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

EN 13480 MHD
form 2-001_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
2-001-2015	2014-12-10	2015-01-10	2015-01-08

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
2			EN 13480-2:2012, Annex B

Question

Dear Sir, would you be so kind to find a time for my question: in Method 1 is cited : „… allows the selection of materials taken from **harmonised European material standards**…" In method 3 is cited : „… materials **not currently covered by harmonised European standard**…" Method 2 is applicable for C, CMn … steels but : to all steel specifications (for example including A106GrB) or materials taken from **harmonised European material standards ? ; my opinion :**if Method 1 is conservative method and include EU materials, method 2 must be only for EU materials considering history of „design lines" .

Thank you very much.

Answer proposed by the author of the question

—

Answer of the maintenance group

All methods apply only for harmonized materials (pre assumption of conformity).
However, if non EU-materials are applied it is necessary to create a particular material appraisal (PMA) according to EN 764-4. This must show that the materials fulfill the requirements in clause 4 of EN 13445-2. Clause 4 leads to methods 1, 2 and 3. In detail this means that method 1 can be used if the PMA is done relative to the strength and toughness level provided through PMA. Method 2 can be applied if it is verified within the PMA that the underlying Master Curve concept applies. Method 3 is the individual fracture mechanics method which as a result would become part of the PMA.

Question from:

Name Goran VRUCINIC

Company TPK ZAVOD *Country* Croatia

Date 2014-12-10

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

EN 13480 MHD
form 2-002_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
2-002-2015	2015-06-17	2015-06-30	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
2			EN 13480-2:2012, B.2.2.5

Question

Subject : Use of austenitic steels for temperatures lower than -105°C

Question/comment :

EN 13480–2:2012 point B.2.2.5 contains reference to EN 13480-4 for welds of austenitic steels used at temperatures lower than -105°C:

Where the design temperature is below - 105°C weld metal and heat affected zones for austenitic stainless steels shall meet additional requirements of EN 13480-4.

This reference is identical to B.2.2.5 of EN 13445-2:2009 which references EN 13445-4.
EN 13445-4:2009 contains requirements for welds of austenitic steels used at temperatures lower than -105°C point 8-2.4.2, but there is no equivalent requirement in EN 13480-4.

Which requirements have to be applied for welding material and heat affected zone of austenitic steels used at temperature lower than -105°C?

Answer proposed by the author of the question

Emission of an answer containing requirements of §8.2.4.2 - EN 13445-4.

Integration of requirements EN 13445-4 §8.2.4.2 directly in EN 13480-2 §B.2.2.5 instead of reference to EN 13480-4.

Answer of the maintenance group

Subject to be studied within CENTC 267/WG 4

CEN/TC 267/WG 4 will draft a proposal for Amendment EN 13480-4:2012/prA5 regarding use of austenitic for temperatures lower than -105 °C following this MHD question (CEN/TC 267 Decision N024/2015 – document CEN/TC 267 N1016).

MHD experts ask P.LANGENBERG (D) (CEN/TC 267/WG 2 Convenor) to create a complete proposal regarding this change. This text needs to be written as a requirement based on EN 13445-4 §8.2 a) 2) without any link to EN 13445-4, if necessary copy the relevant table(s).

Question from:

Name Arnaud FAUCHON

Company Air Liquide Advanced Technologies *Country* France

Date 2015-06-17

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

EN 13480 MHD
form 2-003_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
2-003-2015	2015-07-10	2015-08-31	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
2			EN 13480-2:2012, 4.1.4

Question

Subject : Materials for pressure equipments / fracture after elongation transversal?
Question/comment :
Following the exact wording from subclause 4.1.4:
« *4.1.4 The specified minimum elongation after fracture shall be :*
-- >= 14% for the transverse direction ; and
-- >= 16% for the longitudinal direction
When measured on a gauge length……… »
EN 13480-2 shows no further explanation how to handle the restriction of >=14% elongation after fracture in transversal direction for pressure equipment materials. How to handle the absence of transversal properties in round bars, acc. to DIN EN 10273? Taking into consideration this isolated restriction, it is obviously not allowed to use materials acc. to DIN EN 10273 for any kind of pressure equipments acc. to DIN EN 13480. As it is state of the art and common experience to use materials acc. To DIN EN 10273 for pressure equipments, we herewith ask for clarification how to handle this contradiction between Appendix D and subclause 4.1.4 within EN 13480-2.

Answer proposed by the author of the question

1. Add comment / footnote within subclause 4.1.4 in accordance to EN 12952-2 subclause 4.2.5.3 for exceptions.
2. Add comment / footnote which generally allows the absence of transversal properties for materials acc. to DIN EN 10273.

Answer of the maintenance group

The minimum percentage elongation *A*min after fracture shall be specified for transverse direction if not specified within the material standard.

Further discussion needs to be carried out within CEN/TC 54/WG 52-CEN/TC 267/WG 2.

Question from:

Name Christoph Gorecki

Company Kraftanlagen München GmbH NL Berlin *Country* Germany

Date 2015-07-10

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

EN 13480 MHD
form 3-001_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-001-2015	20/11/2014	31/12/2014	12/05/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012 10.2e) 10.4.2

Question

We have identified one error, in 10.2, about the exemption from detailed fatigue analysis.

We think that the item 10.2.e.1 has to be understood as “the number of full load cycles… does not exceed 1000” and not “the equivalent number of full pressures cycles does not exceed 1000”.

Furthermore, in the paragraph 10.4.2 we have a lot of difficulty to understand that in case of a rate of temperature change at start up or shut down up to 2°C/min, the detailed fatigue analysis would be mandatory.

Answer proposed by the author of the question

—

Answer of the maintenance group

1st remark: Sub-clause 10.3.1 is dealing with "Pressure cycle", this is the reason why it is mentioned in 10.2e) 1) "equivalent number of full pressure cycles".

2nd remark: Note 1 in sub-clause 10.4.2 is "state of the Art", which indicates that for heat up gradients less or equal to 2°C/min and for components less to 125 mm thickness is not required.

Question from:

Name Christophe SERRANO

Company ALSTOM THERMAL POWER *Country* France

Date 2014-11-20

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

EN 13480 MHD
form 3-002_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-002-2015	16/12/2014	31/01/2015	12/05/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 5.2.2

Question

Subject: Use of elongation value for use in wall thickness calculation

Question/comment :

To use the equations for wall thicknesses in Section 6 (e.g. eqn. 6.1-1) it is necessary to calculate the design stress using the equations in Section 5.2.2. Some of these equations depend on the minimum elongation for the material (in my example I have been using EN 10216-5), but the material standards provide two values for minimum elongation, longitudinal and transverse. Which is the correct value to use for this purpose?

Answer proposed by the author of the question

—

Answer of the maintenance group

The same remark was answered in 2013 by the MHD (see MHD answer 3-010-2013 to download on the MHD Website at: http://www.unm.fr/main/core.php?pag_id=121).

The lowest elongation shall be used to decide the nominal design stress.

For clarification, the working group CEN/TC 267/WG 3 "*Design and Calculation*" decided to add a sentence in the Draft Amendment currently under preparation EN 13480-3:2012/prA1.

Question from:

Name Stephen McGENNITY

Company Jacobs Engineering UK Ltd *Country* UK

Date 2014-12-16

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

EN 13480 MHD
form 3-003_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-003-2015	26/01/2015	28/02/2015	12/05/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 10.3.2.3

Question

Question/comment :

The factor F_d (eq. 10.3.2-2) decreases with increasing wall thicknes e_{ord}. Decreasing F_d will lead to an increase of $2\sigma_a$ (eq. 10.3.2-1). Increasing $2\sigma_a$ means a lower number of allowable stress cycles (eq. 10.3.2-6).

So, a pipe with a lower wall thickness will endure more stress cycles than a pipe with thicker walls? As this appears to me to be somewhat counter-intuitive, I would very much appreciate some short explanation or a reference to literature on this matter.

Answer proposed by the author of the question

—

Answer of the maintenance group

These are common Rules given within Standards/Codes such as EN 13445, CODETI for examples.

Question from:

Name Prof. Dr. Richard Aust

Company Technische Hochschule Nürnberg *Country* Germany

Date 2015-01-26

EN 13480 MHD
form 3-004_2015_ACP

Type of question: **Interpretation**

Registration number	Date of submission	Target date for answer	Date of acceptance
3-004-2015	26/01/2015	28/02/2015	12/05/2015

Part number	Page number	Subclause number	Reference of the standard used
3			EN 13480-3:2012, 10.3.2.3

Question

Using eq. 6.1-1 (p. 26) to calculate the allowable pressure at 20°C for a pipe with moderate wall thickness yields

$$p_r = \frac{e 2 f_{20}}{D_o - e}$$

substituting p_r in eq. 10.3.2-1 with this expression gives ;

$$2\sigma_a = \frac{\eta}{F_d F_t} \frac{\hat{p} - \breve{p}}{e} (D_o - e)$$

Hence, if I am not mistaken, $2\sigma_a$ as well as the number of allowable stress cycles N_{all} does not depend on any material properties, i.e. the type of the material of the pipe wall is of no relevance.
Would you please be so kind as to enlighten me, at which point I am misinterpreting the standard?

