LEEKTORUKATLAD. OSA 9: NÕUDED KATLA JA ABISEADMETE LIMITEERIMISÜKSUSTELE

Shell boilers - Part 9: Requirements for limiting devices of the boiler and accessories

EESTI STANDARDIMIS- JA AKREDITEERIMISKESKUS
ESTONIAN CENTRE FOR STANDARDISATION AND ACCREDITATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12953-9:2024 sisaldab Euroopa standardi EN 12953-9:2024 ingliskeelset teksti.	This Estonian standard EVS-EN 12953-9:2024 consists of the English text of the European standard EN 12953-9:2024.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 18.12.2024.	Date of Availability of the European standard is 18.12.2024.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Shell boilers - Part 9: Requirements for limiting devices of the boiler and accessories

Chaudières à tubes de fumée - Partie 9: Exigences pour les dispositifs de limitation de la chaudière et de ses accessoires

Großwasserraumkessel - Teil 9: Anforderungen an Begrenzungseinrichtungen an Kessel und Zubehör

This European Standard was approved by CEN on 20 October 2024.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 12953-9:2024) has been prepared by Technical Committee CEN/TC 269 “Shell and water-tube boilers”, the secretariat of which is held by DIN.

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 June 2025, and conflicting national standards shall be withdrawn at the latest by June 2025.

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 12953-9:2007.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Annex G provides details of significant technical changes between this European Standard and the previous edition.

The European Standard series EN 12953 concerning shell boilers consists of the following Parts:

— *Part 1: General*

— *Part 2: Materials for pressure parts of boilers and accessories*

— *Part 3: Design and calculation for pressure parts*

— *Part 4: Workmanship and construction of pressure parts of the boiler*

— *Part 5: Inspection during construction, documentation and marking of pressure parts of the boiler*

— *Part 6: Requirements for equipment for the boiler*

— *Part 7: Requirements for firing systems for liquid and gaseous fuels for the boiler*

— *Part 8: Requirements for safeguards against excessive pressure*

— *Part 9: Requirements for limiting devices of the boiler and accessories*

— *Part 10: Requirements for feedwater and boiler water quality*

— *Part 11: Acceptance tests*

— *Part 12: Requirements for grate firing systems for solid fuels for the boiler*

— *Part 13: Operating instructions*

Although these parts may be obtained separately, it should be recognized that the parts are interdependent. As such, the design and manufacture of shell boilers requires the application of more than one part in order for the requirements of the European Standard to be satisfactorily fulfilled.

NOTE A "Boiler Helpdesk" has been established in CEN/TC 269 which can be contacted for any questions regarding the application of the European Standards series EN 12952 and EN 12953 see the following website: http://www.boiler-helpdesk.din.de.

Any feedback and questions on this document should be directed to the users'national standards body. A complete listing of these bodies can be found on the CENwebsite.

According to the CEN-CENELEC Internal Regulations, the national standardsorganisations of the following countries are bound to implement this EuropeanStandard: 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, Republic ofNorth Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland,Türkiye and the United Kingdom.

Introduction

The types of limiters which are to be fitted to boilers are specified in EN 12953-6:2024 and the design of the safety systems are specified in EN 50156-1:2015.

In order to provide the necessary safety function, for example, to cut off the energy supply to the boiler in the event of a low water fault, the limiter is connected to other elements in the safety system.

1 Scope

This document specifies requirements for limiters which are incorporated into safety systems for shell boilers as specified in EN 12953-1:2012.

The design requirements and examination of the limiters are covered in this document.

NOTE See Annex E for determination of the characteristic data for use in protective circuits with a safety integrity level (SIL) rating. The requirements for limiters with regard to the safety integrity level (SIL), for example, in accordance with EN 61508 are not covered in 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.

