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Shell boilers - Part 8: Requirements for safeguards against excessive pressure

Großwasserraumkessel - Teil 8: Anforderungen an Sicherheitseinrichtungen gegen Drucküberschreitung

Chaudières à tubes de fumée - Partie 8 : Exigences pour la protection vis à vis des excès de pressions

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**Shell boilers - Part 8: Requirements for safeguards against
excessive pressure**

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la protection vis à vis des excès de pressions

Großwasserraumkessel - Teil 8: Anforderungen an
Sicherheitseinrichtungen gegen Drucküberschreitung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 269.

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European foreword

This document (prEN 12953-8:2026) has been prepared by Technical Committee CEN/TC 269 “Shell and water-tube boilers”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 12953-8:2001 and EN 12953-8:2001/AC:2002.

This document has been prepared under a standardisation 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 C provides details of significant technical changes between this document 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 boiler feed water and boiler water quality*
- *Part 11: Acceptance tests*
- *Part 12: Requirements for firing systems for solid fuels for the boiler*
- *Part 13: Operating instructions*

Although these parts can be obtained separately, it should be recognized that the parts are inter-dependent. As such, the design and manufacture of shell boilers requires the application of more than one part in order for the requirements of the standard to be satisfactorily fulfilled.

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 CEN website.

prEN 12953-8:2026 (E)

1 Scope

This document specifies the requirements for safeguards against excessive pressure in shell boilers as defined in EN 12953-1:2025.

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 12952-10:2021, *Water-tube boilers and auxiliary installations — Part 10 Requirements for safety devices against excessive pressure*

EN 12953-1:2025, *Shell boilers — Part 1: General*

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

EN 12953-9:2024, *Shell boilers — Part 9: Requirements for limiting devices of the boiler and accessories*

EN ISO 4126-1:2013,¹ *Safety devices for protection against excessive pressure — Part 1: Safety valves (ISO 4126-1:2013)*

EN ISO 4126-4:2013, *Safety devices for protection against excessive pressure — Part 4: Pilot operated safety valves (ISO 4126-4:2013)*

EN ISO 4126-5:2013,² *Safety devices for protection against excessive pressure — Part 5: Controlled safety pressure-relief systems (CSPRS) (ISO 4126-5:2013)*

EN ISO 4126-7:2013,³ *Safety devices for protection against excessive pressure — Part 7: Common data (ISO 4126-7:2013)*

EN ISO 4126-10:2024, *Safety devices for protection against excessive pressure — Part 10: Sizing of safety valves for gas/liquid two-phase flow*

3 Terms and definitions

For the purposes of this document the terms and definitions given in EN 12953-1:2025, EN 12953-6:2024, EN ISO 4126-1:2013 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 <https://www.electropedia.org/>

¹ Document impacted by A1:2016 and A2:2019.

² Document impacted by A1:2016.

³ Document impacted by A1:2016.

4 Requirements

4.1 General requirements for safeguards (safety pressure relief devices)

4.1.1 Boilers, with the exception of open vented hot water boilers, shall have at least one safety device sized for the rated output (see 4.2) of the boiler which shall ensure against excessive pressure. The safety devices shall be in accordance with:

- EN ISO 4126-1:2013 for safety valves; or
- EN ISO 4126-4:2013 for pilot-operated safety valves; or
- EN ISO 4126-5:2013 for controlled safety pressure relief systems.

For combination of different safety devices, the requirements according to EN 12952-10:2021, 5.1 or 5.2 shall be fulfilled.

Additionally, every superheater shall have at least one safety device on the outlet side. The capacity of this safety device shall be a minimum of 25 % of the maximum continuous rating. However, this requirement can be waived in the case of non-isolatable superheaters when the maximum metal temperature achieved does not exceed its design temperature.

For fully flooded hot water boilers proportionally opening safety valves may be used as an alternative.

4.1.2 The safety devices fitted on the superheater can be considered as forming part of the total safety device discharge capacity only when a boiler is provided with an integral superheater which cannot be isolated.

If the superheater is equipped with a safety device, and it is necessary to prevent overheating of the superheater, it shall be so set as to respond before the safety device on the boiler.

The difference of enthalpy of saturated steam and superheated steam shall be considered for the requirements of total safety device discharge capacity (see also 4.1.1, 3rd paragraph).

4.1.3 There shall be no shut off devices between the safety devices and the parts of the system (e.g. boiler, economizer, superheaters) they are protecting or between the safety devices and their points of discharge.

4.1.4 When an economizer is fitted to a boiler which can be isolated, a safety device is required on the economizer. The capacity of this safety device shall not be counted as forming part of the relieving capacity of the boiler.

4.1.5 Minimum flow diameter (see EN ISO 4126-1:2013, 3.17 and 3.18) smaller than 15 mm shall not be used.

4.1.6 It shall be possible to open safety valves with lifting gear at a pressure below the set pressure.

4.1.7 Safety devices shall be installed in the vertical position.

4.1.8 For steam boilers and hot water boilers, the safety devices shall be fitted on the top of the boiler.

4.2 Discharge capacity

4.2.1 Steam boilers

The total certified discharge capacity of the safety devices applicable to the boiler shall not be less than the maximum continuous rating (MCR).