

Petroleum and natural gas industries - Glass-reinforced plastics (GRP) piping - Part 3: System design (ISO 14692-3:2017)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

**Petroleum and natural gas industries - Glass-reinforced
plastics (GRP) piping - Part 3: System design (ISO 14692-
3:2017)**

Industries du pétrole et du gaz naturel - Canalisations
en plastique renforcé de verre (PRV) - Partie 3:
Conception des systèmes (ISO 14692-3:2017)

Erdöl- und Erdgasindustrie - Glasfaserverstärkte
Kunststoffrohrleitungen (GFK) - Teil 3:
Systemauslegung (ISO 14692-3:2017)

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

This document (EN ISO 14692-3:2017) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2018 and conflicting national standards shall be withdrawn at the latest by March 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 14692-3:2002.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 14692-3:2017 has been approved by CEN as EN ISO 14692-3:2017 without any modification.

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 Layout requirements	3
4.1 General	3
4.2 Space requirements	4
4.3 System supports	4
4.3.1 General	4
4.3.2 Pipe-support contact surface	5
4.4 Isolation and access for cleaning	5
4.5 Vulnerability	5
4.5.1 Point loads	5
4.5.2 Abuse	5
4.5.3 Dynamic excitation and interaction with adjacent equipment and piping	6
4.5.4 Exposure to light and ultraviolet radiation	6
4.5.5 Low temperatures and requirements for insulation	6
4.6 Fire and blast	6
5 Hydraulic design	7
5.1 General	7
5.2 Flow characteristics	7
5.3 General velocity limitations	7
5.4 Erosion	8
5.4.1 General	8
5.4.2 Particulate content	8
5.4.3 Piping configuration	8
5.4.4 Cavitation	8
5.5 Water hammer	8
6 Generation of design envelopes	9
6.1 Partial factors	9
6.1.1 Design life	9
6.1.2 Chemical degradation	9
6.1.3 Fatigue and cyclic loading	9
6.2 Part factor, f_2	10
6.3 Combinations of part factor and partial factors	11
6.4 Design envelope	11
7 Stress analysis	13
7.1 Analysis methods	13
7.2 Pipe stress analysis software	14
7.3 Analysis requirements	14
7.4 Flexibility factors	14
7.5 Stress intensification factors	14
7.6 Modelling fittings	15
7.7 Allowable deflections	15
7.7.1 Vertical deflection in aboveground piping systems	15
7.7.2 Vertical deflection in buried piping systems	15
7.8 Allowable stresses	16
7.9 External pressure	19
7.10 Axial compressive loading (buckling)	20
7.10.1 Shell buckling	20
7.10.2 Euler buckling	20

7.10.3	Buckling pressure — Buried piping	21
7.10.4	Upheaval buckling pressure	22
7.11	Longitudinal pressure expansion	23
8	Other design aspects	23
8.1	Fire	23
8.1.1	General	23
8.1.2	Fire endurance	24
8.1.3	Fire reaction	24
8.1.4	Fire-protective coatings	25
8.2	Static electricity	25
9	Installer and operator documentation	26
Annex A (normative)	Cyclic de-rating factor — A_3	27
Annex B (normative)	Flexibility factors and stress intensification factors	29
Bibliography		36

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This second edition cancels and replaces the first edition (ISO 14692-3:2002), which has been technically revised. It also incorporates the Technical Corrigendum ISO 14692-3:2002/Cor 1:2005.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 6, *Processing equipment and systems*.

A list of all the parts of ISO 14692 can be found on the ISO website.

Introduction

The objective of this document is to ensure that piping systems, when designed using the components qualified in ISO 14692-2, will meet the specified performance requirements. These piping systems are designed for use in oil and natural gas industry processing and utility service applications. The main users of the document will be the principal, design contractors, suppliers contracted to do the design, certifying authorities and government agencies.

