European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD):* **(2014)-03-67**				**Date: 202X-xx-xx**
Please fulfil the following				
Part: EN 13445-3	Issue: 2014	Page 604	Subclause B.8.3.6.	National Standard Reference
Subject:				
Type of request:	☒ Technical clarification	☐ Editorial correction		
	☐ Technical comment	☐ Translation correction		
From : Company:SINTRA Engineers Name:Pascal Schreurs Postal address:Poststraat 2D; Sittard		e-mail: p.schreurs@sintra-engineers.nl phone: +31 6 57 333 284		
☐ Manufacturer	☒ User	☐ Other (please specify):		

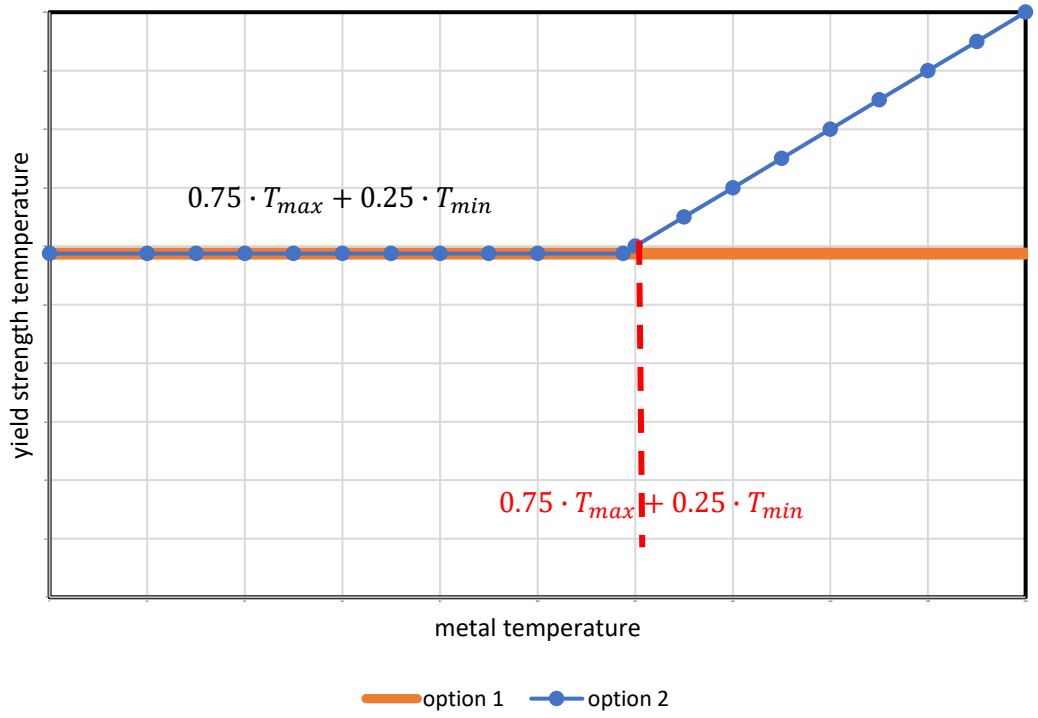
European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

Question/comment:

I have a question with respect to the PPD analysis from the direct route annex B. We have a discussion with a pressure vessel manufacturer about the the progressive plastic deformation design check in annex B (direct route).
The yield strength in this PPD analysis is stated in paragraph B.8.3.6. For carbon steel, the yield strength to be used in this type of analysis is written below:
"RM is given by ReH or Rp0.2/T, at the (time- and space-dependent) calculation temperature, or at a time independent temperature which shall not be less than 0.75 Tmax+0.25 Tmin, where Tmax and Tmin are the highest and lowest calculation temperatures at each point during whole action cycle"

If a thermal transient analysis is performed, the metal temperature should be used to determine the appropriate yield strength since a transient analysis is time dependent. This seems clear to me.
However, if a steady state analysis is performed, a minimum temperature of "*0.75 Tmax+0.25 Tmin"* may be used. How should I interpretate this?

