

**Petroleum and natural gas industries - Pipeline
transportation systems (ISO 13623:2009 modified)**

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14161:2011 sisaldab Euroopa standardi EN 14161:2011 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 29.07.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 06.07.2011.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14161:2011 consists of the English text of the European standard EN 14161:2011.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 29.07.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 06.07.2011.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English Version

**Petroleum and natural gas industries - Pipeline transportation
systems (ISO 13623:2009 modified)**

Industries du pétrole et du gaz naturel - Systèmes de
transport par conduites (ISO 13623:2009 modifiée)

Erdöl- und Erdgasindustrie - Rohrleitungstransportsysteme
(ISO 13623:2009 modifiziert)

This European Standard was approved by CEN on 3 June 2011.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	5
Introduction	6
1 Scope	7
2 Normative references	9
3 Terms, definitions and symbols.....	11
3.1 Terms and definitions	11
3.2 Symbols	13
4 General.....	14
4.1 Health, safety and the environment.....	14
4.2 Competence assurance	14
4.3 Compliance.....	14
4.4 Records.....	14
5 Pipeline system design	14
5.1 System definition	14
5.2 Categorization of fluids.....	14
5.3 Hydraulic analysis	15
5.4 Pressure control and overpressure protection	15
5.5 Requirements for operation and maintenance	15
5.6 Public safety and protection of the environment.....	16
6 Design of pipeline and primary piping	16
6.1 Design principles	16
6.2 Route selection	17
6.3 Loads	19
6.4 Strength requirements	22
6.5 Stability	26
6.6 Pipeline spanning	27
6.7 Pressure test requirements	27
6.8 Other activities	28
6.9 Crossings and encroachments	29
6.10 Adverse ground and seabed conditions	31
6.11 Section isolation valves	31
6.12 Integrity monitoring	31
6.13 Design for pigging	31
6.14 Fabricated components	32
6.15 Attachment of supports or anchors.....	33
6.16 Offshore risers	34
7 Design of stations and terminals	35
7.1 Selection of location.....	35
7.2 Layout	35
7.3 Security	36
7.4 Safety	36
7.5 Environment.....	36
7.6 Buildings.....	36
7.7 Equipment	36
7.8 Piping	37
7.9 Emergency shutdown system	38
7.10 Electrical	38
7.11 Storage and working tankage.....	38

7.12	Heating and cooling stations	38
7.13	Metering and pressure control stations	38
7.14	Monitoring and communication systems	39
7.15	Compressor stations for on-land gas supply systems	39
8	Materials and coatings	39
8.1	General material requirements for pipelines and primary piping	39
8.2	Line pipe	42
8.3	Components other than pipe	43
8.4	Coatings	44
9	Corrosion management	45
9.1	General	45
9.2	Internal corrosivity evaluation	46
9.3	Internal corrosion mitigation	46
9.4	External corrosion evaluation	48
9.5	External corrosion mitigation	49
9.6	Monitoring programmes and methods	50
9.7	Evaluation of monitoring and inspection results	51
9.8	Corrosion-management documentation	51
10	Construction	52
10.1	General	52
10.2	Preparation of the route on land	53
10.3	Preparation of the route offshore	53
10.4	Welding and joining	53
10.5	Coating	54
10.6	Installation of pipelines on land	55
10.7	Installation of offshore pipelines	57
10.8	Cleaning and gauging	59
10.9	As-built surveys	60
10.10	Construction records	60
11	Testing	60
11.1	General	60
11.2	Safety	61
11.3	Procedures	61
11.4	Acceptance criteria	62
11.5	Tie-ins following testing	62
11.6	Testing equipment	63
11.7	Test documentation and records	63
11.8	Disposal of test fluids	64
11.9	Protection following test	64
12	Pre-commissioning and commissioning	64
12.1	General	64
12.2	Cleaning and gauging procedures	64
12.3	Drying procedures	64
12.4	Functional testing of equipment and systems	65
12.5	Documentation and records	65
12.6	Start-up procedures and introduction of transported fluid	65
13	Operation, maintenance and abandonment	66
13.1	Management	66
13.2	Operations	69
13.3	Maintenance	70
13.4	Changes to the design condition	77
13.5	Life extension	78
13.6	Abandonment	78
Annex A	(normative) Safety evaluation of pipelines	79
A.1	Introduction	79
A.2	General requirements	79

