

***IGEM/UP/4 Edition 4  
Communication 1801***

***Commissioning of gas-fired plant on  
industrial and commercial premises***



*Founded 1863  
Royal Charter 1929  
Patron: Her Majesty the Queen*



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## SECTION 1 : INTRODUCTION

- 1.1 This Standard supersedes IGEM/UP/4 Edition 3 Communication 1738 which is obsolete.
- 1.2 This Standard has been drafted by a Panel appointed by the Institution of Gas Engineers and Managers' (IGEM's) Gas Utilisation Committee, subsequently approved by that Committee and has been approved by IGEM's Technical Coordinating Committee on behalf of the Council of IGEM.
- 1.3 This Standard promotes the adoption of sound, basic commissioning procedures for gas-fired plant and ancillary equipment. It is intended to be used as guidance for the writing of specialised commissioning instructions for the whole or individual parts of particular plant, and as a framework for the planning of commissioning of such plant. It is not intended in itself to constitute a commissioning procedure for any item of plant.
- 1.4 The Health and Safety at Work etc. Act (HSWA) requires that commissioning procedures result in the safe start-up and operation of gas-fired plant and that the person undertaking the procedure and the subsequent operator of the plant not be exposed to undue risk. It follows that the person responsible for creating commissioning instructions has the necessary knowledge to do so.
- 1.5 Commissioning instructions and planned procedures have to include all the information necessary to enable commissioning of plant to be conducted in a safe manner and to result in safe, reliable and efficient subsequent operation. In particular, it is important to note that components of the plant which utilise services and fuels other than gas are taken fully into account.
- 1.6 There are certain specialised items of plant or processes where it may be necessary to deviate from or add to this Standard however, the intent of the Standard needs to be followed.
- 1.7 This Standard makes use of the terms "must", "shall" and "should" when prescribing particular requirements. Notwithstanding clause 1.10:
- 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 statutory Legislation or official guidance for information on legal obligations.
- 1.8 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 judgement does not allow employers to abrogate their primary responsibilities. Employers must:
- have done everything to ensure, as far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement
  - have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review

- not require “responsible engineers” to undertake tasks which would necessitate the exercise of professional judgement that is beyond their competence. There should be written procedures defining the extent to which “responsible engineers” can exercise their judgement. When “responsible engineers” are asked to undertake tasks which deviate from this, they should refer the matter for higher review.

1.9 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 better 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 cognisance be taken of the publication HSG48 and HSG65.

1.10 Notwithstanding clause 1.7, this Standard does not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they should be adopted without waiting for modification of this Standard. Amendments to this Standard will be issued when necessary and their publication will be announced in the Journal of IGEM and other publications as appropriate.

1.11 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, should be addressed to Technical Services, IGEM, IGEM 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 or Panel 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 IGEM, this does not relieve the responsible engineer of any of his or her obligations.

1.12 This Standard was published in January 2017.

**SECTION 2 : SCOPE**

- 2.1 This Standard covers the commissioning of new and existing gas-fired plant and ancillary equipment designed for use on lighter and heavier than air flammable fuel gases such as Manufactured Gas, Natural Gas (NG), Liquefied Petroleum Gas (LPG), Biogas (including Biomethane) and LPG air mixtures.
- Note 1: Typically a 1<sup>st</sup> family gas is manufactured, for example Towns Gas, a 2<sup>nd</sup> family gas is methane based, for example NG and a 3<sup>rd</sup> family gas is propane/butane based, for example LPG.*
- Note 2: LPG is primarily distributed in a gaseous form; however it can also be partially distributed in a liquid phase.*
- Note 3: 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases are further defined in BS EN 437.*
- 2.2 When working with 3<sup>rd</sup> family gases further advice on supply and use may be obtained from UKLPG.
- In particular, UKLPG CoP 9 deals with LPG air plant and UKLPG CoP 17 deals with the purging of LPG vessels and systems.
- 2.3 This Standard is not retrospective, however it is recommended that this Standard also applies to existing plant which has been refitted, refurbished, modified, repaired or serviced and in any circumstance where recommissioning of plant is deemed necessary.
- Note: In many cases for existing plant full commissioning procedures will need to be carried out. However, a shortened procedure may be appropriate at the discretion of the responsible engineer when the work involved has been of a minor nature.*
- 2.4 This Standard promotes the adoption of sound, basic commissioning procedures for gas-fired plant and ancillary equipment. The Standard is intended to be used as guidance for the writing of specialised commissioning instructions for the whole or individual parts of particular plant and as a framework for the planning of commissioning of such plant. It is not intended in itself to constitute a commissioning procedure for any specific item of plant.
- 2.5 Any person involved in the commissioning of gas-fired plant is required to be competent in the appropriate disciplines. Competency is achieved by an appropriate combination of education, training and practical experience.
- 2.6 This Standard assumes general compliance with other Standards as appropriate, such as IGEM/UP/2, IGEM/UP/6, IGEM/UP/10, IGEM/UP/12, IGEM/UP/16, UKLPG CoP 1, UKLPG CoP 22, BS 5885 (partially replaced by BS EN 676), BS 6230, BS 6644, BS 6880, BS EN 676, BS 746, BS EN 12828 and BS EN 12953 etc. Reference needs to also be made to relevant plant and equipment manufacturers' instructions and commissioning check lists.
- 2.7 This Standard applies to the commissioning of gas-fired plant installed on industrial and commercial premises. It may equally be applied to large domestic premises that contain complex items of plant.
- 2.8 This Standard does not embrace the design of plant and therefore is written upon the assumption that plant and associated components are fit for the intended purpose and conform to appropriate Legislation, Standards and requirements of manufacture, installation and subsequent operation.
- 2.9 Certain items of gas-fired plant are specialised; hence certain commissioning actions will not be covered by this Standard. Additional reference will need to be made to the appropriate manufacturers' literature in such cases.
- 2.10 Pressures quoted are gauge pressures unless otherwise stated.

- 2.11 All heat inputs are net heat inputs unless otherwise stated.
- 2.12 Italicised text is informative and does not represent formal requirements.
- 2.13 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms “must”, “shall” or “should”.