Answer proposed by the author of the question

—

Answer of the maintenance group

F_t depends on the materials.

Question from:

Name Prof. Dr. Richard Aust

Company Technische Hochschule Nürnberg **Country** Germany

Date 2015-01-26

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

EN 13480 MHD
form 3-005_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-005-2015	09/02/2015	31/03/2015	12/05/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 5.3.1

Question

Subject: Time- dependent nominal design stress

Question/comment: Q1. Under Clause 5.3.1 it mentions that …the creep strength values of the base material shall be reduced by 20%, except where ensured creep strength values have been determined…. Since some materials have weld strength reduction greater than 20% at temperature does this 20% result in conservative design?

Q2. Is it the intent of the Code to only use this 20% reduction for determining the thickness of the pipework. What about the use of the reduced allowable stress for the sustained stress check. Should the reduction in Weld strength be included in the determination of the alllowable sustained stress?

Q3. The wording of Clause 5.3.1 is ambiguous. Can the Code clarify where weld strength reduction factors are to be used?
Q4. Why does the EN 13480 Code not use the zc factor of EN 13445 Code such that it is clear that a weld strength reduction factor should be applied?

Answer proposed by the author of the question

—

Answer of the maintenance group

When the reduction factor is available, you have to use it and when the reduction factor is not available, you have to use 20% reduction.

It is the intention of EN 13480 to use the reduction only for determining the wall thickness, for the time being, for determining allowable stress for the sustained load, it is under discussion.

For clarification, the working group CEN/TC 267/WG 3 "*Design and Calculation*" decided to improve the wording of sub-clause 5.3.1 in the Draft Amendment currently under preparation
EN 13480-3:2012/prA1.

Question from:
Name Denis S. Brennan

Company Doosan Babcock *Country* UK
Date 2015-02-09

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

EN 13480 MHD
form 3-006_2015_ACP

Type of question: **Interpretation**

Registration number	Date of submission	Target date for answer	Date of acceptance
3-006-2015	23/02/2015	31/03/2015	12/05/2015

Part number	Page number	Subclause number	Reference of the standard used
3			EN 13480-3:2012, 8.6.1

Question

Subject: Design of Special Piping Components – Cylindrical Y-Pieces

Question/comment:

Refer Note in Clause 8.6.1, of Cylindrical Y-Pieces

"It is recommended, that such a design should not apply in creep range. Attention should be paid to the welding process"

Questions:

1) Since Cylindrical Y-Piece is a forged component without any weld joints , please clarify where the welding process is applicable

2) What is the reason for not recommending Cylindrical forged Y-Pieces in creep range?

Answer proposed by the author of the question

—

Answer of the maintenance group

This limitation given in 8.6.1 only applies to fabricated welded Y-pieces.

Question from:

Name	PARAMESWARAN H.		
Company	BHARAT HEAVY ELECTRICALS LIMITED	Country	India
Date	2015-02-23		

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

EN 13480 MHD
form 3-007_2015_ACP

Type of question: **Interpretation**

Registration number	Date of submission	Target date for answer	Date of acceptance
3-007-2015	02/03/2015	15/04/2015	12/05/2015

Part number	Page number	Subclause number	Reference of the standard used
3			EN 13480-3:2012, 5.2.2.2

Question

Subject: allowable stress under proof test conditions for austenitic steels with A > 25%

Question/comment:

According paragraph 5.2.2.2 of EN13480-3 the allowable stress at prooftest conditions for austenitic steels with A > 25% is the **greater** of the two following values :

- 95% $R_{p1,0}$ at specified test temperature
- 45% R_m at specified test temperature

This means that the allowable stress of a material with R_m > 95/45 x $R_{p1,0}$, is higher than $R_{p1,0}$.
This implies that the material will have a plastic deformation greater than 1%, while we design in the elastic range of material (<R_e, $R_{p0,2}$ or $R_{p1,0}$).
Please explain why this is allowed.

I have checked the allowable stress for test conditions in EN13445-3. In this standard it is allowed to design higher than the elastic range for test conditions also. However different safety factors and A > 35% is prescribed in the EN13445-3. What is the reason for the difference between the design codes?

Answer proposed by the author of the question

—

Answer of the maintenance group

It is a common engineering practice to use these criteria for austenitic steels with high elongation (State of the Art).

The working group CEN/TC 267/WG 3 "*Design and Calculation*" decided also to add the following correction (A ≥ 25% will be corrected to A ≥ 35%) in sub-clause 5.2.2.2 within the Draft Amendment currently under preparation EN 13480-3:2012/prA1.

Question from:
Name: Mark Stijffs
Company: Tebodin Netherlands BV
Country: The Netherlands

Date: 2015-03-02

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

EN 13480 MHD
form 3-008_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-008-2015	19/05/2015	30/06/2015	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 11.4

Question

Subject: Hollow Circular Attachments

Question/comment:

Q1. Does the calculation method of Section 11.4 only apply to circular attachments welded directly to the pipe without additional reinforcing pads?

Q2. If the answer to Q1 is yes then how should circular attachments with reinforing pads as depicted in Figure 13.1.5.3 be assessed ?

Q3. Can the present approach of Section 11.4 be used for cases where reinforcing pads are used by simply using the combined thickness of pipe and re-pad as e_n in the formulae?

Answer proposed by the author of the question

Section 11.4 does not indicate the procedure for Circular attachments where reinforcing pads are employed. Clarity should be given for situations where either IPC (Integral Pad Configuration) or NIPC (Non-integral pad configuration) are employed.

Answer of the maintenance group

Subject studied by CEN/TC 267/WG 3 with the decision of deletion of the corresponding Figure 13.1.5-3 "Support with intermediate pad". Modification in the Draft Amendment EN 13480-3:2012/prA1 under development.

Question from:

Name Denis S Brennan

Company Doosan Babcock

Country UK

Date 2015-05-19

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

EN 13480 MHD
form 3-009_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-009-2015	19/05/2015	30/06/2015	03/07/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 13.5.5.5

Question

Subject: Coefficient of Friction Steel to Steel

Question/comment:

Q1. The value of the Coefficient of Friction is given as 0.3 for Steel to Steel which is very low compared to Reference Literature where the steel/steel coefficients of friction are significantly higher. Will the use of 0.3 provide conservative loading for the design of pipe supports?

Q2. How can EN 13480 adopt the use of such low steel to steel coefficient of friction when most references indicate significantly higher values?

Answer proposed by the author of the question

Provide reference for the Coefficient of Friction quoted such that users can identify the origin of the 0.3 value.

Answer of the maintenance group

Q1: 0.3 is a good engineer's judgment (see German KTA, BS, Codetti…). If Doosan Babcock wants more it should be indicated within its specification.
Q2: "*most references*" please let us know these references. The standard is not a literature where all bits and pieces are proven by citing other literature.

Question from:

Name Denis S Brennan
Company Doosan Babcock *Country* UK
Date 2015-05-19

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

EN 13480 MHD
form 3-010_2015_ACP

Type of question: **Interpretation**

Registration number	Date of submission	Target date for answer	Date of acceptance
3-010-2015	28/05/2015	15/06/2015	03/07/2015

Part number	Page number	Subclause number	Reference of the standard used
3			EN 13480-3:2012, 6.3.3

Question

Subject: Calculation of equivalent pressure by bending moment – Clause 6.6.3

Question/comment:
Equation (6.6.2-1) considers an axial force on a full circular area by (Pi)*G^2/4 but only half of the moment on the same area by (Pi)*G^3/16. The formula for the corresponding section modulus is given by (Pi)*G^3/32.

Answer proposed by the author of the question

Peq = P + 4*F / ((Pi)*G^2) + 32*|M| / ((Pi)*G^3) (6.6.2-1)

Answer of the maintenance group

The equation (6.6.2-1) is in line with other European standards, e.g. EN 1591-1:2014, equation (96).

The consideration of the "full bending moment" would be far too conservative, since axial stresses due to bending moment are not acting continuously over the cross section.

In EN 13480-3:2012, equation (6.6.2-1), the bending moment refers to the mean gasket diameter, while in EN 1591-1:2014, the bending moment refers to the effective bolt circle diameter.
Thus, EN 13480-3:2012 is more conservative than EN 1591-1:2014.

Question from:
Name: Emil Hanauer
Company: Bosch Rexroth AG
Country: Germany
Date: 2015-05-28

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

EN 13480 MHD
form 3-011_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-011-2015	17/06/2015	30/06/2015	03/07/2015
Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012, 13.3.1

Question

In Appendix N (Table No.1) of EN 13480-3 2012 version, it is stated that the "justification of strength analysis, testing or reference to a standard design submitted for type testing" is to make available for inspection on class S2 and S3 supports only.
However, in paragraph 13.3.1 of EN 13480-3 2012 version, it says the following sentence:
"The design of the support must be verified by calculation in accordance with this paragraph or type tests …"
Can you confirm that this sentence of paragraph 13.3.1 is only for S2 and S3 supports as described in Annex N?

