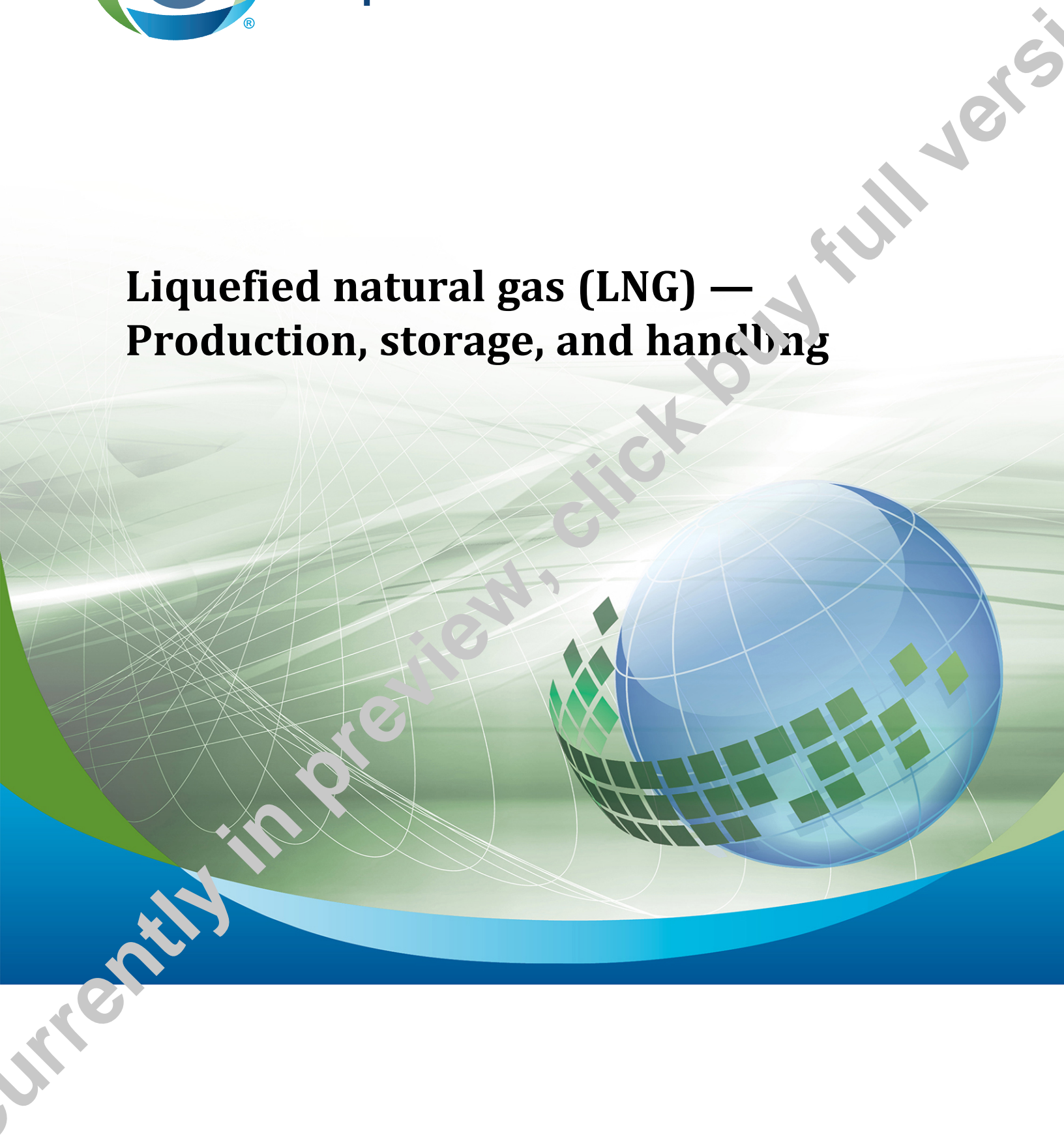




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Z276-18

Liquefied natural gas (LNG) — Production, storage, and handling



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Production, storage, and handling***



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Preface

This is the eleventh edition of CSA Z276, *Liquefied natural gas (LNG) — Production, storage, and handling*. It supersedes the previous editions published in 2015, 2011, 2007, 2001, 1994, 1989, 1981, 1978, 1973, and 1972.

This Standard contains basic reference data relating to design, supplemented by specific requirements, where necessary, to establish a uniform interpretation of the design requirements.

The main differences from the previous edition are the

- a) reordering and rewriting of Clauses 4 and 5;
- b) addition of Clause 14; and
- c) expansion of Annex B for small facilities.

CSA Group would like to acknowledge the financial contributions of industry partners in the development of Annex B. The Technical Committee on Liquefied Natural Gas would like to acknowledge the efforts of the Annex B Task Force to significantly expand the requirements for small facilities.

This Standard was prepared by the Technical Committee on Liquefied Natural Gas, under the jurisdiction of the Strategic Steering Committee on Petroleum and Natural Gas Industry Systems, and has been formally approved by the Technical Committee.

Notes:

- 1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- 3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
- 4) *To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include “Request for interpretation” in the subject line:*
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 - b) *provide an explanation of circumstances surrounding the actual field condition; and*
 - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at standardsactivities.csa.ca.

- 5) *This Standard is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include “Proposal for change” in the subject line:*
 - a) *Standard designation (number);*
 - b) *relevant clause, table, and/or figure number;*
 - c) *wording of the proposed change; and*
 - d) *rationale for the change.*

Z276-18

Liquefied natural gas (LNG) — Production, storage, and handling

0 Introduction

This Standard establishes essential requirements and minimum standards for the design, installation, and safe operation of liquefied natural gas (LNG) facilities. It is not a design handbook, and competent engineering judgment is necessary for its proper use.

1 Scope

1.1

This Standard applies to the

- a) design;
- b) location;
- c) construction;
- d) operation; and
- e) maintenance

of facilities for the liquefaction of natural gas and facilities for the storage, vaporization, transfer, handling, and truck transport of LNG. It also contains requirements for the training of personnel.

1.2

1.2.1

For facilities that load or unload LNG from a marine vessel, this Standard contains requirements for the interconnecting piping between the loading/unloading arm flange and the storage tank(s), and other piping and appurtenances on the pier or jetty itself.

1.2.2

Guidelines for LNG vehicle fuelling stations used for fleet and public LNG vehicle fuel dispensing operations are given in Annex D. (See the definition of “Fuelling station” in Clause D.2.)

1.2.3

The requirements for small LNG facilities are given in Annex B. (See the definition of “Small facility” in Clause 3.)

1.2.4

The requirements for mobile and portable LNG equipment used on a temporary or permanent basis are covered in Annex B.

1.3

This Standard does not apply to the following:

- a) frozen ground containers;
- b) floating LNG facilities;
- c) the transportation of refrigerants by any means;
- d) the transportation of LNG by railcar or marine vessel;
- e) the transportation of LNG or regasified LNG by pipeline beyond the facility boundary, except as specified in Clause 1.2.1; and
- f) facilities designed for the use of LNG as a fuel for railroad locomotives, or marine vessels.

1.4

All references to pressure throughout this Standard refer to gauge pressures unless otherwise specified.

1.5

All pipe sizes refer to nominal pipe sizes (NPS).

1.6

The values given in SI units are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.

1.7

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (nonmandatory) to define their application.

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, unless the user finds it more appropriate to use newer or amended editions of such publications.

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A23.1-14/A23.2-14

Concrete materials and methods of concrete construction/Test methods and standard practices for concrete

A23.3-14

Design of concrete structures