- ***Option 1:*** Is the yield strength for all material determined at "*0.75 Tmax+0.25 Tmin"* regardless of the actual metal temperature?
- ***Option 2:*** Or is the yield strength determined at actual metal temperature with a minimum of "*0.75 Tmax+0.25 Tmin"*



Proposed answer(s): *

In my opinion, option 2 is the correct one. Text should be changed to ensure that the maximum of actual metal temperature or 0.75Tmax+0.25Tmin is used to determine the yieldstrength

Answer from the MHD *(to be filled by MHD):*
Option two is correct. However it is not necessary to change Annex B, because this is clear in Clause 5.3.7.

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)
Question form

Request reference number *(to be filled by MHD):* **(2021)-03-11** **Date: 2023-05-10**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13445-3	2021 or latetst			

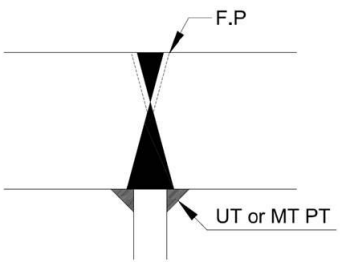
Subject:

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
Company: ENERGYEN CORPORATION (KOREA) ....
Name: SEUNGIL YU .....
Postal address: 72, Jayumuyeok 2-gil, Gunsan-si, Jeollabuk-do, Republic of Korea.....
e-mail: seungil-yu@energyen.co.kr.....
phone: +82-63-472-7456

☒ Manufacturer ☐ User ☐ Other (please specify):

Question/comment:



I would like to know if the EN13345 prohibits that welding the non pressure internal part on the circumferential seam of shell or not.

If it is restricted, I was wondering if there is a way to make it allow this.

Proposed answer(s): *

Answer from the MHD *(to be filled by MHD):*
If not loaded, all the restrictions are given in 5.7.4.2.
If loaded, this is not directly considered in EN 13445-3. This case will be sent to WG 53 for consideration.
Technically, take into account to consider the restriction of 5.7.4.2 in combination with EN 13445-5 related the non destruction test and the operating condition.

To be sent to EN 13445 Maintenance Help Desk secretariat:

EN 13445 MHD secretariat c/o UNM
Standardization Office on behalf of AFNOR
F 92038 Paris La Défense Cedex – France
e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD):* **(2021)-03-12**				**Date: 202X-xx-xx**
Please fulfil the following				
Part: EN 13445-3	Issue: 2021	Page 543 and 562	Subclause 18.2.10 and 18.8.1	National Standard Reference
Subject: Type of stress to be used in fatigue analysis due to high thermal stress transient				
Type of request:	☒ Technical clarification	☐ Editorial correction		
	☐ Technical comment	☐ Translation correction		
From : Company: EDF – Direction Technique ..... Name: PHILIPPON Géraud..... Postal address:19 rue Pierre Bourdeix, Lyon		e-mail: geraud.philippon@edf.fr ..... phone: +33 6 69 15 07 81.....		
☐ Manufacturer	☒ User	☐ Other (please specify):		

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

Question/comment:

The question is about how to deal with thermal stresses in weld fatigue assessment from EN13445-3 §18 :

- In §18.2.10, a definition of structural stress is given. Note 4 gives the following explanation : *«Note 4 to entry: Under high thermal stresses, the total stress rather than the linearly distributed stress should be considered.».* EN13445_background_part3 document also highlights this fact in §18C-6.
- In §18.6.1 it is required to use structural stresses
- In §18.8.1.2, calculation of Δσeq for welds refers to Δσeq,l which is also structural stresses

In the case of high thermal stresses, it seems unclear whether the note 4 from §18.2.10 is applicable or not and that Δσeq,l should be replaced by Δσeq,t. Could you please clarify this point ? If Δσeq,l must be used could you please clarify the background of this choice ?

Could you please also clarify in §18.2.10 what is meant by «High thermal stress» ?

Example : We are performing calculations on a circumferential weld of a thick cylindrical pressure vessel which endure thermal shocks from fluid flowing inside (outside is at atmospheric pressure). There are no variable mechanical loads. (Constant pressure)

For one of transients, this leads to Von mises thermal stresses 1050 MPa internal skin of the shell and less than 350 MPa external skin. Linear distribution is opposite with «low» stresses internally (≈550 MPa) and high stresses externally (≈650 MPa). There is the same pattern for other transients.

In the end, due to using structural stresses, it is found that cracks would first initiate on the outside of the shell which is not necessarily true. Using linearized stresses instead of total stresses also leads to significantly higher permissible number of load cycles. (x10)

Proposed answer(s): *

Unless EN13445-3 welds fatigue design curves are designed with margins to account for ratio between linearized and total stress in case of high thermal loadings, proposal is to request to use Δσeq,t to calculate weld equivalent stress range in §18.8.1.2 in case of high thermal stresses.