Answer proposed by the author of the question

—

Answer of the maintenance group

Clause 13.3.1 gives the general requirements about the design of supports. It is the responsibility of the manufacturer to produce a justification for the design of supports S1.
Annex N states only what types of documents shall be delivered by the manufacturer therefore the sentence of clause 13.3.1 is not only for S2 and S3 supports.

Question from:

Name Nathalie LENEZ

Company SEDECC *Country* France

Date 2015-06-17

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

EN 13480 MHD
form 3-012_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-012-2015	2015-07-27	2015-08-31	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
2			EN 13480-3:2012, 8.3.1

Question

Subject: Openings in dished ends
Question/comment:
Subclause 8.3.1 allows openings in dished ends when 0.3 < di/Di ≤ 0.6.

Annex O hasn't openings in dished ends calculation.

How to deal with small openings in dished ends (di/Di < 0.3) ?

Answer proposed by the author of the question

Remove di/Di < 0.3 limitation if possible.

Answer of the maintenance group

This sentence only defines additional requirements to fulfil for openings with a ratio 0.3 < di/Di ≤ 0.6.

Next step: This item needs to be clarified and studied by CEN/TC 267/WG 3 within the Draft Amendment EN 13480-3:2012/prA1 under development.

Question from:

Name Arnaud FAUCHON

Company Air Liquide Advanced Technologies *Country* France

Date 2015-07-27

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

EN 13480 MHD
form 3-013_2015_ACP

Type of question: **Technical**

Registration number	Date of submission	Target date for answer	Date of acceptance
3-013-2015	2015-09-29	2015-10-29	2015-10-29

Part number	Page number	Subclause number	Reference of the standard used
3			EN 13480-3:2012, 5.3

Question

Subject : Time dependent design stress for extremely short-time loads

Question/comment:
In chapter 5.3.2.1 the standard EN 13480-3 states that for materials in the creep range the creep rupture values of at least 10 000 h have to be used to determine the design stress.

Unfortunately no statement is made in the standard, how the design stress shall be determined for exceptional short-time loads (i.e. water hammers or earthquakes) if materials are used at temperatures in the creep range.

Answer proposed by the author of the question

In chapter 5.3 this text might be added:
"*The time dependent design stress does not need to be considered for exceptional short-time loads (i.e. water hammer or earthquake), which do not last more than 10 h, cumulated over the system's lifetime. For such exceptional short-time loads the time-independent design stress shall be used instead.*

NOTE If no yield strength values are provided for the desired temperature, those might be determined using extrapolation (i.e. as provided in EN 13445-3, Annex S)."

Answer of the maintenance group

No statement is made in EN 13480-3:2012 on this item.

These circumstances can be explained in the "design in the sense of the PED".

Question from:

Name Johann Dichtl

Company MAN Diesel & Turbo SE *Country* Germany

Date 2015-09-29

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

EN 13480 MHD
form 3-014_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
3-014-2015	2015-10-20	2015-10-29	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
3			EN 13480-3:2012

Question

Subject : Various questions have been compiled and recorded within the attached document

Answer proposed by the author of the question

Various answers have been compiled and recorded within the attached document

Answer of the maintenance group

Technical questions to the relevant European Working Group CEN/TC 267/WG 3 “Metallic Industrial piping – Design and calculation” in charge of the development of EN 13480-3:2012.
4.2.3.3 – This applies for the primary stresses.

Figure 4.3-1 – The manufacturing allowance issue is covered by c_2. For operating, corrosion allowance is covered by c_0.

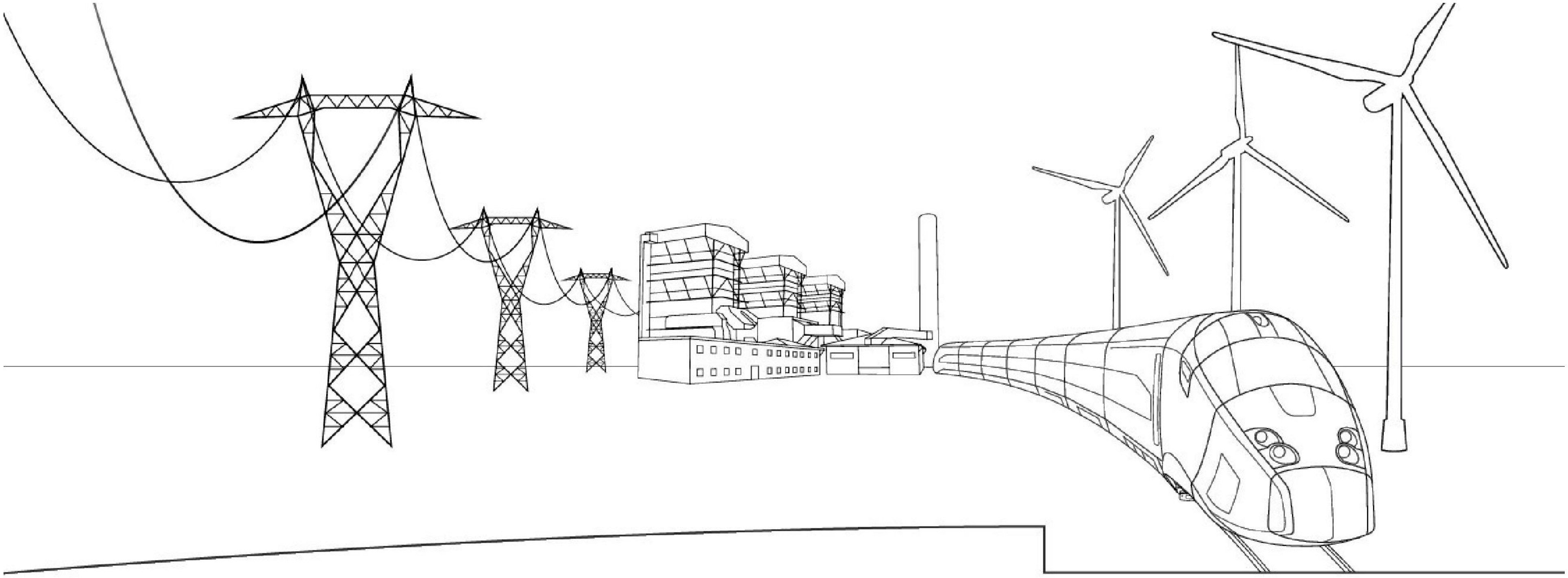
6.6 – This clause will be updated within the Draft Amendment EN 13480-3:2012/prA1 under development.

6.6.4 – Design by analysis is still possible.

Clause 12 + Annex H – This subject is under discussion within the development of a 2nd Draft Amendment EN 13480-3:2012/prA2.

Question from:

Name	Amitkumar Shukla		
Company	Alstom power Switzerland	*Country*	Switzerland
Date	2015-10-20		



EN13480 COMMENTS

A Shukla

Baden

03.09.2015

ALSTOM

Shaping the future

4.2.3.3 **Sets**

The set (p_o, t_o) to be considered for the dimensioning of the elements of a piping system shall correspond to the most severe conditions of pressure and temperature which prevail simultaneously over a long time in the piping section under consideration. Thus for the thickness calculation of a component, the simultaneous conditions of pressure and temperature to be considered are the conditions which lead to the greatest thickness.

For all piping system elements, an allowable maximum pressure, based on

a) specified material (mechanical properties),

b) a given temperature,

can be easily determined by taking into account the applicable safety factors.

Temporary deviations e.g. due to pressure surge or operation of control release valve (safety valve) shall not be taken into account if the calculated stresses from such variations do not exceed the allowable stress by more than 10 % for less than 10 % of any 24 h operating period.

Stress are allowed to exceed by 10 % , but whcih stresses primary (we guess !) , secondary ?

In our opinion from industry expereince as it is laid out in ASME B31.1 , Stresses shall be allowed to be exceed by 10 % of the hoop stresses

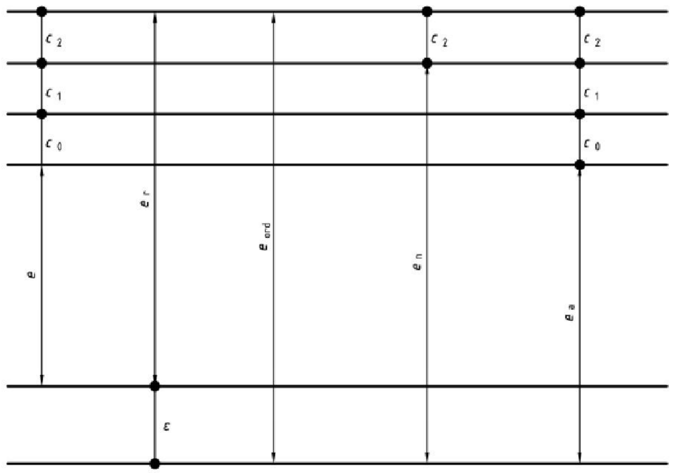
Or either we can use the same Paragraph from ASME B31.1

102.2.4 Ratings: Allowance for Variation From Normal Operation. The maximum internal pressure and temperature allowed shall include considerations for occasional loads and transients of pressure and temperature.

