BS EN 12953-3:2016

BSI Standards Publication

Shell boilers

Part 3: Design and calculation for pressure parts

National foreword

This British Standard is the UK implementation of EN 12953-3:2016. It supersedes BS EN 12953-3:2002 which is withdrawn.

BSI, as a member of CEN, is obliged to publish EN 12953-3:2016 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval as a European Standard.

The UK committee is concerned that subclause 10.2.11.3 introduces requirements that are too restrictive. In their opinion, the principles included in subclause 10.2.10.3 of BS EN 12953-3:2002 better reflect the design parameters currently used in the UK.

The UK participation in its preparation was entrusted to Technical Committee PVE/2, Water Tube And Shell Boilers.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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English Version

Shell boilers - Part 3: Design and calculation for pressure parts

Chaudières à tubes de fumée - Partie 3: Conception et calcul des parties sous pression

Großwasserraumkessel - Teil 3: Konstruktion und Berechnung für drucktragende Teile

This European Standard was approved by CEN on 23 January 2016.

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European foreword

This document (EN 12953-3:2016) 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of an identical text or by endorsement, at the latest by November 2016, and conflicting national standards shall be withdrawn at the latest by November 2016.

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 12953-3:2002.

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 EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The informative Annex E lists the significant technical changes between this European Standard and the previous edition.

EN 12953, 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 boilers*

— *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*

— *(CR 12953) Part 14: Guideline for involvement of an inspection body independent of the manufacturer*

Although these parts can 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 standard to be satisfactorily fulfilled.

NOTE A "Boiler Helpdesk" has been established in CEN/TC 269 which may 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

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This Part of this European Standard specifies requirements for the design and calculation of pressure parts of shell boilers as defined in EN 12953-1.

For other components such as water tube walls reference should be made to EN 12952 series.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1092-1:2007+A1:2013, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 10160, *Ultrasonic testing of steel flat product of thickness equal or greater than 6 mm (reflection method)*

EN 12952-3:2011, *Water-tube boilers and auxiliary installations — Part 3: Design and calculation for pressure parts of the boiler*

EN 12953-1:2012, *Shell boilers — Part 1: General*

EN 12953-2:2012, *Shell boilers — Part 2: Materials for pressure parts of boilers and accessories*

EN 12953-4:2002, *Shell boilers — Part 4: Workmanship and construction of pressure parts of the boiler*

EN 12953-5, *Shell boilers — Part 5: Inspection during construction, documentation and marking of pressure parts of the boiler*

EN 12953-6:2011, *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 13445-3:2014, *Unfired pressure vessels — Part 3: Design*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12953-1:2012, EN 12953-6:2011 and the following apply.

3.1
branch
nozzle, stub, stand pipe

3.2
cold start
starting the boiler from ambient pressure at room temperature to normal operating condition

3.3
warm start
starting the boiler from the hot stand-by condition

3.4
seam
generic term for welded joints, welded seams or welds