What is a high thermal stress criterion to be defined.

Answer from the MHD *(to be filled by MHD):*

A new text for Clause 18 (under preparation – last step of the standardisation process), with deleting of Note 4, will clarify the text.

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD):* **(2021)-03-15**			**Date: 202X-xx-xx**	
Please fulfil the following				
Part: EN 13445-3	Issue: 2021	Page 407	Subclause 16.7.3	National Standard Reference
Subject: e2>=en				
Type of request:	☐ Technical clarification		☐ Editorial correction	
	☐ Technical comment		☐ Translation correction	

From :

Company: MERSEN PY SAS

Postal address:1 rue Jules Ferry 54130 Pagny sur Moselle

e-mail: nicolas.oeillet@mersen.com

phone: +33 776701709

☒ Manufacturer	☐ User	☐ Other (please specify):

Question/comment:

I'm very surprise to see that the pad need to be thicker than the tube. Is it a mistake ?

Proposed answer(s): *

Answer from the MHD *(to be filled by MHD):*

This is not a mistake.
The pad needs to be equal or thicker to the tube.
This figure 16.7.2 needs to be corrected (e_n instead e_a)

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD)*: **(2021)-03-16**			**Date: 201X-xx-xx**	
Please fulfil the following				
Part: EN 13445-3	Issue: 2021	Page 876	Subclause Annex V	National Standard Reference English
Subject:				
Type of request:	☒ Technical clarification		☐ Editorial correction	
	☐ Technical comment		☐ Translation correction	

From :
Company: Cetim .....
Name: Philippe ROHART .....
Postal address: Avenue Felix Louat, Senlis, FRANCE

e-mail: philippe.rohart@cetim.fr .....
phone: +33 3 44 67 47 94 .....

☐ Manufacturer	☒ User	☐ Other (please specify):

Question/comment:

Annex V proposes a rule so as to consider a buffer for unknown nozzle loads.
Could you please provide information about the origin of the rule (Similar rule in another code, works led specifically for EN 13445, …) ? Could you please also comment how this buffer was defined (Data from a company, arbitrary value, …) ?

Proposed answer(s): *

Answer from the MHD *(to be filled by MHD):*

This Annex V is only for the nozzle design, not for flange design. Basic is AD2000.

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD)*: **(2021)-03-18**			**Date**: **202X-xx-xx**	
Please fulfil the following				
Part: EN 13445-3	Issue: 2021	Page 39 - 41	Subclause 6	National Standard Reference French Version
Subject:				
Type of request:	☐ Technical clarification	☐ Technical comment	☒ Editorial correction	☐ Translation correction

From :
Company: Cetim .....
Name: Philippe ROHART .....
Postal address: Avenue Felix Louat, Senlis .....
e-mail: Philippe.rohart@cetim.fr .....
phone: +33 3 44 67 47 94 .....

☐ Manufacturer	☒ User	☐ Other (please specify):

Question/comment:

Page 39, chapter 6.4 is entitled ‘Aciers austénitiques (sauf moulés) avec un allongement minimum après rupture, tel que défini dans la spécification technique pertinente relative au matériau, de 30%≤A%<35%’.

However, page 41, Table 6-1 has a line entitled with different values of rupture elongation, actually ‘Aciers austénisques selon 6.4 30% < A ≤ 35%’

Similarly, Page 39, chapter 6.5 is entitled ‘Aciers austénitiques (sauf moulés) avec un allongement minimum après rupture, tel que défini dans la spécification technique pertinente relative au matériau, de A%≥35 %’.

However, page 41, Table 6-1 has a line entitled with different values of rupture elongation, actually ‘Aciers austénisques selon 6.5 A > 35%’

This leads to a lack of consistency between chapter titles and Table 6-1.

Proposed answer(s): *

Chapter titles are correct. Table 6-1 should be updated in accordance with chapter titles.
Please note this lack of consistency does not exist in the English version.