It is recognized that variations in pressure and temperature inevitably occur, and therefore the piping system, except as limited by component standards referred to in para. 102.2.1 or by manufacturers of components referred to in para. 102.2.2, shall be considered safe for occasional short operating periods at higher than design pressure or temperature. For such variations, either pressure or temperature, or both, may exceed the design values if the computed circumferential pressure stress does not exceed the maximum allowable stress from Appendix A for the coincident temperature by

(A) 15% if the event duration occurs for no more than 8 hr at any one time and not more than 800 hr/year, or

(B) 20% if the event duration occurs for not more than 1 hr at any one time and not more than 80 hr/year



Where

e is the minimum required thickness without allowances and tolerances to withstand pressure, calculated by the appropriate equations given in this standard;

c_0 is the corrosion or erosion allowance;

c_1 is the absolute value of the negative tolerance taken from the material standards or as provided by the pipe manufacturer;

c_2 is the thinning allowance for possible thinning during manufacturing process (e.g. due to bending, straving, threading, groaving, etc);

e_r is the minimum required thickness with allowances and tolerances;

ε is the additional thickness resulting from the selection of the ordered thickness e_{ord};

e_{ord} is the ordered thickness (where c_2 is often equal to 0; e.g. straight pipe);

e_n is the nominal thickness (on drawings);

e_a is the analysis thickness of a component, used for the check of the strength.

Figure 4.3-1 — Thickness (applicable to straight pipes as well as bends)

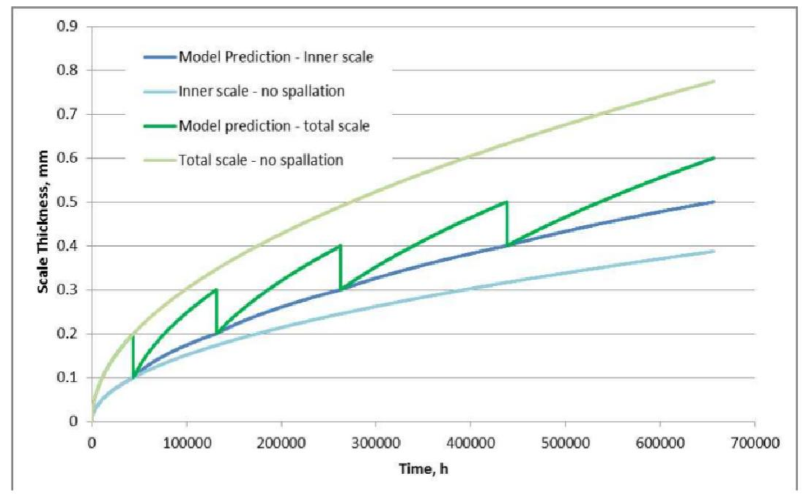
The analysis thickness e_a shall be the lowest thickness after corrosion and shall be given by:

$$e_a = e + \varepsilon \quad (4.3\text{-}1)$$

or

$$e_a = e_{ord} - c_0 - c_1 - c_2 \quad (4.3\text{-}2)$$

- Wall thickness calculation considers allowance for mechanical operations however it does not consider alllowance for HEAT TREATMENT APPLICATION FOR MOSTLY VALID FOR ALLOY STEELS , NI ALLOYS , Additional Scalling allowance shall be introduced as 1.0 mm maximum.
- Oxidation of certain ferritic alloys under pure steam as a media can be very high , during the coarse of lifetime additional allowance for ferrtic alloys operating at elevated conditions shall be considrred



Above chart is the copyright of Mr Steve osgerby and it shall not be published however recomended values for scalling is 1.0 mm

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6.6 Bolted flange connections

6.6.1 General

The rules of this sub-clause are to check the mechanical resistance of the flange connection subjected to static loads. It is also in the responsibility of the designer to ensure the adequacy of the flange connection (gasket type and characteristics, etc) with the operating conditions, in particular with regards to any specific required tightness.

If there is a specific requirement on tightness for the flange connection, this shall be calculated in accordance with EN 1591-1, using Annex P.

The designer shall consider section loadings caused by the connected piping system.

The classification of material for flanges, bolts and nuts is given by EN 1515-2 (PN flanges) and EN 1515-3 (Class flanges). The selection of bolting shall comply with Annex D or Annex P and EN 1515-4.

- Only one method shall be used for calculation of flanges and we suggest to use EN1591, annexure D shall be removed

6.6.4 Non-standard flange

If a non-standard flange is used, the design shall be done by applying the calculation method in EN 1591-1, using for example Annex P, or by applying the algorithm shown in the Taylor-Forge method, using for example Annex D.

NOTE 1 The Taylor-Forge method does not ensure tightness.

NOTE 2 The algorithm given in EN 1591-1 includes a consideration of section loadings.

NOTE 3 The bolt torque should be specified by the designer. Attention should be paid in such cases to the method of tightening. Guidance of scatter band when applying the different methods of tightening are given in EN 1591-1.

- Why **design by analysis** approach is not listed for non standard flanges ?
- WE WOULD RECOMMEND TO USE ASME SECTION VIII DIV 2 , CHAPTER 5 and 4 methods

Problem:

Chap.12 describes stress equations and appendix H1 describes the stress intensification factors (similar to FDBR/ASMEB31.1 CODETI)

12.3.2 Stress due to sustained loads

The sum of primary stresses σ_1, due to
other sustained mechanical loads shall s

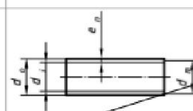
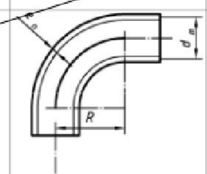
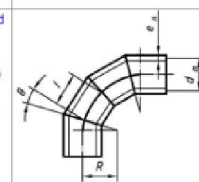
$$\sigma_1 = \frac{p_c d_o}{4 e_n} + \frac{0{,}75\, i\, M_A}{Z} \leq f_f$$

Annex H
(normative)

Flexibility characteristics, flexibility and stress intensification factors and section moduli of piping components and geometrical discontinuities

Piping component and geometrical disconuities characteristics for general cases, particular connections, and out of plane and in plane bending of the piping system shall be in accordance with Tables H.1 to H.3.

Table H.1 — Flexibility characteristics, flexibility and stress intensification factors and section moduli for general cases

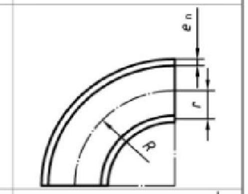
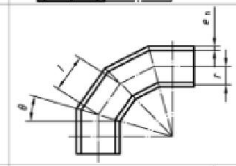
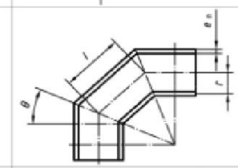
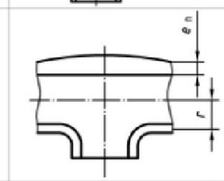
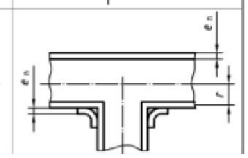
N°	Designation	Sketch	Flexibility characteristic h	Flexibility factor k_B [a]	Stress intensification factor i	Section modulus Z
1	straight pipe		1	1	1	$\frac{\pi}{32}\,\frac{d_o^4 - d_i^4}{d_o}$
2	plain bend		$\frac{4 R e_n}{d_m^2}$	$\frac{1{,}65}{h}$	$\frac{0{,}9}{h^{2/3}}$ [b c]	
3	Closely spaced mitre bend $l < r(1 + \tan\theta)$ $(l = 2R\tan\theta)$		$\frac{4 R e_n}{d_m^2}$ with $R = \frac{l \cot\theta}{2}$	$\frac{1{,}52}{h^{5/6}}$	$\frac{0{,}9}{h^{2/3}}$ [b c]	

(to be continued)

Alternative Equations

Problem:

Appendix H3 describes alternative stress equations (similar to ASME B31.3), but no equations is given in chapter 12

Component description	Out-of-plane i_o	In-plane i_i	Flexibility characteristic	Sketch
Welding elbow or pipe bend	$\frac{0,75}{h^{2/3}}$ a b c	$\frac{0,9}{h^{2/3}}$ a b c	$\frac{e_n R}{r^2}$	
Closely spaced mitre bend $l < r(1 + \tan\theta)$ ($l = 2R\tan\theta$)	$\frac{0,9}{h^{2/3}}$ a b c	$\frac{0,9}{h^{2/3}}$ a b c	$\frac{\cot\theta}{2}\frac{e_n l}{r^2}$	
Single mitre bend or widely spaced mitre bend $l \geq r(1 + \tan\theta)$	$\frac{0,9}{h^{2/3}}$ a b c	$\frac{0,9}{h^{2/3}}$ a b c	$\frac{e_n}{r}\left(\frac{1+\cot\theta}{2}\right)$	
Forged tee to be welded, designed with a burst pressure greater than or equal to the burst pressure of the connected pipes	$\frac{0,9}{h^{2/3}}$ a e f g i	$0,75 i_o + 0,25$ a e f g i	$\frac{4,4 e_n}{r}$	
Reinforced fabricated tee with pad or saddle	$\frac{0,9}{h^{2/3}}$ a d e i	$0,75 i_o + 0,25$ a d e i	$\frac{(e_n + 0,5 e_r)^{5/2}}{r (e_n)^{3/2}}$	

