8 identified priority areas are:

1. Safety
2. Gas Quality
3. Underground Storage
4. Power generation and engines
5. Industry
6. Steel pipes
7. Network Equipment
8. End use appliances

The GTSC monitored the progress of this project and provided input as needed. With the appointment of a Hydrogen Standardisation Expert and the formation of a Hydrogen Working group, the GTSC has been able to review the output of this PNR project and provide collective and carefully considered input into the information gathered.

The project has come to its final stage, and it is envisaged to see a final report from GERG in early 2022. This report will identify further research needs and assist in the development of a work programme for the development of new standards and revision of existing standards.

5.2.1.2 CEN Technical Committees

CEN/TC 234 – Gas infrastructure

Date: 22nd April 2021 - Virtual

4 Irish representatives

The TC is responsible for standards produced for natural gas infrastructures from the input of gas into the onshore transmission network up to the inlet connection of gas appliances.

The TC is currently focusing on the impact of Hydrogen on gas infrastructure, see 5.2.1.1 on details of the PNR project.

The GTSC focused on the work of the following CEN/TC 234 working groups, which are each represented by a nationally nominated expert:

WG 2 Gas supply systems up to and including 16 bar and pressure testing

WG 3 Gas Transportation

WG 5 Gas measuring

WG 6 Gas pressure regulation

WG 7 Gas compression

WG 10 Service Lines

Mr. David Hughes (Convenor)

Ms Alice Hanly, NSAI (Secretary support)

WG 11 Gas Quality

WG 12 Safety and Integrity management

WG 13 H2NG PNR Supervisory Group

WG 14 Methane Emissions

The above national representatives provided input into their associated working group on the standards drafting of the following work programme of CEN/TC 234. The GTSC sub-committees have been paying particular attention to CEN/TC 234 related standardisation, the documents are revised to reflect blending of hydrogen in the existing gas infrastructure.

CEN/TC 234 Work programme 2021

| Standard Reference | Standard Title |
|---------------------|---|
| CEN/TS 12007-6:2021 | Gas infrastructure - Pipelines for maximum operating pressure up to and including 16 bar - Part 6: Specific functional recommendations for unplasticized polyamide (PA-U) |
| EN 12732:2021 | Gas infrastructure - Welding steel pipework - Functional requirements |
| FprEN 15001-2 | Gas supply systems - Gas installation pipework with an operating pressure greater than 0,5 bar for industrial installations and greater than 5 bar for industrial and non-industrial installations - Part 2: Detailed functional requirements for commissioning, operation and maintenance |
| FprEN 15001-1 | Gas Infrastructure - Gas installation pipework with an operating pressure greater than 0,5 bar for industrial installations and greater than 5 bar for industrial and non-industrial installations - Part 1: Detailed functional requirements for design, materials, construction, inspection and testing |

CEN/TC 234 Work programme 2021

| Standard Reference | Standard Title |
|---------------------------|---|
| FprEN 12583 | Gas Infrastructure - Compressor stations - Functional requirements |
| prEN XXX | Gas infrastructure - Injection stations - Part 1 General requirements |
| prEN XXX | Gas infrastructure - Injection stations - Part 2: Specific requirements regarding the injection of biomethane |
| prEN XXX | Gas infrastructure - Injection station - Part 3: Specific requirements regarding the injection of hydrogen fuel gas |
| FprEN 17649 | Gas infrastructure - Safety Management System (SMS) and Pipeline Integrity Management System (PIMS) - Functional requirements |
| prCEN/TS XXX | Methodology for methane emissions quantification for gas transmission, distribution and storage systems and LNG terminals |
| prEN 1594 rev | Gas infrastructure - Pipelines for maximum operating pressure over 16 bar - Functional requirements |
| prEN XXX | Gas infrastructure - Quality of gas - Hydrogen used in converted/rededicated gas systems |
| prCEN/TR 17797 | Gas infrastructure - Consequences of hydrogen in the gas infrastructure and identification of related standardisation need in the scope of CEN/TC 234 |

CEN Sector Forum Gas (SFG)

The Sector Forum Gas gives direction to the CEN Technical Committees in the specific gas sectors and makes recommendations proposed by the Member States that are in turn addressed by the Technical Committees.

