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Shell boilers - Part 14: Guideline for involvement of an inspection body independent of the manufacturer

Chaudieres a tubes de fumée - Partie 14: Lignes directrices relatives a l'implication d'un organisme d'inspection indépendant du fabricant

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Shell boilers - Part 14: Guideline for involvement of an inspection body independent of the manufacturer

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

Foreword

This document (CR 12953-14:2002) has been prepared by Technical Committee CEN /TC 269, "Shell and water-tube boilers" the secretariat of which is held by DIN.

The European Standard 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 feedwater and boiler water quality.*

— *Part 11: Acceptance tests.*

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

— *Part 13: Operating instructions.*

CR 12953-14: Guidelines for the involvement of an inspection body independent of the manufacturer.

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.

1 Scope

This Technical report gives guidance for the involvement of an inspection body independent of the manufacturer of shell boilers as defined in EN 12953-1.

2 Normative references

This CEN Report 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 CEN Report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

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

3 Modules

3.1 General

Each shell boiler should be designed and manufactured under the surveillance of an inspection body (RA) independent of the manufacturer. For the purposes of EN 12953, the inspection body is called a Responsible Authority (RA) as defined in EN 12953-1. The extent of the inspections performed by the RA is dependent on the on the particular module chosen by the manufacturer.

Whilst the majority of shell boilers manufactured to this European Standard fall under the modules G or H1, other modules can be chosen by the manufacturer (see EN 12953-1:2002, clause B.2).

For the purpose of EN 12953, the general requirements of the Pressure Equipment Directive (PED) have been specifically interpreted for both modules G or H1 as given in 3.2 and 3.3.

When the shell boiler is designed and manufactured under the requirements of the PED, then the documents in clause 4 should be supplied to the purchaser.

3.2 Module G

The manufacturer should ensure and declare the shell boiler conforms to EN 12953, and if manufactured under the requirements of the PED, the RA should affix the CE mark and produce a Declaration of Conformity (see Figure 1).

A RA should be involved in the design, manufacturing and inspection stages in accordance with Table 1. If manufactured under the requirements of the PED, issue a Certificate of Conformity (see Figure 2) for the tests undertaken, affix or cause to be affixed its (their) identification number(s) on the approved equipment.

Table 1 — Conformity assessment

Number	Area of activity	Inspection operation	Conformity assessment procedure	
			Module G	Module H1
1	**Quality system**			
1.1	Full quality assurance system	Assessment of Quality System documentation	–	RA
		Audit that Quality System is operational	–	RA
		On-going surveillance	–	RA
2	**Design and general documentation**			
2.1	Design data/calculations	Check that design data/calculations conform to: - technical specification if applicable - the requirements of EN 12953 - applicable regulatory requirements	RA	RA
2.2	Manufacturing drawings	Check that drawing information conforms to: - design data and calculations - technical specification if applicable - the requirements of EN 12953	RA	RA
2.3	Specifications for subcontracted parts	Check that specifications for subcontracted parts conform to: - technical specification if applicable - manufacturing drawing - the requirements of EN 12953 and applicable regulatory requirements	RA	—
3	**Material**			
3.1	Material certificates	Verify that certificate information and results conform to the design specification	RA	—
3.2	Welding consumables	Verify that consumables to be used are in accordance with the design specification	RA	—
3.3	Transfer of identification marks	Examination of the procedure drawn up by the manufacturer for the transfer of marks	RA	RA [a]
4	**Fabrication and welding**			
4.1	Welding specifications	Verify that appropriate welding specifications are available and their contents are compatible with welding procedure approvals	RA	RA [b]
4.2	Welding procedures approvals	Verify that welding procedures, approved by a RA, are available for the materials and field of welding applications	RA	RA
4.3	Welder approval	Verify that welder approvals, approved by a RA, are available and valid	RA	RA