12.3.2 Stress due to sustained loads

The sum of primary stresses σ_1, due to ... other sustained mechanical loads shall s...

$$\sigma_1 = \frac{p_c d_o}{4 e_n} + \frac{0,75\, i\, M_A}{Z} \leq f_f$$

Axial force

Problem:

The stress equations in chap.12 do not consider axial force

(other than that due to internal pressure):

$$\sigma_1 = \frac{p_c d_o}{4 e_c} + \frac{0.75 \cdot i \cdot M_A}{Z_c} \leq f_f$$

The stress analysis cannot be used where axial force from other sources is relevant:

- buried pipes
- axial restrained pipes
- pipes for supporting structures (e.g. in water boilers etc)

Axial force, Solution

Include axial force into stress equations:

$$\sigma_1 = i_{QA} \frac{Q_x}{A_c} + \frac{0.75 \cdot i \cdot M_A}{Z_c} \leq f_f$$

where:

$$Q_x = MAX\left(\left|\frac{p_c \pi d_o^2}{4} + Q_{xA}\right|, \left|Q_{xA}\right|\right)$$

Q_{xs} is the axial force from the sustained mechanical loads

d_i is the inner diameter of the corroded pipe

A_c is the cross section of the pipe (reduced by the corrosion allowances)

i_{QA} is the stress intensification factor for axial forces for sustained loads. Unless more precise information is available i_{QA} = 1.0

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For occasional loads

$$\sigma_2=\frac{i_{QA}Q_x}{A_c}+\frac{0.75\cdot i\cdot M_A+0.75\cdot i\cdot M_B}{Z_c}\leq k\cdot f_f$$

Axial force must include:

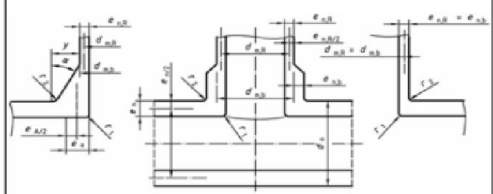
- Pressure effect (acting or not)
- Sustained loads QxA (acting all the time)
- Occasional loads QxB (acting or not, reversing or not)

for reversing loads : $$Q_x=MAX\left(\left|\frac{p_c\pi d_o^2}{4}+Q_{xA}\right|+\left|Q_B\right|,\left|Q_{xA}\right|+\left|Q_B\right|\right)$$

non reversing: $$Q_x=MAX\left(\left|\frac{p_c\pi d_o^2}{4}+Q_{xA}\right|,\left|Q_{xA}\right|,\left|\frac{p_c\pi d_o^2}{4}+Q_{xA}+Q_B\right|,\left|Q_{xA}+Q_B\right|\right)$$

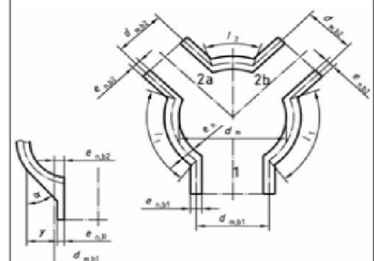
Remove bad page brake in table H2 (SIF of Tee was below heading of Y-piece):

Table H.2 — Stress intensification factors and section moduli for particular connections

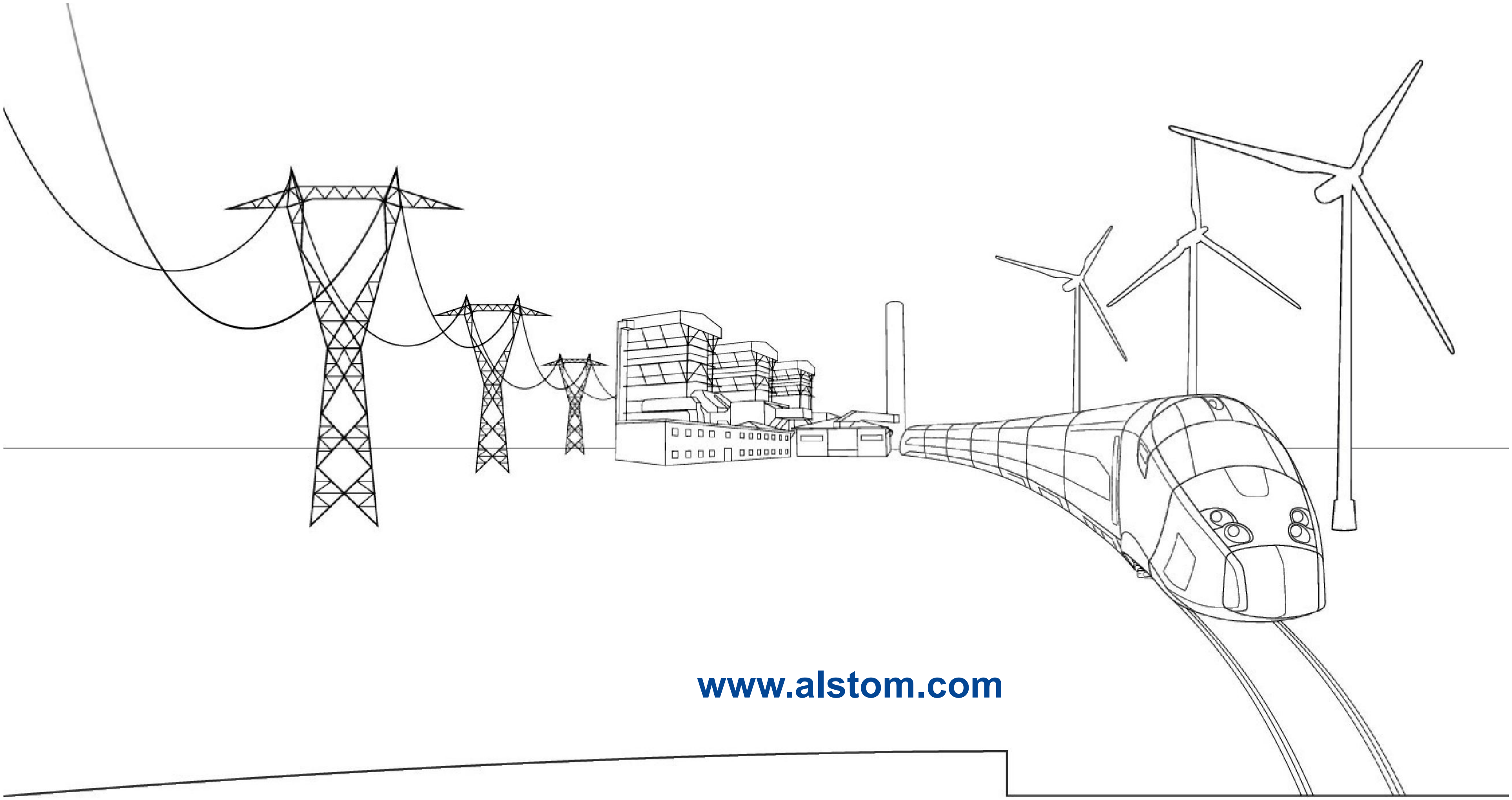
Designation	Tee with special shape conditions
sketch	 $e_{n,b} = e_{n,R} + 2Y/3$ $d_{o,b} = d_{m,b} + e_{n,b}$
shape conditions	$\frac{d_{m,R}}{d_m} \le 0{,}5$; $\frac{d}{e_n} \le 100$; $0{,}1e_n \le r_1 \le 0{,}5e_n$ $r_2 \ge \max\left(\frac{e_{n,b}}{2}; \frac{e_n}{2}\right)$ $\alpha \le 30°$ $r_3 \ge \max\left\{\alpha \frac{d_{m,R} + e_{n,R}}{500}; 2\sin^3\alpha\left(d_{m,b} + e_{n,b} - d_{m,R} - e_{n,R}\right)\right\}$ For the conditions of r_3 α shall be in deg. For branches DN < 100 the conditions for r_1 can be omitted.

