IGEM
Institution of
Gas Engineers & Managers

IGEM/UP/6 Edition 2
Communication 1741

Application of compressors to Natural Gas fuel systems

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SECTION 1 : INTRODUCTION

1.1 This Standard supersedes IGE/UP/6 Communication 1646, which is obsolete.

1.2 This Standard has been drafted by an Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Utilization Committee, and has been approved by IGEM's Technical Coordinating Committee on behalf of the Council of IGEM.

1.3 This Standard covers the application of positive displacement reciprocating compressors; screw compressors; slide vane compressors and centrifugal compressors to Natural Gas installation pipework systems. It does not cover gas compressors used for gas transportation systems.

1.4 Positive displacement compressors installed on industrial and commercial premises, within the stated scope for pressure, volume and power input, are covered, as are the positive displacement compressors utilized in Natural Gas vehicle filling stations, where the shaft power input, normally, is in the range 10 to 100 kW.

1.5 This Standard makes use of the terms "should", "shall" and "must", when prescribing particular requirements. Notwithstanding Sub-Section 1.8:

- 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.

1.6 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, so far as it is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper 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 not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this, they should refer the matter for higher review.

1.7 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 should be taken of publication HSG48.

1.8 Notwithstanding Sub-Section 1.5, 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 to 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.

1.9 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, IGEM, IGEM House, 26-28 High Street, Kegworth, Derbyshire, DE74 2DA 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 IGEM, this does not relieve the responsible engineer of any of his or her obligations.

1.10 This Standard was published in December 2009.

SECTION 2 : SCOPE

2.1 This Standard covers the installation and operation of positive displacement reciprocating compressors; screw compressors; slide vane compressors and centrifugal compressors, with outlet pressures in the range exceeding 0.5 bar but not exceeding 400 bar and a shaft power input exceeding 10 kW.

Note 1: Requirement for the installation of boosters and compressors with outlet pressures not exceeding 0.5 bar are given in IGEM/UP/2.

Note 2: For the purposes of this Standard and IGEM/UP/2, a booster is a centrifugal compressor with an outlet pressure not exceeding 0.5 bar.

2.2 This Standard applies to compressors using Natural Gas (a 2nd family gas as defined in BS EN 437). This Standard may not be appropriate for other gases such as 1st family, other 2nd family and 3rd family gases, including "landfill gas", "mines gas", "digester gas" etc. (see Sub-Section 4.3).

This Standard applies only to gas compressors that are installed downstream of a primary meter installation.

This Standard does not specify the design and manufacturing requirements of compressors such as those contained in BS EN 1012.

2.3 Unless otherwise specified, metric standard conditions are assumed by this Standard.

2.4 This Standard applies to new compressor installations only.

2.5 This Standard applies to compressor installations within the preferred installation arrangements given in IGEM/G/1.

2.6 All pressures are gauge pressures unless otherwise stated.

2.7 Italicised text is informative and does not represent formal requirements.

2.8 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms "should", "shall" or "must".