EN ISO 228-1:2003, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1:2000)*

EN 10226-1:2004, *Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads - Dimensions, tolerances and designation*

EN 12953-6:2024, *Shell boilers — Part 6: Requirements for equipment for the boiler*

EN 12953-10:2003, *Shell boilers - Part 10 : Requirements for feedwater and boiler water quality*

EN 14597:2012, *Temperature control devices and temperature limiters for heat generating systems*

EN 50156-1:2015, *Electrical equipment for furnaces and ancillary equipment - Part 1: Requirements for application design and installation*

EN 50156-2:2015, *Electrical equipment for furnaces and ancillary equipment - Part 2: Requirements for design, development and type approval of safety devices and subsystems*

EN 60529:1991,[1] *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*

EN IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests (IEC 60664-1:2020)*

EN 60730-1:2016, *Automatic electrical controls - Part 1: General requirements (IEC 60730-1:2013)*

EN 60730-2-6:2016,[2] *Automatic electrical controls - Part 2-6: Particular requirements for automatic electrical pressure sensing controls including mechanical requirements (IEC 60730-2-6:2015)*

EN IEC 60730-2-9:2019,[3] *Automatic electrical controls — Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9:2015)*

[1] Document impacted by A1:2000, A2:2013 and AC:2016.

[2] Document impacted by A1:2020.

[3] Document impacted by A1:2019 and A2:2020.

EN IEC 60730-2-15:2019, *Automatic electrical controls - Part 2-15: Particular requirements for automatic electrical air flow, water flow and water level sensing controls (IEC 60730-2-15:2017)*

EN IEC 60747-5-5:2020, *Semiconductor devices — Part 5-5: Optoelectronic devices — Photocouplers (IEC 60747-5-5:2020)*

EN 60947-5-1:2017, *Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices (IEC 60947-5-1:2016)*

EN 61000-4-2:2009, *Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test (IEC 61000-4-2:2008)*

EN IEC 61000-4-3:2020, *Electromagnetic compatibility (EMC) - Part 4-3 : Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2020)*

EN 61000-4-4:2012, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4:2012)*

EN 61000-4-5:2014,[4] *Electromagnetic compatibility (EMC) — Part 4-5: Testing and measurement techniques — Surge immunity test (IEC 61000-4-5:2014)*

EN 61000-4-6:2014, *Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (EN 61000-4-6:2013)*

EN 61000-4-8:2010, *Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test (IEC 61000-4-8:2010)*

EN IEC 61000-4-11:2020,[5] *Electromagnetic compatibility (EMC) — Part 4-11: Testing and measurement techniques — Voltage dips, short interruptions and voltage variations immunity tests (IEC 61000-4-11:2020)*

EN IEC 61000-6-2:2019, *Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments (IEC 61000-6-2:2016)*

EN 61140:2016, *Protection against electric shock - Common aspects for installation and equipment (IEC 61140:2016)*

EN IEC 61558-1:2019, *Safety of transformers, reactors, power supply units and combinations thereof - Part 1: General requirements and tests (IEC 61558-1:2017)*

EN 61558-2-6:2009, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V - Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers (IEC 61558-2-6:2009)*

[4] Document impacted by A1:2017.

[5] Document impacted by AC:2020-06 and AC:2022-10.

EN 61558-2-16:2009,[6] *Safety of power transformers, power supply units and similar — Part 2-17: Particular requirements for safety isolating transformers for switch mode power supplies (IEC 61558-2-16:2009)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12953-6:2024, EN 12953-10:2003 and the following apply.

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

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
limiter
limiting device
safety accessory which, on reaching a limiting value (water level, pressure, temperature, flow, water quality), is used to interrupt and lock out the energy supply

Note 1 to entry: A limiter is an element of a safety device and a safety accessory for shell boilers as specified in the Pressure Equipment Directive 2014/68/EU, Article 2, Clause 4. A limiter contains a sensor, possibly a sensor control unit and ends at the output contact. The following safety logic and actuating element are not components of this part of the standard, see Figure A.1.

Note 2 to entry: A limiting device comprises

— a measuring function and

— optional with a display and

— an activation function for correction, or shut-down, or safety shut-down and fault shut-down, and which is used to carry out safety related functions as specified in the PED. These functions may be on their own or as part of a safety (protective) system (e.g. sensors, limiters). If this is achieved by multichannel systems, then all items or limiters for safety purposes are included within the safety (protective) system.

3.2
self-monitoring
regular and automatic determination that all chosen components of a safety system are capable of functioning as required

3.3
redundancy
provision of more than one device or system which, in the event of a fault, will still be provided by the necessary facilities

3.4
diversity
provision of different means of performing the required function, e.g. other physical principles or other ways of solving the same problem

[6] Document impacted by A1:2013.