A.3	Definition of the scope of the evaluation	79
A.4	Hazard identification and initial evaluation.....	80
A.5	Hazard estimation	81
A.6	Review of results	82
A.7	Documentation.....	82
Annex B	(normative) Supplementary requirements for public safety of pipelines for category D and E fluids on land.....	83
B.1	Objective.....	83
B.2	Location classification	83
B.3	Population density.....	84
B.4	Concentration of people	84
B.5	Maximum hoop stress	84
B.6	Pressure test requirements	85
Annex C	(informative) Pipeline route selection process.....	86
C.1	Limits	86
C.2	Constraints	86
C.3	Preferred corridors of interest.....	86
C.4	Detailed routing.....	86
Annex D	(informative) Examples of factors for routing considerations.....	87
Annex E	(informative) Scope of procedures for operation, maintenance and emergencies	89
E.1	Operating procedures	89
E.2	Maintenance procedures	89
E.3	Emergency procedures	90
Annex F	(informative) Records and documentation.....	91
Bibliography	92

Foreword

This document (EN 14161:2011) has been prepared by Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries”, the secretariat of which is held by AFNOR.

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 January 2012, and conflicting national standards shall be withdrawn at the latest by January 2012.

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

This document supersedes EN 14161:2003.

The text of ISO 13623:2009 has been adopted by CEN/TC 12 with some modifications. These modifications are indicated by a vertical line in the left margin of the text.

Where the expression “International Standard” is used, it is understood as “European Standard”.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Significant differences exist between member countries in the areas of public safety and protection of the environment, which cannot be reconciled into a single preferred approach to pipeline transportation systems for the petroleum and natural gas industries. Reconciliation was further complicated by the existence in some member countries of legislation that establishes requirements for public safety and protection of the environment. Recognizing these differences, ISO/TC 67/SC 2 concluded that this International Standard should allow individual countries to apply their national requirements for public safety and the protection of the environment.

This International Standard is not a design manual; rather, it is intended for use in conjunction with sound engineering practice and judgment. This International Standard allows the use of innovative techniques and procedures, such as reliability-based limit state design methods, providing the minimum requirements of this International Standard are satisfied.

This second edition cancels and replaces the first edition, (ISO 13623:2000), which has been technically revised. Major revisions include replacement of various references to national standards with references to International Standards; replacement of sections on coatings and cathodic protection with ISO references; revision of design to accommodate line pipe above L555 in the new edition of ISO 3183; and the addition of a section on life extension.

ISO 13623:2009, developed within ISO/TC 67 SC 2, has been adopted as EN 14161:2011 (ISO 13623:2009 modified).

The scope of ISO/TC 67/SC 2 is pipeline transportation systems for the petroleum and natural gas industries without exclusions. However, in CEN the scopes of CEN/TC 12 and CEN/TC 234 overlapped until 1995. This scope overlap caused problems for the parallel procedure for the above-mentioned items. The conflict in scope was resolved when both the CEN/Technical Committees and the CEN/BT took the following resolution:

Resolution BT 38/1995: Subject: Revised scope of CEN/TC 12

"BT endorses the conclusions of the coordination meeting between CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries" and CEN/TC 234 "Gas supply" and modifies the CEN/TC 12 scope, to read:

"Standardization of the materials, equipment and offshore structures used in drilling, production, refining and the transport by pipelines of petroleum and natural gas, excluding on-land supply systems used by the gas supply industry and those aspects of offshore structures covered by IMO requirement (ISO/TC 8).

The standardization is to be achieved wherever possible by the adoption of ISO Standards."

In 2009, CEN/TC 12 changed its scope to be in coherency with the last CEN/TC 234's scope changes, as follows (resolution CEN/BTC 19/2009):

Standardisation of the materials, equipment and offshore structures used in the drilling, production, transport by pipelines and processing of liquid and gaseous hydrocarbons within the petroleum, petrochemical and natural gas industries, excluding on-land supply systems used by the gas supply industry excluding gas infrastructure from the input of gas into the on-shore transmission network up to the inlet connection of gas appliances. (covered by CEN/TC234) and those aspects of offshore structures covered by IMO requirements (ISO/TC8).

The standardisation is to be achieved wherever possible by the adoption of ISO standards.

Resulting from these resolutions, "on-land supply systems used by the gas supply industry excluding gas infrastructure from the input of gas into the on-shore transmission network up to the inlet connection of gas appliances" has been excluded from the scope of ISO 13623:2009 for the European adoption by CEN/TC 12.

