

PIPING

and the European
Pressure Equipment Directive

GUIDANCE FOR PLANT OWNERS / OPERATORS

EEMUA PUBLICATION 204



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THE ENGINEERING EQUIPMENT & MATERIALS
USERS' ASSOCIATION

*"EEMUA ... the **users'** voice"*

PIPING AND THE EUROPEAN PRESSURE EQUIPMENT DIRECTIVE: GUIDANCE FOR PLANT OWNERS/OPERATORS

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ATTENTION

This publication gives guidance to plant owners/operators concerning the potential application of the European Pressure Equipment Directive to piping modifications and maintenance. Guidance is in the form of cases that are typical of a range of piping issues: it is not intended to be a comprehensive list. The examples represent a consensus of EEMUA Piping Systems Committee (PSC) members – themselves plant owners/operators – based on their understanding of the applicable regulations at the time of publication. Some examples are the subject of ongoing discussions with the Health and Safety Executive (HSE) in Great Britain.

Despite any advice given in this document regarding repairs and modifications to pressure equipment, it is the ultimate responsibility of the owner of the equipment to ensure compliance with applicable regulations.

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THE ENGINEERING EQUIPMENT AND MATERIALS USERS' ASSOCIATION

The Engineering Equipment and Materials Users' Association – EEMUA – was formed in 1983 by the amalgamation of the Engineering Equipment Users' Association (EEUA) with the Oil Companies' Materials Association (OCMA).

Members are drawn mainly from process plant operating companies in the oil and gas sector, chemical and allied industries, and from the energy and power generating sector, plus companies that specialise in providing engineering services to support such organisations. In terms of asset value and turnover, a high proportion of EEMUA Member companies are among the largest and most advanced businesses in the world. However, small and medium sized enterprises that meet the admission criteria are also welcome to join. Membership is open to companies that share the common interest of **users** of engineering equipment and materials.

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- To encourage and facilitate the development and application of common user best practices, standards and specifications.
- To keep members informed of forthcoming changes to legislation, regulation and standards likely to impact their businesses.
- To provide a route through which Member companies can participate in the work of national and international Standards organisation.
- To represent the users' view on engineering issues to legislative, regulatory and other bodies, to suppliers and the rest of industry.

EEMUA supports the British Standards Institution, works with other institutions, associations, Government departments, regulatory authorities and the Confederation of British Industry, and also has links with other standards-making bodies such as the American Society of Mechanical Engineers and the American Petroleum Institute.

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EEMUA encourages comments on this publication from both Members and non-members of the Association.

Comments should be sent on the standard feedback form, a copy of which is provided in this publication. An electronic version (MS-Word document) of the form is available from EEMUA: e-mail your request for a copy to info@eemua.org, telephone your request to +44 (0)20 7796 1293 or download the form from the EEMUA website at www.eemua.org. Submit comments by e-mail (preferred) or post.

Comments will be considered by the relevant EEMUA Technical Committee – the EEMUA Piping Systems Committee – and may be incorporated in future editions of the publication. New editions will be publicised on the EEMUA website.

The Piping Systems Technical Committee also intends to update the publication periodically in consideration of its ongoing discussions with other organisations and relevant regulatory bodies, in particular the UK Health & Safety Executive.

Full Members of EEMUA are invited to nominate a representative to the EEMUA Piping Systems Technical Committee if they have not yet done so.

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FOREWORD

This publication was originally issued as an internal EEMUA document, reference Information Sheet No 36. A noteworthy change made herein is to provide the current wording of PED guideline 1/3; however, the guidance given in the technical part of this publication (the case studies in the Appendix) are essentially unaltered from the original internal document.

EEMUA encourages comments on this publication from both Members and non-members of the Association. Comments will be considered by the EEMUA Piping Systems Committee (PSC). For further details see Consultation and Feedback, p. iii.

1 INTRODUCTION

The European Pressure Equipment Directive 97/23/EC, to give the PED its full title, sets out the requirements for pressure equipment placed on the market or put into service for the first time. The requirements for modifications and maintenance are not described in detail, and although official guidelines exist, they are general in nature. So, the involved parties (user, manufacturer and notified body) may need further guidance in interpreting the requirements of the PED applicable to their particular circumstances.

In cases where it is concluded that the PED does not apply, consideration should be given to whether relevant national regulations – such as the Pressure Systems Safety Regulations in the UK, or their equivalent in the other countries of the European Economic Area* – do apply. In the UK, particular consideration needs to be given to whether Regulation 13, ‘Modification and Repair’, applies.

2 SCOPE

This publication gives guidance to the user of piping concerning the application the PED to piping modifications and maintenance. Guidance is in the form of cases that are typical of the range of piping issues: it is not intended to be a comprehensive list. The examples represent a consensus of EEMUA PSC members based on their understanding of the applicable regulations at the time of publication.

It should be noted that despite any advice given in this document regarding repairs and modifications to pressure equipment, it is the ultimate responsibility of the owner of the equipment to ensure compliance with the applicable regulations.

3 PIPING AS AN ITEM OF PRESSURE EQUIPMENT

The definition of ‘piping’ in Article 1 (2.1.2) of the PED (‘piping components ... when connected together for integration into a pressure system’) includes: ‘... in particular a pipe or system of pipes, tubing, fittings ...’.

Article 3 (1) and (1.3) recognise piping as being ‘pressure equipment’. The term ‘*item* [our emphasis] of pressure equipment’ first appears in Article 15, 2, first indent, with back reference to Article 3 (1); there is no restriction placed on the extent of piping that could constitute an item of pressure equipment.

The interpretation is that a system of connected pipes and fittings, such as may be assigned a dedicated line number in a piping schedule, can be a single item of pressure equipment – as can, say, a short flanged spool connecting two items of pressure equipment.