SFG – Infrastructure

Date: 21st April 2021 - Virtual

3 Irish representatives

CEN/TC 49 – Gas cooking appliances

Dates: January, February, March, September, October, November 2021 (9 meetings)

1 Irish representative

This committee is responsible for the domestic cooking appliances burning gas standards in Europe EN 30 series which are harmonised to the Gas Appliance Regulations.

CEN/TC 109 - Central heating boilers using gaseous fuels

Date: 10th November 2021

2 Irish representatives

This committee is responsible for all the gas-fired central heating boilers, including the boilers of the condensing type, with or without integrated domestic hot water production, of all types and all nominal inputs, but only for the specific characteristics suited to the utilisation of gaseous fuels.

CEN/TC 237 – Gas meters

Date: 14th April 2021
19th October 2021

1 Irish representative

This committee deals with the requirements for the construction, performance and safety of gas meters, including diaphragm, rotary displacement, turbine, ultrasonic domestic gas meters, and all associated conversion devices.

The TC is currently focusing on the impact of Hydrogen on gas meters.

CEN/TC 326 – Natural Gas Vehicles - Fuelling and Operation

Date: 9th April 2021
5th November 2021

1 Irish representative

This committee is responsible for standards for the design, construction, operation, inspection, safety and maintenance of fuelling stations and facilities for natural gas vehicles (NGV's). It includes natural gas and biomethane in compressed (CNG) or liquefied (LNG) form and covers the operational aspects of NGV's during their life cycle.

The GTSC TC 6 focused on the work of the following CEN/TC 326 working groups, which are each represented by a nationally nominated expert:

WG 1 - CNG fuelling stations
WG 3 - CNG vehicle use and operation
WG 4 - LNG fuelling stations
WG 5 - LNG vehicle use and operation
WG 6 - NGV fuelling appliances

CEN/TC 326 commenced standardisation work on LNG related items, notably LNG fuelling stations and vehicle use and operation, which has been closely monitored by GTSC TC 6.

CEN/TC 408 – Natural Gas and biomethane for use in transport and biomethane for injection in the natural gas grid

This committee is responsible for specifications for natural gas and biomethane as vehicle fuel and of biomethane for injection in the natural gas grid, including any necessary related methods of analysis and testing. Standardization of specifications for biogas production (methanisation, gasification and methanation). Mirror committee of ISO/TC 255 'Biogas'.

CEN/TC 286 – LPG equipment and accessories

This TC is responsible for producing standards for the design, manufacture and operational maintenance of LPG pressure vessels, cylinders and associated valves. The Secretariat of CEN/TC 286 is held by NSAI, with Ms Alice Hanly as the Secretary.

CEN/TC 286 held its 37th Plenary Meeting on the 28th April 2021 as a virtual meeting, given the circumstances at the time with regards to travel restrictions due to COVID-19. 32 committee members were in attendance, including Irish Delegates.

There were 21 WG meetings held throughout the year as follows:

WG 1 – LPG pressure vessels

5 meetings in 2021

April, June, July, August 2021,

WG 2 – Valves

4 meetings in 2021

June, September, October, December 2021

Mr. P. O’Connell, Flogas Ireland Ltd (Convenor)

Ms A. Hanly, NSAI (Secretary support)

WG 5 – Road Tankers

3 meetings in 2021

March, June, September 2021

WG 6 – Automotive Systems

3 meetings in 2021

April, May July 2021

WG 7 – Operation of cylinders and tanks

4 meetings in 2021

March June, October 2021

WG 8 – LPG pipework

2 meetings in 2021

February, April 2021

Mr. J. Quigley, NSAI (Secretary support) (Incoming)

WG 9 – LPG propulsion systems for recreational craft

No meetings in 2021

Ms A. Hanly, NSAI (Secretary)

WG 10 – Environment

No meetings in 2021

Ms A. Hanly, NSAI (Secretary)

WG 11 – Terminology

No meetings in 2021

Ms A. Hanly, NSAI (Secretary)

CEN/TC 286 progressed 25 work items in 2021, including the completion and publication of 7 standards.

