Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air
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CONTENTS

SECTION

1 Introduction 1

2 Scope 3

3 Competency and quality assurance 7
   • 3.1 Competency 7
   • 3.2 Quality assurance 7
      • 3.2.1 Materials 7
      • 3.2.2 Inspection 7

4 Legal and allied considerations 8
   • 4.1 General 8
      • 4.1.1 European Community (EC) Legislation 8
      • 4.1.2 National and local legislation 8
      • 4.1.3 LPG and LPG/Air 8
   • 4.2 Great Britain (GB) 8
      • 4.2.1 Gas Acts 8
      • 4.2.2 Land and planning 8
      • 4.2.3 Nature conservation 9
      • 4.2.4 Water 9
      • 4.2.5 Pollution 9
      • 4.2.6 Farm animals 10
      • 4.2.7 Health and Safety at Work etc. Act (HSWA) 10
      • 4.2.8 Management of Health and Safety at Work Regulations (MHSWR) 10
      • 4.2.9 Construction (Design and Management) Regulations (CDM) 10
      • 4.2.10 Gas Safety (Management) Regulations (GS(M)R) 10
      • 4.2.11 Pressure Systems Safety Regulations (PSSR) 10
      • 4.2.12 Pipelines Safety Regulations (PSR) 11
      • 4.2.13 Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) 11
      • 4.2.14 Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 11
      • 4.2.15 Provision and Use of Work Equipment Regulations (PUWER) 12
      • 4.2.16 Electricity at Work Regulations 12
      • 4.2.17 Control of Substances Hazardous to Health Regulations (COSHH) 12
      • 4.2.18 Pressure Equipment Directive (PED) and Regulations (PER) 13
      • 4.2.19 Gas Safety (Installation and Use) Regulations (GS(I&U)R) 13

5 Planning, location, layout and security 14
   • 5.1 Planning 14
   • 5.2 Location 14
      • 5.2.1 All PRIs 14
      • 5.2.2 Small PRIs supplying domestic premises 15
      • 5.2.3 PRIs supplying commercial or industrial premises 15
5.2.4 Below-ground LPG PRIs

5.3 PRI station layout

5.4 Security

6 Housings

6.1 General

6.1.1 All housings

6.1.2 Safety and safe working access

6.1.3 Documentation for housings and components

6.1.4 Glass reinforced plastic (GRP) housings

6.2 Above-ground housings and buildings

6.2.1 Foundations, bases and floor mounting

6.2.2 Doors

6.2.3 Walls

6.2.4 Roofs and lift off panels

6.2.5 Finish

6.2.6 Performance

6.2.7 Fire resistance

6.2.8 Ventilation of housings

6.2.9 Space heating

6.2.10 Explosion relief

6.2.11 Electrical

6.2.12 Wall mounted PRIs

6.3 Below-ground housings

6.3.1 General

6.3.2 Access and egress

6.3.3 Construction

6.3.4 Cover

6.3.5 Ventilation

6.3.6 Dimensions

6.3.7 Through-wall sealing

6.3.8 Drainage/pumping/breather lines

6.3.9 Ground water

6.3.10 Explosion relief

6.4 Vessel-type housings

6.4.1 Installation and external loading

6.4.2 Corrosion protection

6.4.3 Vent stacks

6.4.4 Ground water

7 Design of a PRI

7.1 General principles

7.2 Pipework sizing

7.3 Design pressure boundaries
7.4 Isolation of PRIs and components
   7.4.1 Principles of isolation
   7.4.2 Provision of isolation valves
   7.4.3 Location and identification of isolation valves
   7.4.4 Selection of valves
   7.4.5 Features of valves and their actuators

7.5 Gas cleaning

7.6 Heating of gas

7.7 Noise and vibration
   7.7.1 Environmental noise
   7.7.2 Vibration and acoustic fatigue

7.8 Breathers, manual vent lines and relief vent lines
   7.8.1 General
   7.8.2 Breathers
   7.8.3 Manual vent lines
   7.8.4 Relief vent lines

7.9 Pipe and fittings
   7.9.1 General
   7.9.2 Steel pipe for main PRI pipework
   7.9.3 Fittings
   7.9.4 Gaskets
   7.9.5 Bolting, studs, nuts and washers
   7.9.6 Sensing, instrument and auxiliary pipework
   7.9.7 Screwed pipework and fittings
   7.9.8 Pre-testing