(to be continued)

Table H.2 *(continued)*

Designation	Y-spherical fitting		
stress intensification factors and section moduli	for header : $i = 0{,}4\left(\frac{d_m}{2e_n}\right)^{\frac{2}{3}} \times \frac{d_{m,R}}{d_m}$ but at least $i = 1{,}5$ $Z = \frac{\pi}{4} d_m^2 e_n$	for branch : $i = 1{,}5\left(\frac{d_m}{2e_n}\right)^{\frac{2}{3}}\left(\frac{d_{m,R}}{d_m}\right)^{\frac{1}{2}} \times \frac{e_{n,R}}{e_n} \times \frac{d_{m,R}}{d_{m,b} + e_{n,b}}$ $Z = \frac{\pi}{4} d_{m}^2 e_{n,R}$	
sketch			$e_{n,b1} = e_{n,R} + 2y/3$ $d_o = d_m + e_n$ $d_{o,b1} = d_{m,b1} + e_{n,b1}$ $d_{o,b2} = d_{m,b2} + e_{n,b2}$
factors of influence l_o, λ_1, λ_2	$l_o = 2\sqrt{d_m e_n}$; $\lambda = 1 - \sqrt{\frac{l_1}{l_o}}$; $\lambda = 1 - \sqrt{\frac{l_2}{l_o}}$ for $l_1 \ge l_o$, $\lambda_1 = 0$ and for $l_2 \ge l_o$, $\lambda_2 = 0$		
stress intensification factor i	$i = \frac{0{,}9}{h^{2/3}}$ with $h = \frac{2e_n}{d_m}$		
section moduli	Nozzle 1	Nozzle 2a and 2b	
Z_1 Z_2	$Z_1 = \pi d_{m,b1}^2 e_{x1}/4$ with $e_{x1} = \min(e_n; ie_{n,b1})$	$Z_2 = \pi d_{m,b2}^2 e_{x2}/4$ with $e_{x2} = \min(e_n; ie_{n,b2})$	

(to be continued)



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EN 13480 MHD
form 4-001_2015_ACP

Type of question: Technical

Registration number	Date of submission	Target date for answer	Date of acceptance
4-001-2015	2015-01-29	2015-02-28	2015-02-17

Part number	Page number	Subclause number	Reference of the standard used
4			EN 13480-4:2012, clause 9.14.6

Question

Myself and a collegue (Marcel Rabie) have a query regarding BS EN 13480- 4;2012+A1:2013 section 9.14.16 Local heat treatment vs the General rules for local post weld heat treatment of welds in pipe stated in section 9.6 in BS EN ISO 17663:2009. BS EN 13480-4;2012+A1:2013 section 9.14.16 states the following: "When local heat treatment of circumferential welds is applied by heating a shielded area around the entire circumference, the heated area shall be such as to provide the specified temperature for a minimum 2.5.((2.D-4.t).t)^0.5 on either side of the fusion line of the weld". BS EN ISO 17663:2009 section 9.6 states the following:" The width of the heated zone, Lw ,expressed in millimetres, shall not be less than the value L as given in Equation (1) nor more than 12t, with the weld being in the centre." Equation 1 states: L=2,5.((2.D-4.t).t)^0.5. This equation is equivalent to the equation listed in BS EN 13480-4;2012+A1:2013 section 9.14.16. The query is: Why does the 2 specifications differ in the application zone width of PWHT (either side of fusion line vs width of the heated zone) but uses the equivalent equation to determine the section length of the heated zone?

Additionally:

BS EN ISO 17663:2009 section 9.6 states the following:" NOTE Equation 1 is equivalent to 5.(Rt)^0.5 as given in European standards". BS EN 13445-4:2014 section 10.3.3 states the following: "It is permissible to heat treat circumferential welds in shells locally by heating a shielded band around the entire circumference, in which case the width of the heated band shall not be less than 5.(Ren)^0.5 with the weld in the centre". This statement corresponds to BS EN ISO 17663:2009 section 9.6, which lets us to believe that there might be an issue with the wording used in BS EN 13480-4;2012+A1:2013 section 9.14.16 with regards to the application width of the heating zone. Your valued response will be appreciated.

Answer proposed by the author of the question

Is there a chance that BS EN 13480-4;2012+A1:2013 section 9.14.16 is stated wrongly in the sense that it was not supposed to state either side of the fusion line of the weld but rather indicate that the equation used shall be the total width of the heat band?

Answer of the maintenance group

This question is technical and was discussed during the last relevant European Working Group meeting CEN/TC 267/WG 4 in 2014-12.

The Working Group decided to revise the subclause 9.14.6 "Local heat treatment". The proposal is presented below for information:

When local heat treatment of circumferential welds is applied by heating a heated band around the entire circumference, the heated band shall be at minimum 5 (((D – t)/2) t) 0,5 .

This proposal will be forwarded to CEN/TC 267 for launching the procedure for the adoption of a new Amendment on EN 13480-4:2012. Be aware that this is only a first draft proposal for a new Amendment and it is not a final Standard or Amendment. This proposal may be subject to comments and changes from CEN Members during the CEN Enquiry process.

Question from:

Name DE VILLIERS Moll and RABIE Marcel

Company ESKOM **Country** South Africa

Date 2015-01-29

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EN 13480 MHD
form 4-002_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
4-002-2015	2015-06-29	2015-07-03	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
4			EN 13480-4:2012, clause 9.14

Question

My query is with respect to Standard BSEN 13480-4 (Metallic Industrial Piping – Part 4: Fabrication and Installation). This is with specific reference to the power generation industry (coal fired power station piping outside of the boiler).

For group 5.1 and 5.2 materials, exemption from Post Weld Heat Treatment (PWHT) in section 9.14, table 9.14.1-1 requires:

Renouncement of PWHT is possible for dimension diameter ≤114.3 mm and wall thickness ≤ 7.1 mm, when the preheat temperature is 200 °C or above.

Earlier codes (for example BS2633) we have used within the power generation industry have allowed PWHT exemptions for wall thicknesses ≤ 12.5 mm (where diameter was <127mm and carbon content <0.15%), other codes had similar minimum thickness values e.g. ASME B31.1.

Answer proposed by the author of the question

Can you advise why there has been a reduction in the wall thickness exemption for PWHT in BSEN13480-4?

Answer of the maintenance group

This technical question is forwarded to the relevant European working group CEN/TC 267/WG 4 "*Manufacturing and installation*" in charge of the development of EN 13480-4:2012 "*Metallic industrial piping - Part 4: Fabrication and installation*". Item to be studied/discussed and to be put on the Agenda of the next meeting of CEN/TC 267/WG 4

Just a thickness up 7.1 mm without PWHT may be critical and should not be offered in a standard otherwise some not "so well educated people" will make a welding without PWHT, because a table in part 4 allows it (without any explanation).

Mr. DUNCOMBE (BSI – UK) is asked to prepare a proposal with explanation for the next CEN/TC 267/WG 4 meeting and send it to CEN/TC 267/WG 4 Secretary (DIN).

Additional/complementary answer: Exemptions depend on the service conditions for the welded joint such as temperature.

Question from:

Name Charlie DUNCOMBE

Company BSI *Country* UK

Date 2015-06-29

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Europaïsches Komitee für Normung

EN 13480 MHD
form 5-001_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
5-001-2015	24/01/2015	24/02/2015	17/02/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
5			EN 13480-5:2012, 8.1.2

Question

I am looking for a help with interpretation of a point 8.1.2 in above mentioned standard.

For example I have such a case:

Welder is welding many pipelines on a site (pipe line: yy-20-2222,xx-30-4444 etc -each pipe line is separate device according to 97/23/WE so it will be register separately) with a same WPS. During RT film review of welded joint made by that welder on line yy-20-2222 it appeared that additional two joints have to be X-rayed because that joint had a defect. Should I Xray additional two joints on same line eg. yy-20-2222 or I can X-ray two additional joints on another line. In those additional two joints defect also appeared. So what should I do? Should I check by X-ray all joints on all lines on a site or only check all joints on that line where defect appear?

Answer proposed by the author of the question

—

Answer of the maintenance group

This question is technical and was sent to the relevant European Working Group of CEN/TC 267.
This issue was discussed during the last Working Group meeting CEN/TC 267/WG 5 in 2014-12 as it was also a MHD question from BAM Leidingen and Industrie bv (The Netherlands) (for reminding: question 5-003-2014).

The Working Group decided not to revise 8.1.2 but 8.1.3 e). The proposal is attached to this MHD answer for information. This proposal will be forwarded to CEN/TC 267 for launching the procedure for the adoption of a new Amendment on EN 13480-5:2012. Be aware that this is only a first draft proposal for a new Amendment and it is not a final Standard or Amendment. This proposal may be subject to comments and changes from CEN Members during the CEN Enquiry process. If you wish to comment this proposal during the CEN Enquiry process, please get in contact with your National Standardization Office: Polski Komitet Normalizacyjny (PKN) (Polish Standard Institut).

Question from:

Name Jakub STOJANOWSKI

Company SAIPEM *Country* Poland

Date 2015-01-24

Annex to the answer on the MHD Question 5-001-2015 – EN 13480-5:2012 – Clause 8.1.2

Proposal 8.1.3 e)

If any one of the two additional welds required by c) reveal an unacceptable imperfection, all welds in that batch represented by the sample inspection shall be examined and, as necessary, repaired or replaced and re-examined.

When defining the represented sample inspection one may distinguish between

a) piping installation at construction sites or
b) piping manufacturing (series or mass production) in workshops.

a) is normally used if b) is not applicable. For this piping a group of welds represented by the same sample inspection may be defined per piping system or per line number.
b) is normally used for piping in packaged units such as machinery. For this piping a group of welds represented by the same sample inspection may be defined as per a) above or per production lot or any other sample inspection system as long as the minimum extent of NDT of this standard is kept.

