IGEM
Institution of
Gas Engineers & Managers

IGEM/SR/4 Edition 3
Communication 1752

Variable volume gasholders storing lighter than air gases

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SECTION 1 : INTRODUCTION

1.1 This Standard supersedes IGE/SR/4 Edition 2, Communication 1624, which is obsolete.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 Transmission and Distribution Committee and published by the authority of the Council of IGEM.

1.3 This Standard applies to the design, inspection, maintenance, operation, repair, modification and demolition of gasholders. It is not retrospective but where existing practices do not comply it is recommended that such practices are reviewed and brought into line where practicable. Any deviation from this Standard needs to be subject to risk assessment and cost benefit analysis.

1.4 Significant amendments to Edition 2 have been made in this edition. These include:

- updating the definitions for gasholders (see IGEM/G/4)
- revision of the requirements for electrical apparatus
- additional information on purging
- further guidance on control systems
- inclusion of advice for the demolition of gasholders
- updating of numerous references to legislation and Standards
- revised and additional drawings of the different types of gasholders and their seals.

1.5 This Standard sets out general requirements for water-sealed, dry (Wiggins) and waterless (M.A.N.) gasholders. Due to the individuality of these gasholder types, however, they each have specific considerations which are made apparent in the following sections:

- design
- entry for inspection and maintenance
- isolation and purging
- inspection
- maintenance and repair
- demolition.

The following flow chart will assist in using this Standard:

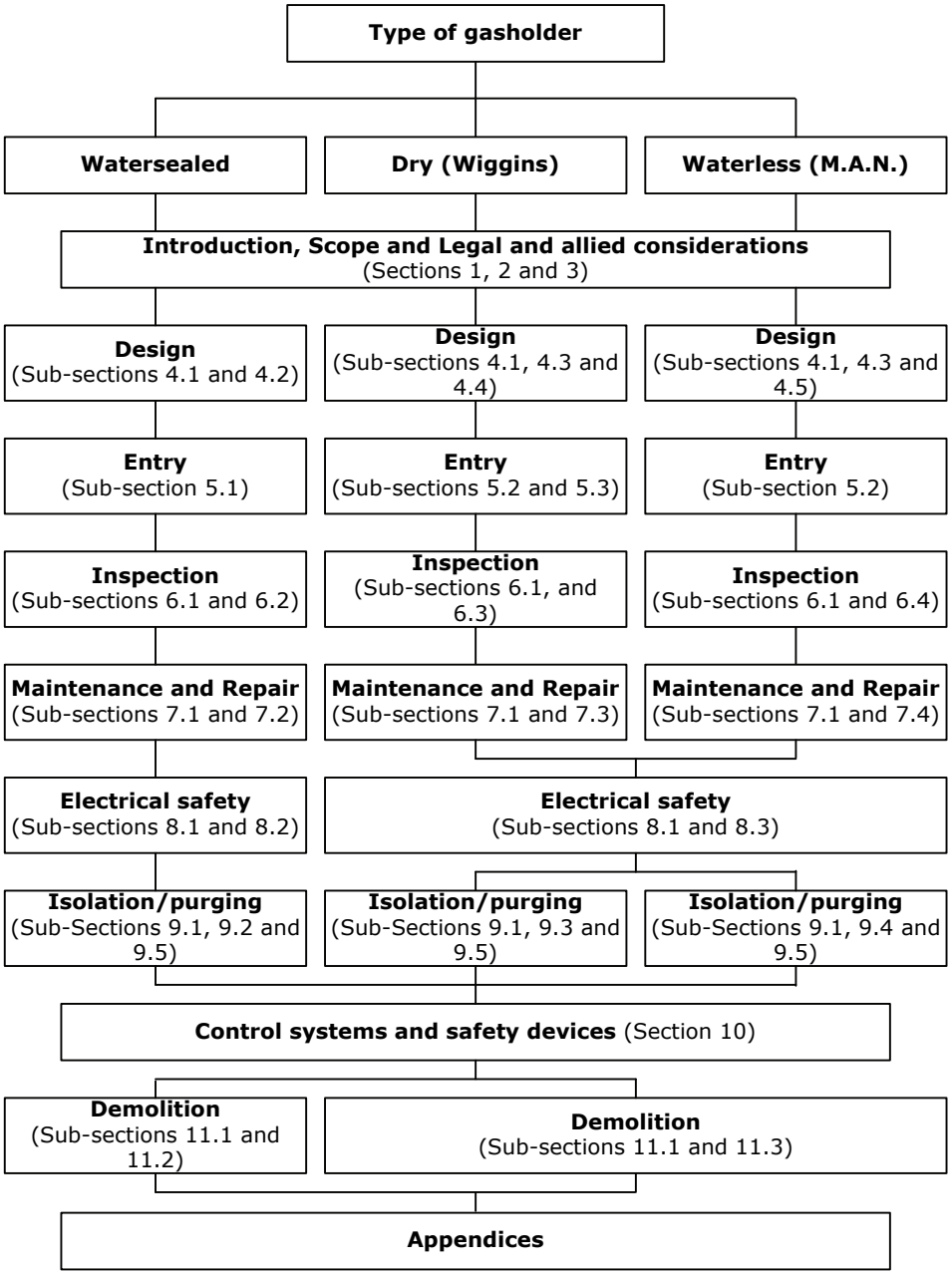

FIGURE 1 - LAYOUT OF IGEM/SR/4

1.6 Requirements for fixed volume gas storage storing lighter than air gases can be obtained from IGEM/SR/14.

1.7 This Standard makes use of the terms "must", "shall" and "should". Notwithstanding Sub-Section 1.9:

- 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 relating to health and safety at work 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 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.

1.9 Notwithstanding Sub-Section 1.7, 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 should be adopted without waiting for the modification of 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.

1.10 It is now widely accepted that the majority of accidents in industry may be attributable to human as well as technical factors. People may initiate actions that cause or contribute towards accidents.

To assist in the control of risk and proper management of these human factors, due regard should be taken of both HSG65 and HSG48.

1.11 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, should be either:

- addressed to Technical Services, IGEM, IGEM House, High Street, Kegworth, Derbyshire, DE74 2DA; or
- emailed to technical@igem.org.uk.

These 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 liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

1.12 This Standard was published in May 2011.

SECTION 2 : SCOPE

2.1 This Standard highlights those aspects of gasholder design, inspection, maintenance, operation, repair, modification and demolition which may put the gasholder or persons working on the gasholder, or members of the public, at risk.

2.2 Ancillary fittings, such as measurement controls etc., have not been covered in detail as it is considered that they come within the purview of "instrumentation controls". However, the combination of measurement and control into a logical system is discussed at some length.

2.3 This Standard refers to the safety of gasholders and where matters of design are mentioned, these relate to the safety features and not to the design of gasholders as a whole.

2.4 This Standard refers specifically to storage of gases having a density less than air. If heavier than air gases are stored in variable volume gasholders, consideration has to be given to the effects of the escape of gas during purging operations and accidental escapes of gas during operation. It is expected that the responsible engineer will identify problems and provide his or her own safe solutions.

2.5 All references to gas pressure are gauge pressure unless otherwise stated.

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

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