7.10 Welding
   7.10.1 Preparation
   7.10.2 MOP > 7 bar
   7.10.3 MOP ≤ 7 bar
   7.10.4 Post-weld stress relieving
   7.10.5 PE jointing

7.11 Stress analysis
   7.11.1 General
   7.11.2 Supports

7.12 Metering

8 Pressure and flow control
   8.1 General
   8.2 Pressure regulating systems
   8.3 Auxiliary systems
   8.4 Sensing and control pipework
8.5 Pressure safety systems
- 8.5.1 General
- 8.5.2 Design of non-venting pressure safety systems
- 8.5.3 Design of venting pressure safety systems
- 8.5.4 Pressure warning systems
- 8.5.5 Pressure safety system instrumentation

8.6 Arrangement of equipment and safety devices
- 8.6.1 General
- 8.6.2 PRIs of inlet pressure exceeding 100 mbar and not exceeding 2 bar
- 8.6.3 PRIs of inlet pressures exceeding 2 bar and not exceeding 100 bar
- 8.6.4 Small regulator installations
- 8.6.5 Pre-fabricated skid units for Natural Gas

8.7 By-passing the regulating equipment and/or the safety system

9 Protection against corrosion
- 9.1 Cathodic protection (CP)
  - 9.1.1 General
  - 9.1.2 Technical considerations
  - 9.1.3 Types of systems
- 9.2 Methods of protection against external corrosion other than CP
  - 9.2.1 General design considerations
  - 9.2.2 Surface preparation for coating
  - 9.2.3 Coating of above-ground pipework and components
  - 9.2.4 Coating of below-ground pipework
  - 9.2.5 Backfilling
  - 9.2.6 Inspection

10 Electrical Installation and Instrumentation
- 10.1 Electrical installation
  - 10.1.1 General
  - 10.1.2 Hazardous areas
  - 10.1.3 Electrical isolation
  - 10.1.4 Lightning
  - 10.1.5 Earthing
  - 10.1.6 Lighting
- 10.2 Instrumentation
  - 10.2.1 General
  - 10.2.2 Gas instrumentation pipework
  - 10.2.3 Telemetry
  - 10.2.4 Selection of equipment

11 Construction
- 11.1 Site safety
- 11.2 Site environment
  - 11.2.1 General
  - 11.2.2 Noise abatement
  - 11.2.3 Chemicals and fluids
  - 11.2.4 Traffic
- 11.3 Materials, work procedures and records
• 11.4 Civil engineering
  • 11.4.1 Site assessment
  • 11.4.2 Alignment and levels
• 11.5 Fabrication and welding of pipework and components

12 Testing
• 12.1 General
• 12.2 Safety - General
• 12.3 Safety
• 12.4 Test method, test pressure and duration
• 12.5 Planning/Preliminary requirements
• 12.6 Hydrostatic strength testing
  • 12.6.1 Preparation for testing
• 12.7 Pneumatic testing
• 12.8 Test equipment
  • 12.8.1 Instrumentation
  • 12.8.2 Measurement of pressure
  • 12.8.3 Measurement of volume
  • 12.8.4 Measurement of temperature
  • 12.8.5 Test ends
• 12.9 Acceptance criteria
  • 12.9.1 Air content
  • 12.9.2 Temperature variations
  • 12.9.3 Test acceptance
• 12.10 Test sections
• 12.11 Fitting of test ends
• 12.12 Water supply
• 12.13 Repair of test failures and leaks
• 12.14 Recording and documentation
  • 12.14.1 General
  • 12.14.2 Test equipment and instruments
  • 12.14.3 Test record
  • 12.14.4 Test certificate

13 Commissioning and de-commissioning
• 13.1 General
• 13.2 Gas systems
• 13.3 CP systems
• 13.4 Electrical equipment
• 13.5 Instrumentation