The following standards were published in 2021:

| Standard Reference | Standard Title |
|--------------------|--|
| EN 15609:2021 | LPG equipment and accessories - LPG propulsion systems for boats, yachts and other watercraft - Installation requirements |
| EN 13760:2021 | LPG equipment and accessories - Automotive LPG filling system for light and heavy-duty vehicles - Nozzle, test requirements and dimensions |
| EN 16119:2021 | LPG equipment and accessories - Sealing caps and plugs for LPG cylinder and pressure vessel valves - Specification and testing |
| EN 14894:2021 | LPG equipment and accessories - Cylinder and drum marking |
| EN 1439:2021 | LPG equipment and accessories - Procedure for checking transportable refillable LPG cylinders before, during and after filling |
| EN ISO 14245:2021 | Gas cylinders - Specifications and testing of LPG cylinder valves - Self-closing (ISO 14245:2021) |
| EN ISO 15995:2021 | Gas cylinders - Specifications and testing of LPG cylinder valves - Manually operated (ISO 15995:2021) |

CEN/TC 286 continued the revision of 3 harmonised standards for reference in the Official Journal of the European Union (OJEU) in support of Directive 2014/68/EU on Pressure Equipment, with the aim to publish in 2022.

| Standard Reference | Standard Title |
|--------------------|---|
| FprEN 13799 | LPG equipment and accessories - Contents gauges for Liquefied Petroleum Gas (LPG) pressure vessels |
| prEN 14071 | LPG equipment and accessories - Pressure relief valves for LPG pressure vessels - Ancillary equipment |
| prEN 14129 | LPG Equipment and accessories - Pressure relief valves for LPG pressure vessels |

1 new standard was progressed to Enquiry with the aim to publish in 2022:

| Standard Reference | Standard Title |
|--------------------|--|
| FprEN 17613 | LPG equipment and accessories – Composite piping for use with LPG in liquid phase and vapour pressure phase - Design and manufacture |

CEN/CLC/JTC 006 - Hydrogen in energy systems

Dates: 11th February 2021
 13th April 2021
 15th September 2021

4 Irish representatives

This Joint Technical Committee is responsible for standardization in the field of systems, devices and connections for the production, storage, transport and distribution, measurement and use of hydrogen from renewable energy sources and other sources, in the context of the European strategy for the development and acceptance of the hydrogen market. The scope includes cross cutting items such as: terminology, Guarantee of Origin, interfaces, operational management, relevant hydrogen safety issues, training and education.

CEN/CLC/JTC 014 WG 5 Guarantees of Origin related to energy

Date: 16th December 2021

1 Irish representative

This Joint Technical Committee, CEN/CLC/JTC 14 is responsible for standardization in the field of energy management within the energy transition framework in close coordination with CEN/CENELEC sectorial strategy.

The GTSC is particularly monitoring the work related to Energy measurement and monitoring, CEN/CLC/JTC 14 WG 5 *Guarantees of origin related to energy*.

CEN/CLC/JTC 14 WG 5 are currently revising EN 16325, *Guarantees of Origin for electricity, gaseous hydrocarbons, and hydrogen, and heating & cooling*, which is being updated to reflect hydrogen and biomethane. This committee is working closely with CNE/CLC/JTC 6 Hydrogen in energy systems.

5.2.1.3 ISO Technical Committees

ISO TC 58 SC 2 Cylinder fittings

This committee is a sub-committee of TC 58 - Gas cylinders, which is responsible for the standardization of gas cylinders and other pressure receptacles, their fittings and requirements relating to their manufacture and use. The plenary meeting is represented by Irish delegate, Mr. Paul O'Connell, Convenor of ISO/TC 58/SC 2/WG 12 *Cylinder fittings*.

ISO TC 58 SC 2 WG 12 Cylinder fittings

Mr. Paul O'Connell, Convenor

Ms. Alice Hanly, Supporting Secretary

The WG is responsible for producing standards for LPG cylinder valves. This WG has an agreement with CEN/TC 286 to develop ISO 15995, *Gas cylinders - Specifications and testing of LPG cylinder valves - Manually operated* and ISO 14245 *Gas cylinders - Specifications and testing of LPG cylinder valves - Self-closing* in parallel with the development of EN ISO 15995, EN ISO 14245. A minor revision of each standard was completed and published in early 2021. In late 2021 an amendment of each standard was commenced.