Answer from the MHD *(to be filled by MHD):*

Proposed answer from convernorship
French version needs to be corrected to be in accordance with the English version

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD):* **(2021)-03-19**			**Date: 202X-xx-xx**	
Please fulfil the following				
Part: EN 13445-3 EN 10213	Issue: 2014 or 2021 2007+A1:2016	Page	Subclause 18.5.3	National Standard Reference
Subject:				
Type of request:	☒ Technical clarification	☐ Editorial correction		
	☐ Technical comment	☐ Translation correction		
From : Company: Baker Hughes Masoneilan ..... Name: BELLIARD Antoine..... Postal address:3 rue Saint Pierre 14110 Condé sur Noireau.....		e-mail: antoine.belliard@bakerhughes.com..... phone: +.....		
☒ Manufacturer	☐ User	☐ Other (please specify):		

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

Question/comment: Fatigue justification of valve body steel casted according to EN 10213.

Production welding is used in foundry manufacturing process to weld casting defects such as sand inclusions, shrinkage porosity or other foundry defects. It is a very common well-developed technique, practically inherent to the casting process, permitted by EN 10213 and controlled through the use of qualified weld procedure using qualified welders. The different steps of such manufacturing process are: defect detection, excavation of the defect cavity, liquid penetrant or magnetic particle test of the cavity, welding, heat treatment if applicable, grinding of the surface if needed, control of the welding (visual examination, liquid penetrant or magnetic particle test, radiography examination if requested),

Definition of production welding according to EN ISO 11970:2007 : any welding carried out during manufacturing before final delivery to the purchaser including joint welding of castings and finishing welding.

This is different from a repair welding which the definition in EN ISO 11970 is: any welding carried out after delivery to the end user, i.e. after the casting has been in service.

As part of casted pressure vessel design check, harmonized standard EN 12516-2:2014 for valves refers to EN 13445-3 for fatigue calculation. Location of a potential production welding in a valve body casted part is impossible to anticipate at fatigue calculation stage (because it can appear anywhere in the casted part). Besides, Table 18-4 and appendix P of EN 13445-3 do not cover this configuration and associated control group, since not planned at design stage.

Question 1 : In reference to §18.5.3 of EN 13445-3 (*Plain material might contain flush ground weld repairs. The presence of such repairs can lead to a reduction in the fatigue life of the material. Hence, only material which is certain to be free from welding shall be assessed as unwelded*), can we consider that a “production welding” of a full casted part according to harmonized standard EN 10213 is not considered as a “flush ground weld repair” and has no effect on the fatigue life of the material ? If yes, this component will be thus assimilated to an unwelded material.

Question 2 : If the answer to Question 1 is ‘NO, how can a class of weld detail be determined ?

Proposed answer(s) 1 : Yes, Production welding of an EN 10213 casted part has not to be considered in the fatigue EN 13445 evaluation.

Proposed answer(s) 2 : Such a production weld could be considered as a Full penetration butt weld flush ground, including weld repairs (Detail 1.1, Table 18-4) considering that a welding procedure could fully eliminate the cracking risk in the bottom of the cavity.

Answer from the MHD *(to be filled by MHD):*

For EN 13445-3:2021, the proposed answer 2 is the correct one.

There is an amendment under preparation, so this question is sent to CEN/TC 54/WG 53 for consideration.

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)
Question form

Request reference number *(to be filled by MHD):* **(2021)-03-20** **Date: 202X-xx-xx**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13445-3	2021	607-629	Table A-1 to A-6	

Subject:

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
Company:Hartford Steam Boiler UK Ltd
Name:Gavin Edley
Postal address:9th Floor Chancery Place, 50 Brown Street, Manchester, M2 2JT

e-mail: gavin_edley@hsb.com
phone: +44 7483926929 .....

☒ Manufacturer ☐ User ☒ Other (please specify): UK Approved Body

Question/comment:

Several rows in the tables referenced above show the words “NOT ALLOWED FOR DBA-DR AND CREEP DESIGN”

Calcification is requested on the correct meaning, does this mean:

“A” – that it is not allowed when using BOTH DBR-DR AND CREEP DESIGN (so if you were using DBA-DR but not creep design, then this is permitted)

“B” – that it is not allowed when using EITHER DBR-DR AND CREEP DESIGN (so if you were using DBA-DR but not creep design, then this is not permitted)

Proposed answer(s): *

A – the words “DBA-DR AND CREEP DESIGN” is an “and” requirement, and only applicable when both are used.