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Petroleum and natural gas industries — Glass-reinforced plastics (GRP) piping —

Part 3: System design

1 Scope

This document gives guidelines for the design of GRP piping systems. The requirements and recommendations apply to layout dimensions, hydraulic design, structural design, detailing, fire endurance, spread of fire and emissions and control of electrostatic discharge.

This document is intended to be read in conjunction with ISO 14692-1.

Guidance on the use of this document can be found in [Figure 1](#), which is a more detailed flowchart of steps 5 and 6 in ISO 14692-1:2017, Figure 1.

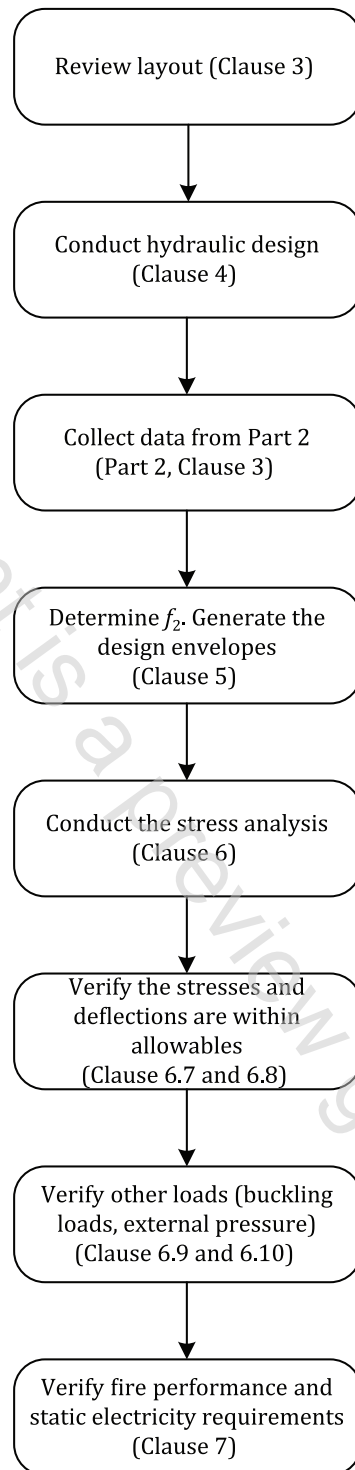


Figure 1 — Guidance on the use of this document

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14692-1:2017, *Petroleum and natural gas industries — Glass-reinforced plastics (GRP) piping — Part 1: Vocabulary, symbols, applications and materials*

ISO 14692-2:2017, *Petroleum and natural gas industries — Glass-reinforced plastics (GRP) piping — Part 2: Qualification and manufacture*

ASTM D2992, *Standard Practice for Obtaining Hydrostatic or Pressure Design Basis for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe and Fittings*

ASTM D2412, *Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading*

AWWA Manual M45, *Fiberglass pipe design*

3 Terms and definitions

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in ISO 14692-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Layout requirements

4.1 General

GRP products are proprietary and the choice of component sizes, fittings and material types can be limited depending on the supplier. Potential vendors should be identified early in design to determine possible limitations of component availability. The level of engineering support that can be provided by the supplier should also be a key consideration during vendor selection.

Where possible, piping systems should maximize the use of prefabricated spoolpieces to minimize the amount of site work. Overall spool dimensions should be sized taking into account the following considerations:

- limitations of site transport and handling equipment;
- installation and erection limitations;
- limitations caused by the necessity to allow a fitting tolerance for installation (“cut to fit” requirements).

The designer shall evaluate system layout requirements in relation to the properties of proprietary piping systems available from manufacturers, including but not limited to the following:

- a) axial thermal expansion requirements;
- b) ultraviolet radiation and weathering resistance requirements;
- c) component dimensions;
- d) jointing system requirements;
- e) support requirements;
- f) provision for isolation for maintenance purposes;
- g) connections between modules and decks;
- h) flexing during lifting of modules;