Number	Area of activity	Inspection operation	Conformity assessment procedure	
			Module G	Module H1
4.4	Forming procedures	Verify that forming procedures are available, where applicable, and their contents are appropriate to the product to be formed	RA	RA [b]
4.5	Formed parts	Verify that formed parts are in accordance with the requirements of the forming process	RA	—
4.6	Production test plates	Verify that any PWHT on production test plates independent of the vessel complies with the specific heat treatment applied to the vessel	RA	—
		Examine NDE reports on production test plates	RA	—
		Verify the identity of the test specimens and witness the mechanical tests	RA	RA
		Verify that test information and results contained in manufacturer's report conform to the requirements of EN 12953	RA	RA [b]
5	**Non-destructive examination of welds**			
5.1	Non-destructive examination procedures	Verify that appropriate non-destructive examination procedures are available and check qualification of originator	RA	RA [b]
5.2	Non-destructive examination operator qualifications	Verify the validity of the non-destructive examination operator qualifications	RA	RA [b]
5.3	Non-destructive examination operation	Examination of any radiographs and check conformance to the acceptance criteria	RA [c]	—
		Verify that the results of any ultrasonic examination conform to the acceptance criteria and at least 5 % of the examination conducted by the manufacturer	RA	—
5.4	Non-destructive examination reports	Verify that information and results conform to the acceptance criteria	RA	RA [b]
6	**Post weld heat treatment**			
6.1	PWHT procedures	Verify post-weld heat treatment procedures conform to EN 12953	RA	RA [b]
6.2	PWHT records	Verify that temperature/time recordings conform to the requirements of EN 12953	RA	RA [b]

Number	Area of activity	Inspection operation	Conformity assessment procedure	
			Module G	Module H1
7	**Final inspection and marking**			
7.1	Pre-hydrostatic pressure test inspection	Dimensional checking, visual examination and identification of accessible parts after component completion, prior to hydrostatic pressure test	RA	RA [b]
7.2	Hydrostatic pressure test	Witness final hydrostatic pressure test	RA	RA [b]
7.3	Post-hydrostatic pressure test inspection	Visual examination on completion of hydrostatic pressure test	RA	RA [b]
		Check marking on nameplate	RA	RA [b]
7.4	Safety devices	Check provision for safety equipment	RA	RA [b]
7.5	Manufacturer's data dossier	Review data dossier for completeness (see 4.3)	RA	RA [b]
8	**Actions required under the PED**			
8.1	RA identification number	Affix or cause to be affixed identification number	RA	RA [d]
8.2	Design examination certificate	Issue a Design examination certificate (Figure 3)	—	RA
8.3	Test report	Issue a Test report (see Figure 4)	—	RA
8.4	Certificate of Conformity	Issue a Certificate of conformity (see Figure 2)	RA	—

[a] This assessment is included in the formal assessment of the boiler manufacturer's quality system.

[b] It is not intended that these inspection operations will be undertaken on a regular basis. The RA can decide which operations it requires to inspect, and these may be reduced as experience is gained between the RA and the manufacturer. These operations should be completed prior to the review of the Data Dossier.

[c] The RA will decide on the number of radiographs it will examine.

[d] The identification number of the RA who assesses the manufacturer's quality system and, if different, that of the RA involved during the design, fabrication and final inspection stages of the boiler.

3.3 Module H1

The manufacturer should operate a full quality assurance system for the design, manufacture and inspection. This system should be approved and subjected to regular surveillance by a RA.

During the design and construction of a specific shell boiler contract, the manufacturer should ensure and declare the shell boiler conforms to EN 12953, and if manufactured under the requirements of the PED affix the CE mark and the identification number of the RA responsible for the quality surveillance and produce a Declaration of Conformity (see Figure 1).

A RA should approve the design. If manufactured under the requirements of the PED, the RA should produce a Design Examination Certificate (see Figure 3).

A RA should be involved in the manufacturing and inspection stages in accordance with Table 1. If manufactured under the requirements of the PED, the RA should affix or cause to be affixed its identification number on the approved equipment, and issue a Test report (see Figure 4) for the inspection stages with which it has been involved.