14 Operation and maintenance
• 14.1 General
• 14.2 Management
  • 14.2.1 Organisation
  • 14.2.2 Communications
  • 14.2.3 Systems of work
  • 14.2.4 Emergency arrangements
  • 14.2.5 Training and competence
  • 14.2.6 Records
  • 14.2.7 Site information
• 14.3 Maintenance procedures and instructions 111
• 14.4 Maintenance philosophies 112
  • 14.4.1 Introduction 112
  • 14.4.2 Selection of maintenance philosophy 113
  • 14.4.3 Maintenance at regular intervals 113
  • 14.4.4 Breakdown maintenance 113
  • 14.4.5 Condition-based maintenance (condition monitoring) 114
• 14.5 Safety during maintenance 114
  • 14.5.1 General 114
  • 14.5.2 Lifting equipment 115
  • 14.5.3 Personal protective equipment (PPE) 115
• 14.6 Isolations 115
  • 14.6.1 Isolation schemes 115
  • 14.6.2 Isolation of gas plant and equipment 116
  • 14.6.3 Continuity bonds 117
  • 14.6.4 Instrumentation and control systems 117
  • 14.6.5 Electrical equipment 117
  • 14.6.6 Earth continuity 117
• 14.7 Venting 117
• 14.8 Purging 118
• 14.9 Leakage testing 118
• 14.10 Re-commissioning 118
• 14.11 Maintenance review 119
• 14.12 Operational checks 119
• 14.13 CP systems 121
• 14.14 Corrosion monitoring of exposed pipework 121
• 14.15 Uprating and downrating 122
  • 14.15.1 Uprating 122
  • 14.15.2 Downrating 122
  • 14.15.3 Design approach 122
  • 14.15.4 Altering the maximum design factor, f 122
  • 14.15.5 Modification process 123
  • 14.15.6 Validation 123
  • 14.15.7 Uprating MOP of a PRI to a level above the previous design pressure 123

15 Records 126
• 15.1 Design 126
• 15.2 Construction 126
• 15.3 Testing 126
• 15.4 Corrosion control 127
• 15.5 Commissioning 127
• 15.6 Operation and maintenance 127
APPENDIX

1  Glossary, acronyms, abbreviations, subscripts, units and symbols  128
2  References  131
3  Example calculations  137
4  Noise assessment and control  148
5  Reducing the frequency of vibration-related failures  152
6  Installation and use of temporary open-ended skirt type strainers  155
7  Performance requirements for stream discrimination NRVs  157
8  Performance tests for GRP housings  158
9  Pressure testing procedures  160

FIGURE

1  Selection of Standards (NG)  4
2  Selection of Standards (LPG)  5
3  Selection of Standards (LPG/Air)  6
4  Access classification  18
5  Provision of exits in long “walk-in” housings  23
6  Housing roof area/height of lift  30
7  Termination of ventilation ducts from a pit  34
8  PRI isolation method examples  39-40
9  Types of branch fittings  54
10  Pressure criteria  61
11  Decision algorithm for minimum number of safety devices  65
12  SSV impulse pressure limits  68
13  Typical slamshut valve and active regulator arrangement  72
14  Typical slamshut valve and active regulator arrangement for LPG  72
15  Typical monitor and active regulator arrangement  73
16  Typical slamshut valve, monitor and active regulator arrangement  74
17  Typical slamshut valve and active regulator arrangement for small PRI’s  75
18  Typical slamshut valve and active regulator with integral relief valve arrangement for small PRI’s (no stream discrimination)  76
19 Typical slamshut valve and active regulator with integral relief valve arrangement for small PRI’s (with stream discrimination) 76
20 Typical slamshut valve and first stage regulator arrangement for LPG 76
21 Typical slamshut valve and second stage regulator arrangement (UPSO fitted) for LPG 77
22 Typical combined first and second stage regulator with slamshut arrangement (UPSO fitted) for LPG 77
23 Measurement of air content 99
24 Schematic illustration of a PRI and related pressure systems 138
25 Recommended maximum equipment settings (example 1) 142
26 Recommended maximum equipment settings (example 2) 145
27 Overlapping ranges of operation (example 3) 146
28 Recommended maximum equipment settings (example 3) 147
29 Recommended impulse pipework configuration to minimise risk of vibration related failures 154
30 Open ended strainer dimensions 156
31 Impact tool 159
32 Pneumatic testing of small bore pipework. Typical test rig arrangement 164

