



SLOVENSKI STANDARD
SIST EN 12952-1:2002
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Vodocevni kotli in pomožne napeljave - 1. del: Splošno

Water-tube boilers and auxiliary installations - Part 1: General

Wasserrohrkessel und Anlagenkomponenten - Teil 1: Allgemeines

Chaudières a tubes d'eau et installations auxiliaires - Partie 1: Généralités

Ta slovenski standard je istoveten z: EN 12952-1:2001

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12952-1

December 2001

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English version

Water-tube boilers and auxiliary installations - Part 1: General

Chaudières à tubes d'eau et installations auxiliaires - Partie
1: Généralités

Wasserrohrkessel und Anlagenkomponenten - Teil 1:
Allgemeines

This European Standard was approved by CEN on 10 March 2000.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document EN 12952-1:2001 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of an identical text or by endorsement, at the latest by June 2002, and conflicting national standards shall be withdrawn at the latest by June 2002.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of the Pressure Equipment Directive (PED)¹).

For the relationship with Pressure Equipment Directive see informative annex ZA, which is an integral Part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard : Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The European Standard series EN 12952 concerning water-tube boilers and auxiliary installations 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: In-service boiler life expectancy calculations
- Part 5: Workmanship and construction of pressure parts of the boiler
- Part 6: Inspecting during construction, documentation and marking of pressure parts of the boiler
- Part 7: Requirements for equipment for the boiler
- Part 8: Requirements for firing systems for liquid and gaseous fuels for the boiler
- Part 9: Requirements for firing systems for pulverized solid fuels for the boiler
- Part 10: Requirements for safeguards against excessive pressure
- Part 11: Requirements for limiting devices, and safety circuits of the boiler and accessories
- Part 12: Requirements for boiler feedwater and boiler water quality
- Part 13: Requirements for flue gas cleaning systems
- Part 14: Requirements for flue gas DENOX-systems
- Part 15: Acceptance tests
- Part 16: Requirements for grate and fluidized bed firing systems for solid fuels for the boiler

Although these Parts may be obtained separately, it should be recognised that the Parts are inter-dependent. As such, the design and manufacture of boilers requires the application of more than one Part in order for the requirements of the European Standard to be satisfactorily fulfilled.

NOTE Part 4 is not applicable during the design, construction and installation stages.

The annexes A and ZA of this European Standard are informative.

¹) Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment; OJEC L181.

EN 12952-1:2001 (E)**1 Scope****1.1 General**

This European Standard applies to water-tube boilers with volumes in excess of 2 litres for the generation of steam and/or hot water at an allowable pressure greater than 0,5 bar and with a temperature in excess of 110 °C as well as auxiliary installations (other plant equipment).

The purpose of this European Standard is to ensure that the hazards associated with the operation of water-tube boilers are reduced to a minimum and that adequate protection is provided to contain the hazards that still prevail when the water-tube boiler is put into service. This protection will be achieved by the proper application of the design, manufacturing, testing and inspection methods and techniques incorporated in the various parts of this European Standard. Where appropriate, adequate warning of residual hazards and the potential for misuse are given in the training and operating instructions and local to the equipment concerned (see prEN 12952-8, prEN 12952-9 and prEN 12952-16).

1.2 Boiler assembly

For the purpose of this standard, the boiler assembly includes:

- a) the water-tube boiler including all the pressure parts from the feedwater inlet (including the inlet valve) up to and including the steam and/or hot water outlet (including the outlet valve or, if there is no valve, the first circumferential weld or flange downstream of the outlet header).

All superheaters, reheaters, economizers, the associated safety accessories and interconnecting tubing that are heated by means of the gases of combustion and are not capable of isolation from the main system by interposing shut-off valves.

Additionally, the tubing that is connected to the boiler involved in services such as draining, venting, desuperheating, etc., up to and including the first isolating valve in the tubing line downstream of the boiler.

Reheaters which are heated by the flue gas or independently fired, and are separately provided with their safety accessories including all control and safety systems.

- b) isolatable superheaters, reheaters, economizers and related interconnecting tubing;
- c) the heat supply or firing system;
- d) the means of preparing and feeding the fuel to the boiler including the control systems;
- e) the means of providing the boiler with feedwater including the control system;
- f) the pressure expansion vessels and tanks of hot water generating plant.

1.3 Other plant equipment

- a) the boiler supporting structural steelwork, the thermal insulation and/or brickwork and the casing;
- b) the means of providing the boiler with air including the forced draught fans and air pre-heaters which are heated by the gases of combustion;
- c) the facilities for moving flue gases through the boiler up to the stack inlet, including the induced draught fans and the air pollution reducing equipment located in the flue gas removal path;
- d) all other equipment necessary for the operation of the boiler plant.