The user (either the plant owner/operator or a contractor working on behalf of the owner/operator) should therefore indicate for each job whether the item of pressure equipment for piping is to be the flanged spool or the complete line. This applies whether a

* The European Economic Area, in which the PED applies, comprises the European Union, Iceland, Liechtenstein and Norway. Switzerland has also transposed the Directive into law, which becomes fully effective at the beginning of July 2005.

completely new line, or a flanged spool for an existing line, is being purchased. In most cases, unless otherwise agreed, the complete line (as given by a specific line number) should be considered as an item of pressure equipment. This also applies when all the piping (comprising several lines) on a plant is considered an assembly and stamped with a single CE mark.

4 IMPORTANT CHANGES

The European Commission 'Blue Guide'^{*} (Chapter 2) uses the term 'product' to describe things complying with various Directives. 'Products' includes 'equipment' and 'assemblies', the terms used in the PED. Two other statements are significant:

- 'A product, which has been subject [the word should be 'subjected'] to important changes that aim to modify its original performance, purpose or type after it has been put into service, may be considered as a new product. This has to be assessed on a case-by-case basis Where a rebuilt or modified product is considered as a new product, it must comply with the provisions of the applicable directives'
- 'Products which have been repaired (for example following a defect), without changing the original performance, purpose or type, are not to be considered as new products according to the New Approach directives.'

The PED does not, therefore, apply to repairs and maintenance, but it does apply to replacement and 'important changes'. For piping, the distinction between repairs, replacement and modifications is often blurred.

The process industry considers all changes to be potentially significant, from a process safety point of view. Indeed, a fundamental feature of process safety management is 'management of change', (sometimes referred to as 'control of modifications'), requiring careful assessment and implementation of all modifications.

There are two official PED guidelines[†] on this subject:

Guideline 1/3

Question: Are replacements, repairs or modifications of pressure equipment in use covered by the directive?

Answer:

- 1) Entire change: the complete replacement of an item of pressure equipment by a new one is covered by the PED.
- 2) Repairs are not covered by the PED but are covered by national regulations (if any).
- 3) Pressure equipment which has been subject [should be 'subjected'] to important modifications that change its original characteristics, purpose and/or type after it has been put into service has to be considered as a new product covered by the directive. This has to be assessed on a case by case basis.

Note 1: Operating instructions in the sense [i.e. context] of the PED (see guideline 8/3) cover documentation concerning safe operation including maintenance, but not necessarily detailed information concerning repair or modification of the equipment (e.g. material certificates or qualification of welding procedures). Such information may be provided by a specific contractual agreement between manufacturer and user.

Note 2: The directive applies only to the first placing on the market and putting into service. See 'Blue Guide' chapter 2.1.

^{*} *Guide to the Implementation of Directives Based on the New Approach and the Global Approach*

[†] The full set of guidelines can be viewed and downloaded on <http://ped.eurodyn.com>.

Guideline 1/4

Question: When is a modification of a piping system not covered by the PED?

Answer: When the content, main purpose and safety systems remain essentially the same, it may be regarded as a non-important modification of an existing piping system and is therefore not covered by the PED.

Reason: See guideline 1/3.

To assist in this matter, EEMUA PSC suggest that the following examples should each be considered an 'important change':

- 1 Change resulting in an increase in PED Category (for example due to a change of fluid, pipe size, or pressure).
- 2 Change to process duty to provide a major new process function – minor changes in fluid/composition or flow rate would not normally be regarded as a change in process duty.
- 3 Change of (piping) material type (not grade within a type).
- 4 Changes of pressure and/or temperature resulting in significant changes to loads on equipment and stresses, considerably increasing those in the original design.

In summary, all changes need to be controlled by effective management of change procedures, and conform to the PED and in-service regulations (e.g. Pressure Systems Safety Regulations in the UK) as appropriate.

5 CASE STUDIES

To examine the applicability of the PED, the case studies in Tables 1 and 2 of the Appendix have been prepared. The opinion of EEMUA PSC on PED compliance is given in each case, and will be amended only in the event that information to the contrary is received. Case Nos 1.1, 1.2, 1.5, 1.6, 1.14 and 2.2 are the subject of ongoing discussions with the Health and Safety Executive (HSE) in the UK.

6 'UNDER THE RESPONSIBILITY OF THE USER'

Regulation 4(2) of the UK Pressure Equipment Regulations* states: 'For the avoidance of doubt these Regulations do not apply to the assembly of pressure equipment on the site and under the responsibility of the user.' (This accords with the last part of Recital 5 of the PED.)

A letter from the HSE responding to an enquiry from an EEMUA member company offers the following interpretation:

"... 'under the responsibility of the user' includes a case where the user assembles it [the pressure equipment] himself, or where it was assembled by contractors acting under his control. But it does not extend to a case where the user places an order for an assembly, specifying what he wishes it to achieve, and the person to whom the order is given designs, fabricates etc. it and hands it over after installing it at the site. That is to say, the user could naturally be described as the customer.

"[The company] mentions that 'In some cases the contractor must submit deviations from the contract specs etc. to the user company's technical authority for endorsement, [implying] that that user may be taking responsibility for the assembly. Up to a point he is taking responsibility of something. But that seems to fall a long way short of what regulation 4(2) contemplates by 'assembly...under the responsibility of the user'."

Based on the above, HSE subsequently issued operational circular OC 308/14 (12.9.03) as an interpretative guide for their inspectors. Guidelines 3/1 and 3/2, pertaining respectively to global conformity assessment and joining operations, also have some bearing on the issue.

* The transposition of the PED into UK law.