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Type of question: **Technical**

Registration number	Date of submission	Target date for answer	Date of acceptance
5-002-2015	13/05/2015	30/06/2015	03/07/2015

Part number	Page number	Subclause number	Reference of the standard used
5			EN 13480-5:2012, Table 8.2-1

Question

I would like to communicate material Group 11 in the Inspection part of EN 13480, in the new amendment, is missing. That is causing us, welding engineers, inspectors, Notified Bodies, etc. a great misunderstanding.

Material group 11 is no longer mentioned in A1:2013 what makes me wonder where has to be located within Table 8.2-1 after amendment publication.
Has it been deleted on purpose? Then, where should I locate material group 11 within Table 8.2-1?

Answer proposed by the author of the question

Please could you give some feedback/justification of the deletion of material group 11 in Table 8.2-1 of EN 13480-5:2012?

Answer of the maintenance group

Group 11 was deleted in EN 13445-2 / EN 13480-2 annex A years ago. Table 4.1-1 specifies a maximum C content of 0,23% for C-CMn steels. ISO Group 11 applies for materials with
0,25% $<C\leq$ 0,5% of C. Thus, the group 11 was deleted from annex A.
The revision of table 8.2-1 in part 5 take very long and finally in the 2013 edition group 11 was deleted. It is not transferred to another part of the text.
By the way, old but often used ASTM specifications such as A 105 and A 106 allow carbon content up to 0,35%. This material is in the ASME codes classified in ISO group 11. If one wants to use this under EN 13480, the C content has to be limited to max 0,25% (limits to P and S and other additional requirements apply) and the material group changes to 1. This was explained in MHD enquiries about PMA. In this case, the NDT extent as for group 1 may be taken from table 8.2-1 of part 5.

Question from:

Name Jesús Ángel Plaza Rodríguez

Company

Country Spain

Date 2015-05-13

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form 5-003_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
5-003-2015	2015-08-04	2015-08-31	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
5			EN 13480-5:2012, clause 8.1.2

Question

Subject: Examination of weld qulity by sample inspection

Question/comment:

In the point 8.1.2 examination of weld quality by sample inspection it indicates :
Where the required extent of non-destructive testing is less than 100%, the specified NDT techniques shall be employed at the earliest stage practicable in the fabrication process to ensure that sound welds are achieved. The timing shall be agreed. Sample welds to be examined shall be:

- Randomly selected
- Representative of a group of welds.

At least one complete sample weld shall be examined over the whole length.

Where the number of sample welds required is small, combinations of thicker sections and smaller diameters or thinner sections and greater diameters shall be given preference.

NOTE: A group of welds is a quantity of welds, welded by one welder or welding operator, in accordance with a specific welding procedure specification.

My question regarding this point is: Could you confirm that covering the percentage indicated in the table 8.2-1 but NOT covering in this inspection every group of welds, the requirements of this standard are met?

Answer proposed by the author of the question

In the standard there is not point that state that every group of welds shall be covered, as state in new revision EN 13480-5:2012+A1:2013, where clearly indicates in the same point that “all welders and welding operators shall be covered”.

Taking into account these two considerations, the standard does not required that every group of welds need to be covered during the sample inspection (not a sample of every quantity of welds welded by one welder or welding operator, in accordance with a specific welding procedure specification shall be covered during the sample inspection).

Answer of the maintenance group

The range of NDT belongs to a group of welds in the sense of the definition of the last paragraph of 8.1.2.

Therefore, every group of welds shall be covered.

Question from:

Name Enrique Bandera Rodriguez

Company MONCOBRA S.A *Country* Spain

Date 2015-08-04

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

EN 13480 MHD
form 5-004_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
5-004-2015	2015-09-09	2015-10-29	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
5			EN 13480-5:2012, clause 8.2.1

Question

Question/comment: Paragraph 8.2.1 - The amount of examination.

Clause b. states that for piping of material groups 1.1, 1.2 and 8.1 in categories I or II, volumetric testing shall be a minimum of 10% of circumferential butt welds irrespective of PS and DN, if the piping is > DN25 and contains very toxic or extremely flammable fluids.

The table 8.2-1 on page 18 indicates a RT/UT of 5%.

Here the discussion is what does the content very toxic or extremely flammable indicate?

This is important for PED (97/23/EC) purposes to have clear.

Answer proposed by the author of the question

See Attached proposed answer.

Answer of the maintenance group

The grouping of the fluids is part of the new PED Article 13 since 01 June 2015.

This requirement was deleted.

The reader should refer to the valid issue of EN 13480-5:2012 (Issue 4 – 2015-07) and not to an old version (2002) which was revised earlier with integration of successive Amendments.

Question from:

Name Racime van den Berg

Company Inspectie SZW *Country* The Netherlands

Date 2015-09-09

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

EN 13480 MHD
form 5-005_2015_ACP

Type of question: **Interpretation**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
5-005-2015	2015-10-07	2015-10-29	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
5			EN 13480-5:2002, clause 8.1.2

Question

With my customer, we have an interrogation about the meaning of « representative » of batch of welds in the §8.1.2 of EN 13480-5:2002. For me, it is given purely by the NOTE:

« *A batch of welds is a quantity of welds, welded by one welder or welding operator, in accordance with a specific welding procedure specification* »

My customer understands: The welds must be more of the same welding position (PC or PF or HLO45) and the same time (for example the same year) to be representatives.

In the site, we have many WPS (all positions) and is a very long time.

How must we understand « representative »: same difficulties (weld with left hand, with mirror, …), same place in the site, same solder, same base metal , same diameter, …?

Answer proposed by the author of the question

Please give more information.

Answer of the maintenance group

The NDT range is independent from the welding position, if not, restricted in WPS, e.g. for only one position.

See definition in 8.1.2, last paragraph.

Question from:

Name Semi ZAMOURI

Company PONTICELLI **Country** France

Date 2015-10-07

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

EN 13480 MHD
form 6-001_2015_ACP

Type of question: **Interpretation**

Registration number	Date of submission	Target date for answer	Date of acceptance
6-001-2015	17/11/2014	30/06/2015	03/07/2015

Part number	Page number	Subclause number	Reference of the standard used
6			EN 13480-6:2012, Annex A

Question

Subject: Small suspected errors, Unit inconsistencies and un- or badly defined variables

I ran into some trouble when using EN13480-6, and was hoping you could make some uncertain matters clear to me. Where I have guesses as to what is supposed to be the case, these are added to the proposed answer field following this question/comment field.

See attached Form presenting questions/comments

Answer proposed by the author of the question

Proposed answer(s)/correction(s) * :

1) I assume μ' in equation A.3.2.5.2-4 should be μ
2) I assume the unit of variable L is meters, so L= 1 m if the actual length exceeds 1 m.
3) I assume EN 1991-1-1 is the appropriate norm to determine traffic loads.
4) I assume v is half the pipe thickness and I is the 1/12*pipe thickness^3
5) I assume calculated stresses exclude the influence resulting from shear and tensile forces in the pipe.
6) I assume momentum equations are only valid in region 0 < 'α' <π
7) I assume that

   p_{cw} = density pipe material (kg/m3) * gravity accel. (m/s^2) * pipe thickness (m)

   p_w = density medium in pipe (kg/m3) * gravity accel. (m/s^2)
8) –
9) I assume the square applies to (Ht+dm/2) as well.
10) –

Answer of the maintenance group

See attached sheet presenting MHD answers to the questions/comments 1) to 10)

Question from:
Name Maarten van der Most
Company Spie Controlec Engineering Terneuzen
Country The Netherlands
Date 2014-11-17

Question/comment : Greetings,

I ran into some trouble when using EN13480-6, and was hoping you could make some uncertain matters clear to me. Where I have guesses as to what is supposed to be the case, these are added to the proposed answer field following this question/comment field.