1 Scope

This International Standard specifies requirements and gives recommendations for the design, materials, construction, testing, operation, maintenance and abandonment of pipeline systems used for transportation in the petroleum and natural gas industries.

It applies to pipeline systems on land and offshore, connecting wells, production plants, process plants, refineries and storage facilities, including any section of a pipeline constructed within the boundaries of such facilities for the purpose of its connection. The extent of pipeline systems covered by this International Standard is illustrated in Figure 1.

This International Standard applies to rigid, metallic pipelines. It is not applicable for flexible pipelines or those constructed from other materials, such as glass-reinforced plastics.

This International Standard is applicable to all new pipeline systems and can be applied to modifications made to existing ones. It is not intended that it apply retroactively to existing pipeline systems.

It describes the functional requirements of pipeline systems and provides a basis for their safe design, construction, testing, operation, maintenance and abandonment.

On-land supply systems used by the gas supply industry excluding gas infrastructure from the input of gas into the on-shore transmission network up to the inlet connection of gas appliances are excluded from the scope of this standard.

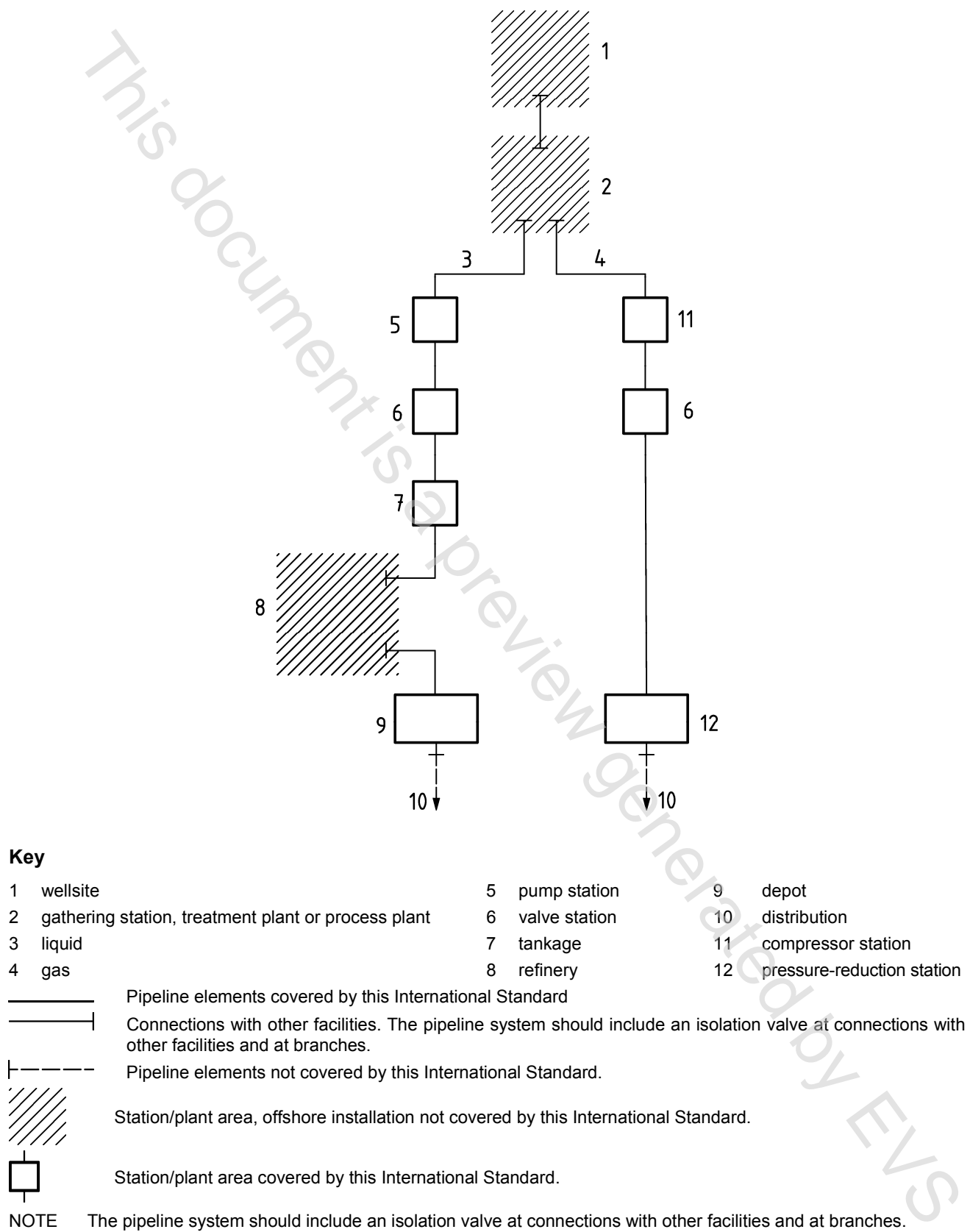


Figure 1 — Extent of pipeline systems covered by this International Standard

2 Normative references

The following referenced documents are indispensable for the application 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 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 3183:2007, *Petroleum and natural gas industries — Steel pipe for pipeline transportation systems*

ISO 3977 (all parts), *Gas turbines — Procurement*

ISO 10439, *Petroleum, chemical and gas service industries — Centrifugal compressors*

ISO 10474:1991, *Steel and steel products — Inspection documents*

ISO 13623:2009, *Petroleum and natural gas industries -- Pipeline transportation systems*

ISO 13707, *Petroleum and natural gas industries — Reciprocating compressors*

ISO 13709, *Centrifugal pumps for petroleum, petrochemical and natural gas industries*

ISO 13710, *Petroleum, petrochemical and natural gas industries — Reciprocating positive displacement pumps*

ISO 13847, *Petroleum and natural gas industries — Pipeline transportation systems — Welding of pipelines*

ISO 14313, *Petroleum and natural gas industries — Pipeline transportation systems — Pipeline valves*

ISO 14723, *Petroleum and natural gas industries — Pipeline transportation systems — Subsea pipeline valves*