ISO TC 197 Hydrogen technologies

Dates: 8th, 9th, 10th December 2021

Irish representatives: Ms Niamh Conroy, Hydrogen Standardisation Expert

This Technical Committee is responsible for standardization in the field of systems and devices for the production, storage, transport, measurement and use of hydrogen.

This WG is responsible for producing the following standards:

- ISO 14687: 2019 -Hydrogen fuel quality —Product specification -this includes hydrogen quality for both fuel cell applications and combustion applications.
- ISO/TR 15916: 2015 -Basic considerations for the safety of hydrogen systems
- ISO 26142: 2010 -Hydrogen detection apparatus —Stationary applications

A sub-committee, ISO/TC 197/SC 1, has been approved to be created. SC1 anticipates collaboration with CEN/TC234 on addressing energy systems integrated with blended fuels (H2NG) gas networks.

ISO/TC/197 is working with CEN/TC 234 to most effectively progress the development of standards in the following areas

- Hydrogen quality requirements for combustion appliances;
- Hydrogen quality requirements for industrial power generation;
- Requirements for hydrogen combustion applications;
- Requirements for electrolysers when used for injection into the natural gas grid / a repurposed gas grid if different;
- Requirements for electrolysers when used for electrical grid balancing;
- Input into CEN TC 234 WG6 work on injection of renewable gases
- Requirements for vehicles operating on mixtures of compressed hydrogen and natural gas above 2% (the current limit in EN 16723-2), including interoperability requirements for the interface with fuelling stations.

Ireland also monitored the following ISO committees in 2021

ISO /TC 67/SC 2 – Pipeline transportation systems

ISO/TC 138 – Plastics pipes, fittings and valves for the transport of fluids

ISO/TC 193 – Natural gas

ISO/TC 185 – Safety devices for protection against excessive pressure

ISO/PC 252 – Project committee: Natural gas fuelling stations for vehicles

5.2.2 International standards

The main international work activities carried out by the GTSC in 2021 included the following:

| Committee | Work item |
|---|---|
| All GTSC committees | <ul style="list-style-type: none"> Review of FprCEN/TR 17797, <i>Gas infrastructure – Consequences of hydrogen in the gas infrastructure and identification of related standardisation need in the scope of CEN/TC 234</i> – All GTSC sub-committees reviewed this document, where comments raised were collated by the Hydrogen Standardisation Expert and submitted with approval. |
| TC 1 Distribution | <ul style="list-style-type: none"> Review of the revised suite of EN 1555:2021 <i>Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE)</i> and its associated national annexes, where it was decided to drop the national annexes and insert any further information into the updated I.S. 329 revision. |
| TC 2 Installation and appliances | <ul style="list-style-type: none"> Review of FprEN 1949, <i>Specification for the installation of LPG systems for habitation purposes in leisure accommodation vehicles and accommodation purposes in other vehicles</i> – TC 2 voted to approve this document. Review of FprEN 30-1-1, <i>Domestic cooking appliances burning gas - Part 1-1: Safety – General</i> – TC 2 voted to approve this document. |
| TC 5 Transmission | <ul style="list-style-type: none"> Monitoring of the development of EN 1594 <i>Gas infrastructure - Pipelines for maximum operating pressure over 16 bar - Functional requirements</i> – awaiting enquiry period in 2022. Review of prEN 12583, <i>Gas Infrastructure - Compressor stations - Functional requirements</i> – TC 5 voted to approve the enquiry draft with the submission of comments. Review of prEN 17649, <i>Gas infrastructure - Safety Management System (SMS) and Pipeline Integrity Management System (PIMS) - Functional requirements</i> – TC 5 voted to approve the enquiry draft with the submission of comments. Monitoring the development of the new standards on Injection Stations for biomethane and hydrogen – awaiting enquiry period in 2022. Monitoring the development of the new CEN/TS on Methodology for methane emissions quantification – awaiting TC vote in 2022. |
| TC 6 Use of gaseous fuel in vehicles | <ul style="list-style-type: none"> Review of FprEN 17278, <i>Natural gas vehicle (NGV) refuelling appliances</i> – TC 6 voted to approve the formal vote draft with submission of comments. Review of draft CEN/CLC Guide 37 <i>Multifuel stations</i> Monitoring of the development of the new standards on LNG (un)loading coupling for mobile LNG storage, unloading ESD systems and LNG workshops. |