1) **On page 22, All formulas appear similar and make consistent use of the same variables, only differing on some plus/minus signs. I therefore suspect that the use of μ' in equation A.3.2.5.2-4 is the result of a typo. Can you verify if this is the case.**

2) **On page 24, the unit to be used for L is not specified. As long as I use a consistent system of units, the specific unit used shouldn't matter, but when a requirement on it is stated without unit, it's not intuitive what the exact requirement on L actually is supposed to be. Could you specify what is actually required.**

3) **On page 24, there is no reference to what norm should be used for determining the traffic loads. Is the assumption correct that using EN-1991-1-1 for this is sufficient, or would different comparable norms like NEN3650 be more appropriate?**

4) **On page 28, the formula for stresses uses unspecified variables 'I' and 'v'. I would generally interpret these as area moment of inertia and poisson ratio. But poisson ratio makes no sense in this case, I would expect something like $e_{ord}/2$. Likewise, for 'I', the section to be considered is unclear. I suspect one through the circumference, but am not sure. If I'm interpreting the formulas for Moments correctly, it'd need one normalized to unit length, resulting in a 'I' of 1/12* e_{ord}^3, assuming a centralized bend line. This is not a common formula since width is missing, so I want to be sure using the formula like this is the correct method.**

5) **I'm not really following along on how the Moment formulas in A.3.4 have been constructed, but the simplest one (A.3.4.2.1) seems to be the moment at the bottom minus the moment generated by the section reaction force at 'α'. If this is the correct interpretation and the other formulas are constructed in a similar way, but taking into account distributed loads etc., am I correct in saying that the tensile and shear stresses are *not* taken into account when determining the stresses according to the formula discussed in point 4? As I said, I'm not certain how these formulas came about, so it's possible that some general term is taken, that results in at least representative stresses, maybe larger. But I'd like to have that verified. These variables also return in A.3.5.6.4-6**

6) **Another note on A.3.4.2.1, I'd expect the moment in sections to behave symmetrical with 'α', but the formula given doesn't follow such behaviour. Is it possible that the sign needs to be reversed when looking at π<'α' <2π, or was 0<'α' <π always the intended valid domain of the function and was it forgotten to specify this?**

7) **I'm not 100% clear on the intended p_{cw} and p_w used in A.3.4.3 & A.3.4.4. Are the following assumptions correct?**

   p_{cw} = density pipe material (kg/m3) * gravity accel. (m/s^2) * pipe thickness (m)

   p_w = density medium in pipe (kg/m3) * gravity accel. (m/s^2)

8) **If the assumptions in point 7 are correct, these loads have different units and act on different parts/directions of the pipe geometry. How must they be properly added to q_{total} to result in correct results in A.3.4.5?**

9) **On page 32, the second term of the equation for $\overline{q}$ appears to be of different unit than the other terms. Should the 'to the second power' after the square brackets also apply to the (Ht + Dm/2) term, or is this some other type of error?**

10) **Under the earlier made assumptions, the units in A.3.4. pan out, but it's easy to see they don't add up under different assumptions. Perhaps it would be a slight improvement if units were specified more consistently in a later release.**

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

Annex to the answer on the MHD Question 6-001-2015 – EN 13480-6:2012 – Annex A

1) It does not seem correct.

2) The unit of *L* shall be consistent with the results i.e. a load per unit length.

3) The values of traffic loads should be contractual agreement.

4) Yes, but the thickness shall be the nominal thickness $e_n - c_o$ (corrosion or erosion allowance) (see 4.3 of EN 13480-3:2012)

5) Tensile stresses are taken into account but not the shear stresses as one determines a bending stress.

6) Yes, this is correct.

7) It is correct for p_w. This is not correct for $p_{cw.}$ p_{cw} = [density pipe material (kg/m^3) x volume of pipe (m^3) x gravity accel. (N/kg)] / perimeter of pipe (m)

8) Your interpretation in 7) is 100% correct, it seems difficult to answer this question 8)

9) Indeed, your proposal seems to be correct, but this needs to have further analysis because it may have technical impact. Question to be forwarded to the relevant European Working group CEN/TC 267/WG 1 in charge of the development of EN 13480-6:2012

10) Your proposal to be forwarded to the relevant European Working group CEN/TC 267/WG 1 in charge of the development of EN 13480-6:2012 for further consideration

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

EN 13480 MHD
form 6-002_2015_ACP

Type of question: **Interpretation**

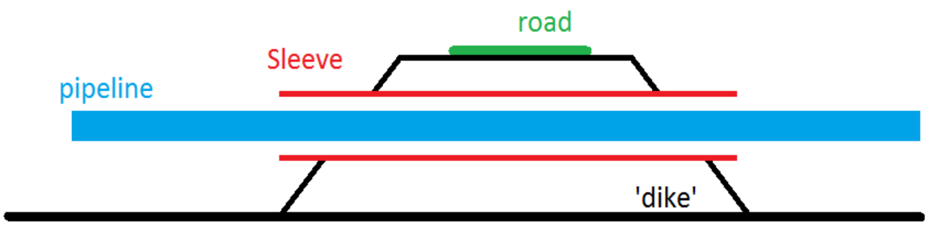
Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
6-002-2015	30/10/2014	30/06/2015	03/07/2015

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
6			EN 13480-6:2012, scope

Question

Subject : interpretation of part 6 of 13480
Question/comment :

We have a case on an industrial pipeline designed with the EN-13480. This pipeline is above ground. The route of the pipeline crosses a road. Since this road runs to a bridge, the road is an elevated at the passage, like on a dike. The pipeline crosses the road perpendicular to the 'dike'. To make the passage through the 'dike, the pipeline is fitted with a sleeve (steel pipe, larger in diameter) which runs from slope to slope. The pipeline does not contact any soil. The sleeve should protect the pipeline against any harmful external influences.



Answer proposed by the author of the question

We would like to know if the EN 13480-6 is applicable for the passage under the road.
The scope of the EN 13480-6 specifies requirements for "either totally buried or partly buried and partly run in sleeves or similar protection". Our pipeline is not completely buried. Our pipeline is not partly buried. Our pipelines partly runs in a sleeve. The 'either' situation is not applicable. The 'or' situation (combination between partly buried and partly in s sleeve) is not applicable. **Thus, the EN-13480-6 is not applicable/mandatory for this passage.**

Answer of the maintenance group

The proposed interpretation above is correct.

Question from:

Name	M. Salden		
Company	SPIE Industry	*Country*	The Netherlands
Date	2014-10-30		

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

EN 13480 MHD
form 6-003_2015_ACP

Type of question: **Technical**

Registration number	Date of submission	Target date for answer	Date of acceptance
6-003-2015	17/06/2015	30/06/2015	03/07/2015

Part number	Page number	Subclause number	Reference of the standard used
6			EN 13480-6:2012, A.3.5.7

Question

I am writing to you on behalf of the Secretary of the national Technical Committee M267 within the Institute for Standardization of Serbia (ISS). As you may know, the ISS is an Affiliate member to CEN as of January 1st, 2008. The national Technical Committee M267 adopts the standards developed by CEN/TC 267. We have adopted and published EN 13480-6:2012 as Serbian standard SRPS EN 13480-6:2012.

One of our clients has contacted us recently with the request for interpretation of the specific part of this standard:

A.3.5.7 Unrestrained pipe

For a straight part of a piping when the sum of the effective lengths is greater than the actual length the procedure given in A.3.5.6.2 shall apply using Equation (A.3.5.6.4-2b) and for *Lf* the calculated value or *L* if *Lf* > *L*.

Answer proposed by the author of the question

Our client believes that:

1. the procedure given in **A.3.5.6.2** is not related to the equation **(A.3.5.6.4-2b)**
2. the value ***Lf*** is not defined in the standard EN 13480-6:2012, and he also would like
3. the **equations A.3.5.6.4-2a and A.3.5.6.4-2b** to be checked again and to get an answer in what measuring unit **the value Y_1** is expressed in the mentioned equations?

Could you please be so kind to take these comments into consideration and send us your professional standpoint and opinion?

Answer of the maintenance group

1 – *Yes, in clause A.3.5.7, a correction is needed. Reference to A.3.5.6.2 must be changed to A.3.5.6.4.*

2 – *Yes, it is not defined, the value Lf must be changed to Leff. A modification is needed.*

3 – *Equation A.3.5.6.4-2a) shall not be used. It will be proposed to delete this equation, which is not applicable, through the adoption of an Amendment prA1 to EN 13480-6:2012. Equation A.3.5.6.4-2b) needs to be used only and the unit of Y1 shall be expressed within a unit of length.*

This Draft Amendment will be drafted by CEN/TC 267 Secretary. This proposal will be forwarded to CEN/TC 267 for launching the procedure for the adoption of a new Amendment on EN 13480-6:2012.

Question from:

Name Zorica Knežević

Company ISS - Institute for Standardization of Serbia **Country** Serbia

Date 2015-06-17

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

EN 13480 MHD
form 6-004_2015_ACP

Type of question: **Technical**

Registration number	*Date of submission*	*Target date for answer*	*Date of acceptance*
6-004-2015	18/09/2015	29/10/2015	2015-10-29

Part number	*Page number*	*Subclause number*	*Reference of the standard used*
6			EN 13480-6:2012, A.3.5

Question

In A.3.5 « *Global stability of a buried piping system* », Allowable deformation factor of the soil « R_{ultime} », used to determine coefficient K, is not indicated.

It is therefore impossible to calculate the defined bending stress with the formula A.3.5.6.4-6

Answer proposed by the author of the question

Add data (columns) in Table A.3.2.3.

If there is a lack of information on the allowable deformation factor of the soil, indicate a default value to be taken.

Answer of the maintenance group

Indeed, it is a coefficient called also "ultimate deformation factor of the soil", which is generally between 0,015 and 0,030 (m^{-1}).

If there is no data, the value giving the safest results must be taken.

Next step: This item needs to be studied by CEN/TC 267/WG 1 within the development of a 2nd Draft Amendment EN 13480-6:2012/prA2 (CEN/TC 267 Decision N018/2015 – document CEN/TC 267 N1016)

Question from:

Name David CARNINO

Company CADSUD *Country* France

Date 2015-09-18