ISO 15156-1, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 1: General principles for selection of cracking-resistant materials*

ISO 15156-2, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons*

ISO 15156-3, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 3: Cracking-resistant CRAs (corrosion-resistant alloys) and other alloys*

ISO 15589-1, *Petroleum and natural gas industries — Cathodic protection of pipeline transportation systems — Part 1: On-land pipelines*

ISO 15589-2, *Petroleum and natural gas industries — Cathodic protection of pipeline transportation systems — Part 2: Offshore pipelines*

ISO 15590-1, *Petroleum and natural gas industries — Induction bends, fittings and flanges for pipeline transportation systems — Part 1: Induction bends*

ISO 15590-2, *Petroleum and natural gas industries — Induction bends, fittings and flanges for pipeline transportation systems — Part 2: Fittings*

ISO 15590-3, *Petroleum and natural gas industries — Induction bends, fittings and flanges for pipeline transportation systems — Part 3: Flanges*

ISO 15649, *Petroleum and natural gas industries — Piping*

ISO/DIS 21809-1, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 1: Polyolefin coatings (3-layer PE and 3-layer PP)*

ISO 21809-2, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 2: Fusion-bonded epoxy coatings*

ISO 21809-3, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 3: Field joint coatings*

ISO 21809-4, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 4: Polyethylene coatings (2-layer PE)*

ISO 21809-5, *Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 5: External concrete coatings*

IEC 60034-1, *Rotating electrical machines — Part 1: Rating and performance*

IEC 60079-10-1, *Explosive atmospheres — Part 10-1: Classification of areas — Explosive gas atmospheres*

IEC 60079-14, *Explosive atmospheres — Part 14: Electrical installations design, selection and erection*

API¹⁾ 620, *Design and Construction of Large, Welded, Low-Pressure Storage Tanks*

API 650, *Welded Steel Tanks for Oil Storage*

ASME B16.5, *Pipe Flanges and Flanged Fittings — NPS 1/2 Through NPS 24*

ASME Boiler and Pressure Vessel Code, Section VIII, Division I, *Rules for Construction of Pressure Vessels (BPVC)*

MSS²⁾ SP-25, *Standard Marking System for Valves, Fittings, Flanges and Unions*

MSS SP-44, *Steel Pipeline Flanges*

NFPA³⁾ 30, *Flammable and Combustible Liquids Code*

NFPA 220, *Standard on Types of Building Construction*

1) American Petroleum Institute, 1220 L Street, Northwest Washington, DC 20005-4070, USA.

2) Manufacturer's Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, VA 22180, USA.

3) National Fire Protection Association, 1 Batterymarch Park, PO Box 9101, Quincy, MA 02269-9101, USA.