| Committee | Work item |
|---|--|
| TC 9 LPG equipment and accessories | <ul style="list-style-type: none">Review of 60 ballots launched by CEN/TC 23, CEN/TC 69, CEN/TC 286, CEN/TC 296, ISO/TC 58/SC 2 & ISO/TC 58/SC 4. |
| TC 11 Gas Quality | <ul style="list-style-type: none">Review of EN 16726:2015+A1:2018, <i>Gas infrastructure - Quality of gas - Group H</i> – TC 11 voted to revise this document along with submission of comments. |

6 Work programme for 2022

The GTSC will undertake the following work in 2022:

- **GTSC** will continue to focus on the extension of its scope to include renewable gas, Hydrogen and LNG. Experts from within these areas will be invited to join the relevant sub-committees. Focus will be continued on the recruitment of experts from the area of hydrogen.
- **GTSC TC 1** will continue to monitor and review the development of European and International Standards in CEN/TC 155/WG12, CEN/TC 234, CEN/TC 237 and ISO/TC 138 SC2.
- **GTSC TC 1** will continue the revision of I.S. 329:2015, *Gas distribution mains* with public enquiry envisaged to be launched in Q3 2022.
- **GTSC TC 2** will continue to monitor and review the development of European and International Standards in CEN/TC 049, CEN/TC 048, CEN/TC 058, CEN/TC 62, CEN/TC 106, CEN/TC 109, CEN/TC 131, CEN/TC 181 and CEN/TC 234, CEN/TC 236, CEN/TC 299, CEN/CLC/JTC 6 and CEN/CLC/JTC 17.
- **GTSC TC 2** will continue the revision of I.S. 813:2014+A1:2017 with public enquiry envisaged to be launched in Q2 2022.
- **GTSC TC 5** will continue to monitor and review the development of European and International Standards in CEN/TC 219, CEN/TC 234, CEN/TC 237, CEN/TC 408, ISO/TC 67 SC 2 and CEN/CLC/JTC 6.
- **GTSC TC 6** will continue to monitor and review the activities and work of CEN TC 326, CEN/TC 268 and CEN/CLC/JTC 6.
- **GTSC TC 8** will continue with the revision of the Irish Standard I.S. 3216 - *Code of practice – Bulk storage of Liquefied Petroleum Gas (LPG)* with public enquiry envisaged to be launched in Q3 2022.
- **GTSC TC 8** will continue to monitor and review the development of European and International Standards in CEN/TC 268 and CEN/TC 282.
- **GTSC TC 9** will continue to participate in the development of European Standards developed by CEN/TC 23, CEN/TC 69, CEN/TC 286, CEN/TC 296 and ISO TC58 SC2.
- **GTSC TC 11** will continue to monitor and review the development of European and International Standards in CEN/TC 19, CEN/TC 234, CEN/TC 238, CEN/TC 268, CEN/TC 408, CEN/CLC/JTC 006, CEN/CLC/JTC 014.

7 Active indigenous Irish standards within the scope of the GTSC

- **S.R. 12007-5:2016**
Installation of Gas Service Pipes. Parts 1 and 2 (Fourth Edition)
- **SWiFT 8:2011**
Specific requirements for electrical apparatus for the detection of Carbon Monoxide (CO) in domestic premises
- **I.S. 328:2021**
Gas Transmission Pipelines and Pipeline Installations
- **I.S. 329:2015**
Gas distribution mains (Including Amd. 1 2016)
- **I.S. 370:2016**
Colour code for buried plastics piping
- **I.S. 813:2014+A1:2017**
Domestic gas installations Edition 3 (Including AC1:2014 and AC2:2014)
- **I.S. 820:2019**
Non-Domestic gas installations Edition 3
- **I.S. 822:2007**
Gas pressure regulating installations on service pipelines
- **I.S. 3213:2020**
Code of Practice for the Storage of LPG Cylinders and Cartridges
- **I.S. 3216:2010+A1:2014**
Code of practice – Bulk storage of Liquefied Petroleum Gas (LPG)