

***IGEM/UP/20***  
***Communication 1775***

## ***Compressed Natural Gas fuelling stations***



Price Code: C4H  
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ISBN 978 1 905903 51 1

ISSN 0367 7850

Published by the Institution of Gas Engineers and Managers

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## SECTION 1 : INTRODUCTION

- 1.1 This Standard covers Compressed Natural Gas (CNG) fuelling stations, updating and replacing the obsolete Standards IGE/UP/5 Parts 1 and 3.
- 1.2 This Standard has been drafted by an Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Gas Utilization Committee, and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.
- 1.3 The intent of this Standard is to provide requirements for design, construction, testing, commissioning, and guidelines on general operation and maintenance of CNG fuelling stations and facilities.

It is addressed to designers, manufacturers, installers and operators, for whom this document provides the basic principles for the design and installation of facilities and parts thereof, and to operators, for whom the minimum requirements for safe operation are given. It also serves as a basis for the inspection of CNG fuelling stations.

It is necessary to ensure, through the use of standards and compliant and fit for purpose components and materials, that CNG fuelling stations and their components, when correctly constructed, operated and maintained are permanently safe while in operation and prior to de-commissioning. Preventive measures are required to prevent fire and explosion and to provide protection against their effects.

- 1.4 The document makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding Sub-Section 1.7:
  - the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
  - the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
  - the term "should" prescribes a requirement which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

Such terms may have different meanings when used in legislation, or Health and Safety Executive (HSE) Approved Codes of Practice (ACoPs) or Guidance, and reference needs to be made to such legislation or official guidance for information on legal obligations.

- 1.5 The primary responsibility for compliance with legal duties rests with the employer. The fact that certain employees, for example "responsible engineers", are allowed to exercise their professional judgment does not allow employers to abrogate their primary responsibilities. Employers must:
  - have done everything to ensure, so far as is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of judgment
  - have systems and procedures in place to ensure that the exercise of professional judgment by "responsible engineers" is subject to the appropriate monitoring and review
  - not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgment that is not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgment. When "responsible engineers" are asked to undertake tasks which deviate from this, they should the matter for higher review.



- 1.6 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors in the sense that actions by people initiated or contributed to the accidents, or people might have acted in a more appropriate manner to avert them.
- It is therefore necessary to give proper consideration to the management of these human factors and the control of risk. To assist in this, it is recommended that due regard be paid to HSG48 and HSG65.
- 1.7 Notwithstanding Sub-Section 1.4, this Standard does not attempt to make the use of any method or specification obligatory against the judgment of the "responsible engineer". Where new and better techniques are developed and proved, they ought to be adopted without waiting for modification to this Standard. Amendments to this Standard will be issued when necessary, and their publication will be announced in the Journal of the Institution and other publications as appropriate.
- 1.8 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, should be addressed in writing to Technical Services, IGEN, IGEN House, 26 & 28 High Street, Kegworth, Derbyshire, DE74 2DA, or emailed to [technical@igem.org.uk](mailto:technical@igem.org.uk), and will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by, or on behalf of IGEN, this does not relieve the engineer of his or her obligations.
- 1.9 This Standard was published in December 2014.

## SECTION 2 : SCOPE

- 2.1 This Standard covers the design, construction, installation, testing, commissioning, operation and maintenance of fuelling stations which deliver CNG for use as a vehicle fuel or for filling CNG mobile storage units, which are supplied by either:
- piped Natural Gas (NG) from the supply network, or
  - a mobile CNG storage unit, or
  - a piped bio-methane supply from a production facility, or
  - a Liquefied Natural Gas (LNG) supply from an on-site fixed storage facility.
- Note: Mobile CNG storage units (with or without on-board ancillaries) are covered by the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).*
- 2.2 This Standard applies to stations dispensing CNG for use as a vehicle fuel, operating at a maximum operating pressure (MOP) not exceeding 300 bar.
- Note 1: This Standard may be used as general guidance for CNG stations designed for higher MOPs providing due cognisance is given to material specifications, safety distances and hazardous areas etc.*
- Note 2: The fuelling station inlet valve (which is upstream of the gas supply connection) is taken to be the start of the CNG fuelling station.*
- 2.3 This Standard applies to fuelling stations delivering NG as defined by BS EN 437.
- 2.4 Mobile CNG storage units containing on-board ancillaries (to enable vehicle fuelling directly from the mobile unit (i.e. a CNG fuelling station)) are covered by the applicable parts of this Standard.
- 2.5 Fuelling stations dispensing LNG are not covered by the scope of this Standard.
- Note 1: Fuelling stations dispensing LNG are covered by British Compressed Gases Association (BCGA) CP41.*
- Note 2: Further requirements for LNG will be provided in IGEN/UP/21 which, when published, will also complement the information given in Section 9.*
- 2.6 CNG vehicle refuelling appliances (VRAs) are not covered by this Standard.
- 2.7 The scope of the Standard includes fuelling stations of the following types:
- public access (self-service or assisted)
  - private access (self-service or assisted)
  - fuelling stations supplying mobile CNG storage units
  - fuelling stations supplied from mobile CNG storage units
  - mobile CNG refuelling stations.
- 2.8 The CNG fuelling facility may be integrated with new or existing fuelling facilities for other fuels, noting that by doing so this may impact the site licensing conditions.
- 2.9 This Standard applies to private and public stations having fast and/or timed fuelling dispensers. If fuelling stations are intended to be used by the general public, due regard needs to be taken to any additional public safety, security and trading standards issues.
- 2.10 Guidance on the operation and maintenance of fuelling stations is given in Appendix 6.

- 2.11 An example layout of components is given in Appendix 5.
- 2.12 Pressures quoted are gauge pressures, unless otherwise stated.
- 2.13 Italicised text is informative and does not represent formal requirements.
- 2.14 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms “must”, “shall” or “should”.