For a description of the types of operating systems used for water-tube boiler plant, see prEN 12952-7.

1.4 Exclusions

This European Standard does not apply to the following types of boiler plant:

- a) boilers other than stationary boilers;
- b) shell type boilers including electrical boilers;
- c) nuclear primary circuits, the failure of which can cause an emission of radioactivity.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

prEN 764 (All parts), *Pressure equipment*

prEN 764-3:1999, *Pressure equipment — Part 3: Definition and parties involved.*

EN 12952-5:2001, *Water-tube boilers and auxiliary installations — Part 5: Workmanship and construction of pressure parts of the boiler.*

prEN 12952-6:1998, *Water-tube boilers and auxiliary installations — Part 6: Inspection during construction, documentation and marking of pressure parts of the boiler.*

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3 Terms and definitions

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For the purposes of this European Standard, the terms and definitions in prEN 764 and the following apply:

3.1

purchaser

individual or organization that buys the completed boiler plant or part thereof from the manufacturer

3.2

manufacturer

individual or organization responsible for the design, fabrication, testing, installation where relevant, and compliance with the requirements of this standard whether executed by him or a subcontractor, see prEN 764-3:1999

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3.3**designer**

individual or organization that, on behalf of the manufacturer, carries out the design of the boiler plant. The designer determines the shape, dimensions and thicknesses of the boiler plant components, selects the materials and details the methods of construction and testing

3.4**material supplier**

individual or organization, not being a material manufacturer, that supplies material or prefabricated parts to be used in the construction of the boiler plant or any component thereof

3.5**material manufacturer**

individual or organization that produces basic materials for the fabrication of boiler plant components or prefabricated standardized parts

3.6**responsible authority**

this standard identifies the involvement of competent organizations which are independent of the manufacturer. Such organizations may be notified bodies, recognized third-party organizations or user inspectorates. For the purpose of this standard these organizations have been collectively termed responsible authorities (RA)

NOTE 1 The definition of a notified body and the criteria controlling its operation are given in Article 12 of the Pressure Equipment Directive.

NOTE 2 The definition of a recognized third-party organization and the criteria controlling its operation are given in Article 13 of the Pressure Equipment Directive.

NOTE 3 The definition of a user inspectorate and the criteria controlling its operation are given in Article 14 of the Pressure Equipment Directive.

NOTE 4 The responsibility of the manufacturer is described in 3.2.

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4 Symbols and abbreviations

For the purposes of this European Standard, the general symbols and abbreviations given in table 4-1 and table 4-2 shall apply.

Table 4-1 — Symbols

Symbol	Description	Unit
A	area	mm ²
A_f	effective cross-sectional area without allowances	mm ²
A_{fb}	effective cross-sectional area of branch	mm ²
A_{fp}	effective cross-sectional area of reinforcing ring	mm ²
A_{fs}	effective cross-sectional area of body	mm ²
A_p	pressurized area without allowances	mm ²
A_{pb}	pressurized area referred to branch	mm ²
A_{ps}	pressurized area referred to body	mm ²
C	shape factor	—
C_1	shape factor for unstayed walls, ends or plates	—
C_2	shape factor for rectangular and elliptical plates	—
C_3	shape factor for flat plates with openings	—
c_1	minus tolerance on the ordered nominal wall thickness	mm
c_2	allowance for metal wastage	mm
D_b	mean diameter of flat ends with knuckle or design diameter of flat cover plates	mm
D_L	bolt circle diameter	mm
d	diameter of tube hole (if applicable in the condition after metal wastage)	mm
d_i	inside diameter	mm
d_{ib}	inside diameter of branch without allowances	mm
d_{is}	inside diameter of main body (cylindrical shell, spherical shell or dished end) without allowances	mm
d_m	mean diameter	mm
d_o	outside diameter	mm
d_{ob}	outside diameter of branch without allowances	mm
d_{os}	outside diameter of main body without allowances	mm
d_s	stay diameter	mm
E	modulus of elasticity at design temperature	N/mm ²
e	wall thickness	mm
e_b	ordered wall thickness of the branch	mm
e_{cb}	required wall thickness of branch or nozzle without allowances	mm
e_{ch}	required wall thickness of flat end without allowances	mm
e_{cs}	required wall thickness of cylindrical or spherical shells or dished end without allowances	mm