**TABLE**

1 Scope of IGEM/TD/13 Edition 2 1
2 Defining a “small” PRI 1
3 Minimum free area for ventilation apertures for below-ground housings (> 0.5 m³ volume) 33
4 Differential pressure across regulator stream isolation valves 42
5 Maximum differential pressure across clean filters 44
6 Filtration cut off levels for main regulators 44
7 Filtration cut off level for gas supplies to pilot and auxiliaries 45
8 Selection of maximum design factor (f) 50
9 Minimum wall thickness of steel pipe 51
10 Limitations on the selection and use of fittings 53
11 Selection of sensing, instrument and auxiliary pipework 55
12 Piping and tubing supports 56
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Minimum internal bend radius for nylon tube</td>
<td>57</td>
</tr>
<tr>
<td>14</td>
<td>Limitation on the use of screwed connections</td>
<td>57</td>
</tr>
<tr>
<td>15</td>
<td>Relationship between downstream system MOP, peak level OP, TOP and MIP</td>
<td>62</td>
</tr>
<tr>
<td>16</td>
<td>Minimum number of safety devices</td>
<td>65</td>
</tr>
<tr>
<td>17</td>
<td>Creep relief capacity (MOP_u \leq 7) bar</td>
<td>69</td>
</tr>
<tr>
<td>18</td>
<td>Determination of strength test method; STP and STD</td>
<td>95</td>
</tr>
<tr>
<td>19</td>
<td>Maintenance philosophies - some advantages and disadvantages</td>
<td>119</td>
</tr>
<tr>
<td>20</td>
<td>Functional Tests</td>
<td>120</td>
</tr>
<tr>
<td>21</td>
<td>Pressure term definitions</td>
<td>137</td>
</tr>
<tr>
<td>22</td>
<td>Open ended strainer dimensions</td>
<td>156</td>
</tr>
</tbody>
</table>
SECTION 1 : INTRODUCTION

1.1 This Standard revises and supersedes IGE/TD/13, Communication 1672 which is obsolete.

This Standard now incorporates the updated content of IGE/SR/9 Edition 2, Communication 1654, which is obsolete.

1.2 This Standard complements, as far as practicable, the requirements of BS EN 12186 and BS EN 12279, the equivalent European Standards on which IGE/TD/13 provides more specific requirements.

Note: A limited number of the individual requirements prescribe a more stringent standard than BS EN 12186 and BS EN 12279 to reflect United Kingdom (UK) practice.

1.3 This Standard has been drafted by a Panel appointed by the Institution of Gas Engineers and Managers’ (IGEM's) Gas Transmission and Distribution Committee, and has been approved by IGEM’s Technical Co-Ordinating Committee on behalf of the Council of IGEM.

1.4 This Standard applies to the safe design, construction, inspection, testing, operation and maintenance of pressure regulating installations (PRIs) in accordance with current knowledge and operational experience.

The Standard reflects the need to ensure adequate reliability and continuity of supply at pressures that are safe for the downstream system and equipment.

1.5 This Standard now addresses Natural Gas (NG), Liquefied Petroleum Gas (LPG) and LPG/air. As a result, the scope of this Standard is shown in Table 1.

<table>
<thead>
<tr>
<th>GAS</th>
<th>MOP (bar)</th>
<th>MAXIMUM CAPACITY (m³ h⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>≤ 100</td>
<td>No limit</td>
</tr>
<tr>
<td>LPG</td>
<td>≤ 16</td>
<td>No limit</td>
</tr>
<tr>
<td>LPG/air</td>
<td>≤ 2</td>
<td>No limit</td>
</tr>
</tbody>
</table>

Note: MOP is maximum operating pressure.

TABLE 1 - SCOPE OF IGE/TD/13 EDITION 2

In addition, significant changes have been made to this Standard including the addition of specific requirements for “small” PRIs as defined in Table 2.

<table>
<thead>
<tr>
<th>GAS</th>
<th>MOP (bar)</th>
<th>MAXIMUM CAPACITY (m³ h⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural</td>
<td>≤ 7</td>
<td>200</td>
</tr>
<tr>
<td>LPG</td>
<td>≤ 16</td>
<td>80</td>
</tr>
<tr>
<td>LPG/air</td>
<td>≤ 2</td>
<td>310</td>
</tr>
</tbody>
</table>

TABLE 2 - DEFINING A “SMALL” PRI

Other changes include:
- additional guidance on housings
- the inclusion of specific information on pipework sizing
- a justification for plug valves
- further clarification on the setting of regulators and safety devices
- new information on uprating and downrating.
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 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 HSG48.