Answer from the MHD *(to be filled by MHD):*

Answer B is the correct one.
Amendment under preparation needs to be change to replace “and” with “and/or”. (to CEN/TC 54/WG 53)

To be sent to EN 13445 Maintenance Help Desk secretariat:

EN 13445 MHD secretariat c/o UNM
Standardization Office on behalf of AFNOR
F 92038 Paris La Défense Cedex – France
e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)

Question form

Request reference number *(to be filled by MHD):* **(2021)-03-21** **Date: 202X-xx-xx**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13445-3	2021	24	5.3.10	

Subject: Calculation pressure and temperature in the creep range

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
Company: Bilfinger Tebodin Netherlands B.V. .....
Name: Dinant Krijgsman.....
Postal address: Jan Tinbergenstraat 172, 7559 SP Hengelo, The Netherlands.....
e-mail: dinant.krijgsman@bilfinger.com.....
phone: +31 6 1533 8903 .....

☐ Manufacturer ☒ User ☐ Other (please specify):

Question/comment:

EN 13480-3 clause 4.2.3.4 states that for piping operating in the creep range, the calculation pressure shall be considered equal to the operating pressure which is associated with the corresponding temperature. In EN 13445-3 I have not been able to find such a clause. Therefore my question is if for components operating in the creep range, do we have to consider the operating pressure or the design pressure for verification of the wall thickness (in combination with the time dependant allowable stress).

To be more specific I have an equipment with the following design / operating conditions:

Design pressure	3.0 barg
Operating pressure	1.0 barg
Design temperature	1100 °C
Operating temperature	1000 °C

Do I have to check the design pressure of 3.0 barg using the time dependent allowable stress at a temperature of 1100°C, or do I need to the check the operating pressure of 1.0 barg using the time dependant allowable stress at a temperature of 1000°C?

Proposed answer(s):

For calculation temperatures above the creep range, the calculation pressure is equal to the operating pressure.

Answer from the MHD *(to be filled by MHD):*

EN 13445-3, Clause 5 needs to be considered
3 bar for 1100°C time independent material property
1 bar for 1000°C time dependent material property

This question is sent to CEN/TC 54/WG 53 to see if it is necessary to add a remark for LC0 of Table 5.3.2.4–1

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

To be sent to EN 13445 Maintenance Help Desk secretariat:	EN 13445 MHD secretariat c/o UNM Standardization Office on behalf of AFNOR F 92038 Paris La Défense Cedex – France e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*

European Committee for Standardization
Comité Européen de Normalisation
Europaïsches Komitee für Normung

EN 13445 "Unfired pressure vessels" Maintenance Help Desk (MHD)
Question form

Request reference number *(to be filled by MHD):* **(2014)-05-31** **Date: 2024-21-02**

Please fulfil the following

Part:	Issue:	Page	Subclause	National Standard Reference
EN 13445-5	2014		6.3	

Subject: Weld Mapping Traceability

Type of request: ☒ Technical clarification ☐ Editorial correction ☐ Technical comment ☐ Translation correction

From :
Company: VALIDATE .....
Name: Ger Whelan .....
Postal address: T12DY0P Ireland .....
e-mail: gerwhelan617@gmail.com .....
phone: +353 087 2667592 .....

☐ Manufacturer ☐ User ☒ Other (please specify): Quality Auditor

Question/comment:

Audit of site operating & qualified, pharmaceutical vessel, technical records.

One Main longitudinal shell weld pressure, product contact seam, has no welding traceability or mapping.

Missing: Weld Joint Nr. WPS, Filler Nr. Welder ID, Weld Machine, NDT.

Can this vessel still be considered compliant to EN 13445, PED ESR annex 1, CE, EU Cert. of Conformity?

Proposed answer(s): *

Vessel cannot be considered compliant, as weld material subject to stress, has no traceability.
EN 13445-5 / 6.3.1 requires all materials subject to stress, to be traceable, including welding consumables.

Answer from the MHD *(to be filled by MHD):*

This question is out of the scope of CEN/TC 54/WG 10. It needs to be address to a notify body

To be sent to EN 13445 Maintenance Help Desk secretariat:

EN 13445 MHD secretariat c/o UNM
Standardization Office on behalf of AFNOR
F 92038 Paris La Défense Cedex – France
e-mail: en13445@unm.fr

***** *Please note that question with proposed answers will be dealt with as priority.*