SLOVENSKI STANDARD
SIST EN 13445-6:2002/oprA3:2007

01-september-2007

Neogrevane tlaļne posode - 6. del: Zahteve za konstruiranje in proizvodnjo tlaļnih posod in tlaļnih delov posode iz sive litine s kroglastim grafitom

Unfired pressure vessels - Part 6: Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron

Unbefeuerte Druckbehälter - Teil 6: Anforderungen an die Konstruktion und Herstellung von Druckbehältern und Druckbehälterteilen aus Gusseisen mit Kugelgraphit

Récipients sous pression non soumis a la flamme - Partie 6: Exigences pour la conception et la fabrication des récipients sous pression et des parties sous pression moulés en fonte a graphite sphéroidal

Ta slovenski standard je istoveten z: **EN 13445-6:2002/prA3**

ICS:

23.020.30	Tlaļne posode, plinske jeklenke	Pressure vessels, gas cylinders

SIST EN 13445-6:2002/oprA3:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
EN 13445-6:2002

prA3

May 2007

ICS

English Version

Unfired pressure vessels - Part 6: Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron

Récipients sous pression non soumis à la flamme - Partie 6: Exigences pour la conception et la fabrication des récipients sous pression et des parties sous pression moulés en fonte à graphite sphéroïdal

Unbefeuerte Druckbehälter - Teil 6: Anforderungen an die Konstruktion und Herstellung von Druckbehältern und Druckbehälterteilen aus Gusseisen mit Kugelgraphit

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 54.

This draft amendment A3, if approved, will modify the European Standard EN 13445-6:2002. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 13445-6:2002/prA3:2007: E

Contents

Page

Foreword

This document (EN 13445-6:2002/prA3:2007) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

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, B, C or D, which is an integral part of this document.

This document includes the text of the amendment itself. The corrected pages of EN 13445-6 will be delivered as issue **xx** of the standard.

5 Requirements

Replace 5.2.2.1.8 with the following:

5.2.2.1.8 Simplified fatigue assessment (SFA)

A simplified fatigue assessment will return a value of maximum allowable number of equivalent pressure fluctuations under service conditions. The assessment shall be performed according to Annex D.

A maximum stress concentration factor of 3 is pre-supposed, unless for construction details as limited in Table D-1A where equal or lower values than 3 may be used.

NOTE This Table D-1A may also be used for other metallic castings than spheroidal graphite cast iron(i.e. cast steel, cast aluminium and so on), but is retained in EN 13445-6 until further notice.

7 Testing and final assessment

Change the reference in the second sentence of 7.1.7 from Table 4 to Table 3 as follows:

The maximum severity level shall be equal to or better than SM 3 in Table 2 of EN 1369:1996 and LM4/AM4 in Table 3 of EN 1369:1996.

Annex D
(normative)

Assessment of fatigue life

D.6.1 Pseudo-elastic stress range

Replace clause the 3rd and 4th paragraph of D.6.1 with the following text:

For each component the value of the stress concentration factor η is obtained from Table D.1A .

For details which are not described in Table D-1A, a value for η of 3 shall be used, except if a lower value can be justified by i.e. 3-D finite element modelling, experimental analysis, etc. and accepted by the parties concerned.

NOTE 4 It is no longer required to use Table 17-1 from EN 13445-3 substituting the weld joint factor z=1.

D.6.3 Fatigue design curves

Replace the NOTE under Figure D.1 with the following text:

NOTE These fatigue design curves have been derived from those given in D.7 for detailed assessment (Figure D.2). They incorporate the notch effect of all local stress concentrations whose Kt factor does not exceed approximately 2 Instead of 2, we can also use the more accurate value 1,88 which is the ratio of the endurance limit of the design curves in figure D.2 over that in Figure D.1.For the definition of the theoretical stress concentration factor Kt (see D.7.1 , equation D.7.3). They are valid for the same probability of survival, i.e. Ps > 97,7%

Add the following text and Table after the NOTE:

The value of η is obtained from Table D.1A for each vessel detail. It is an upper bound of the following ratio:

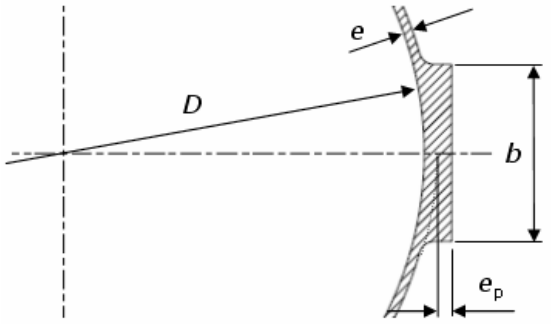
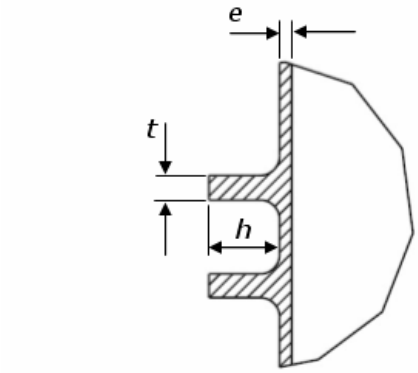
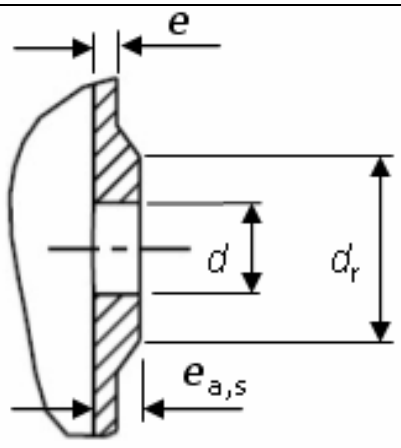
$$\frac{\mathrm{no\,min\,al}\cdot\mathrm{design}\cdot\mathrm{stress}\cdot\mathrm{at}\cdot\mathrm{calculation}\cdot\mathrm{temperature}}{\mathrm{max\,imum}\cdot\mathrm{structural}\cdot\mathrm{stress}\cdot\mathrm{in}\cdot\mathrm{the}\cdot\mathrm{det\,ail}\cdot\mathrm{at}\cdot\mathrm{P}_{\mathrm{max}}}$$

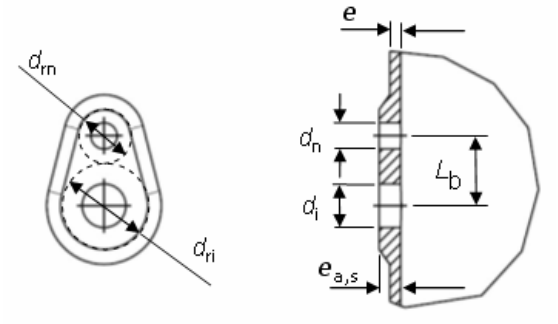
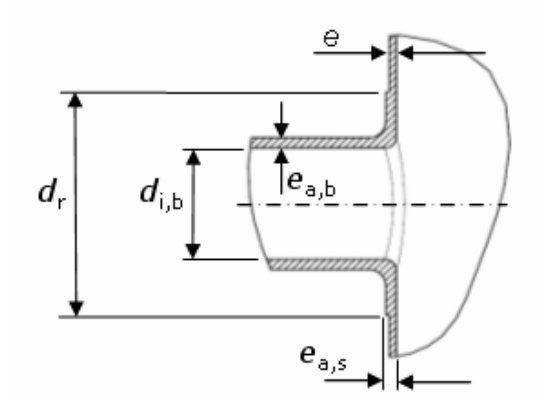
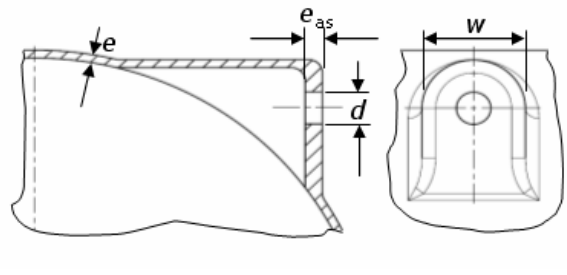
To assess the fatigue life of a detail not covered by Table D.1A, the η value shall be obtained through an estimate of the maximum structural stress in the detail under pressure P_{max}.

For simplification, the maximum value η for the whole vessel can be taken as same value for any detail.

NOTE These values apply equally for any cast part made from metallic material (cast steel, cast aluminium, etc.) since it is only depending on material structure.

Table D.1A — Stress factor η and associated maximum pressure for typical cast constructions

Detail description	Detail	Maximum permissible pressure P_{max}	Conditions	Stress factor η
Cylindrical or conical shells	Left intentionally blank	Cylindrical shell: Part 3, equation (7.4.3) Conical Shell: Part 3, equation (7.6.4)		1,0
Pad for data plate on cylindrical or conical shell		As for shell details	$b \leq 0{,}4 \cdot D$ $e_p \leq 2 \cdot e$	1,1
Stiffening ring (single or multiple) on cylindrical or conical shell		As for shell details	$2e \leq t \leq 4e$ $2e \leq h \leq 6e$	1,0
Single opening with reinforcement in shell or spherical end		As for shell details	$e_{a,s} \geq 2e$ $d_r \geq 2d$	3,0

Multiple openings with reinforcement in shell or spherical end		As for shell details	$e_{a,s} \geq 2e$ $d_{r,i} \geq 2d_r$ $d_{r,n} \geq 2d_r$ $L_b \geq d_i + d_n$	3,0
Nozzle with reinforcement in shell or spherical end		As for shell details	$e_{a,s} \geq 1,5 \cdot e$ $e_{a,b} \geq 1,5 \cdot e$ $d_r \geq 2d_{i,b}$ $di/Di < 0,2$	2,0
Nozzle without reinforcement in shell or spherical end			$e_{a,s} = e$ $e_{a,b} = e$ $di/Di < 0,6$	3,0
Tangential inlet/outlet in cylindrical or conical shell		As for shell details	$e_{as} \geq 2 \cdot e$ $3d \leq w \leq 5\ d$	2,5