1.7 This Standard makes use of the terms “must”, “shall” and “should” when prescribing particular requirements. Notwithstanding Sub-Section 1.9:

- the terms “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.

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, so 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 by “responsible engineers”
- 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 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 professional judgement. When “responsible engineers” are asked to undertake tasks which deviate from this, they should refer the matter for higher review.

1.9 Notwithstanding Sub-Section 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.

1.10 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, may be addressed to Technical Services, IGEM, IGEM House, 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 imply acceptance of any liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

1.11 This Standard was published in September 2011.
SECTION 2: SCOPE

2.1 This Standard covers the design, construction, inspection, testing, operation and maintenance of any PRI installed as below and whose extent is shown in Figure 8 (a), (b) and (c).

2.2 This Standard covers any PRI containing NG that is installed in a Network pipeline, i.e:
- a transmission pipeline (whose design is in accordance with IGEM/TD/1) or
- a distribution main (whose design is in accordance with IGE/TD/3) or
- a service (whose design is in accordance with IGE/TD/4).

This Standard covers any PRI containing LPG or mixtures of LPG and air, that is installed in a distribution main whose design is in accordance with IGE/TD/3 or in service pipework whose design is in accordance with IGE/TD/4.

Note 1: For regulating installations downstream of an emergency control valve (ECV) (which defines the end of the Network as in IGEM/G/1 (NG) or downstream of a distribution main or service pipework (LPG and LPG/air)), and which are associated with a meter installation, the relevant standards are IGE/GM/4, IGEM/GM/6, IGE/GM/8, BS 6400-1, BS 6400-2 (all for NG) and BS 6400-3 (for LPG), as appropriate. There are no recognised, equivalent, Standards to the IGE/GM Standards where LPG or LPG/air is used. The principles of the IGEM/GM Standards may be applied. Where it is required to install a PRI downstream of an ECV or downstream of a distribution main or service not associated with a meter installation, the principles of this Standard may be applied. See also Figures 1, 2 and 3.

Note 2: Minimum requirements are contained in appropriate normative Standards (see Figures 1, 2 and 3).

2.3 This Standard covers PRIs of MOP not exceeding:
- for Natural Gas, 100 bar
  Note: Higher MOPs may be accommodated, in which case specialist advice needs to be sought in addition to adopting the principles of the Standard.
- for LPG, 16 bar
- for LPG/air, 2 bar.

2.4 This Standard covers PRIs of operating temperature:
- for Natural Gas, between -20°C and 120°C
- for LPG, between -20°C and 50°C
- for LPG/air, between -20°C and 50°C.

2.5 This Standard covers PRIs for gases in the vapour phase. This Standard does not address gases in the liquid phase.

2.6 There is no intention that this Standard be applied retrospectively. However, for inspection, testing, operation and maintenance, IGEM/TD/13 Edition 2 can be applied to existing PRIs that were designed and constructed to IGE/TD/13 Edition 1, IGE/TD/9 or IGE/TD/10, but it may be necessary to continue some operations in accordance with those Recommendations.
  Note: There are no equivalent obsolete IGEM Standards for PRIs operating on LPG or LPG/air.

2.7 This Standard covers PRIs handling odorised or unodorised gases.

2.8 All pressures quoted are gauge pressures unless otherwise stated.

2.9 Italicised text is informative and does not represent formal requirements.
2.10 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms “must”, “shall” or “should”.

FIGURE 1 - SELECTION OF STANDARDS (NG)
PRESSURE REGULATION

IN A DISTRIBUTION MAIN (IGE/TD/3) or SERVICE PIPOERWORK (IGE/TD/4)?

MOP ≤ 16 bar?

SEEK SPECIALIST ADVICE

YES

IGEM/TD/13

NO

DOWNSTREAM OF AN ECV (GS(I&U)R)?

SEEK SPECIALIST ADVICE

NO

INSTALLED IN A METER INSTALLATION?

YES

BS 6400-3 or UKLPG COP 22

NO

USE PRINCIPLES OF IGEM/TD/13 or BS 5482-1 or UKLPG COP 22

FIGURE 2 - SELECTION OF STANDARDS (LPG)
FIGURE 3 - SELECTION OF STANDARDS (LPG/AIR)