

ICS 75.200

English version

**Guide to the use of ISO 15649 and ANSI/ASME B31.3 for piping
in Europe in compliance with the Pressure Equipment Directive**

Guide pour l'utilisation de l'ISO 15649 et l'ANSI/ASME
B31.3 pour les tuyauteries en Europe en respectant la
Directive Equipements sous Pression

Erdöl- und Erdgasindustrien - Alternative für metallische
industrielle Rohrleitungen

This Technical Report was approved by CEN on 21 December 2003. It has been drawn up by the Technical Committee CEN/TC 12.

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Foreword

This document CEN/TR 14549:2004 has been prepared by Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas", the secretariat of which is held by AFNOR.

Annexes A, B, C, D and E are informative.

The European Pressure Equipment Directive (PED), Directive 97/23/EC, entered into force on 29th November 1999 and has been mandatory throughout all Member States of the EU and the rest of the European Economic Area (EEA) on 30th May 2002. The prime purpose of the PED is to eliminate barriers to trade without detriment to safety. In May 1985, European Community Ministers agreed on a *New Approach to Technical Harmonisation and Standards* in order to fulfil the objective of an open market in Europe with free movement of goods. *New Approach* Directives such as the PED set out essential safety requirements which must be met.

This document has been developed in order to facilitate PED compliance with respect to the current industry practice for piping that is based on ANSI/ASME B31.3.

This document is technically identical to the EEMUA publication 202 and its Amendment 1 published in May 2002.

This CEN Technical Report cannot provide a presumption of conformity with the PED, therefore the essential safety requirements of the PED should be followed and seen to be followed in full.

PED Issues and their solutions are continuing to develop, therefore users ¹⁾ * of this CEN Technical Report are advised to make use of the references provided in this guide, in order to keep up to date via information published on the Internet World Wide Web.

¹⁾ In the text that follows, the term "user" often refers to the end user of pressure equipment, rather than to the user of this Guide. The precise meaning should be clear from the context in which the term is used.

Introduction

This Guide explains how to use ISO 15649 and ANSI/ASME B31.3 while also complying with the European Pressure Equipment Directive (PED), for piping in Europe Union and other EEA countries. This Guide is intended to facilitate discussions between owner/purchaser, manufacturer/designer and notified body leading to conformity with the PED in a consistent manner.

In general, the PED acts as a jurisdictional regulation with emphasis on general requirements, while for the details of design and construction, reference needs to be made to appropriate engineering standards. ANSI/ASME B31.3 Code is a standard addressing design, fabrication, examination and testing of piping systems. Its use is subject to contractual agreements between the owner and the manufacturer/ assembler of a piping system. The PED does not prohibit the use of ANSI/ASME B31.3 (or indeed of any code), however the requirements specified in the PED should be fulfilled.

Review of ANSI/ASME B31.3 against the Articles and the essential safety requirements (ESRs) of the PED has shown that:

- some Articles and ESRs are satisfied by ANSI/ASME B31.3;
- some Articles and ESRs are not addressed by ANSI/ASME B31.3;
- some aspects of ANSI/ASME B31.3 differ from the Articles and ESRs.

The PED is transposed and translated by each Member State into its national legislation. Users are advised to review the translation implemented in the relevant Member State in order to ensure full regulatory compliance. (The relevant document in the UK is *The Pressure Equipment Regulations 1999*, SI 1999 No 2001.) National legislation can also include requirements outside the scope of the PED, for example for in-service inspection.

The full text of the PED can be found at the European Commission's PED website. The European Commission also publishes Guidelines approved by the Commission's Working Group Pressure (WGP) that, while not legally binding, are intended to provide more detail on how to apply the PED. References in the present document to "Guideline x/x" pertain to the WGP Guidelines. See also annex E.

Europa has published a guide for the oil industry on the use of the PED with particular emphasis on refinery operations, whilst EEMUA has published a guide for purchasers of valves under the PED (EEMUA Publication 196).

NOTE ON UNIT OF PRESSURE Throughout the text of this Guide, "bar" signifies gauge pressure (above atmospheric).

1 Scope

This Guide is intended for use in the petroleum, petrochemical and chemical industries. It identifies and defines a set of common additional and modified requirements to ISO 15649 and ANSI/ASME B31.3 necessitated by the PED. Additional guidance is provided by a suite of annexes (A to E) which are intended to be read independently, but in the context of the main text. These include an actions checklist, tables identifying key requirements of the PED and the corresponding clauses of the ISO/ANSI-ASME standards, and supplementary information.

ISO 15649 incorporates ANSI/ASME B31.3 by normative reference and also contains additional common international practice. The relationships are illustrated in Figure 1.

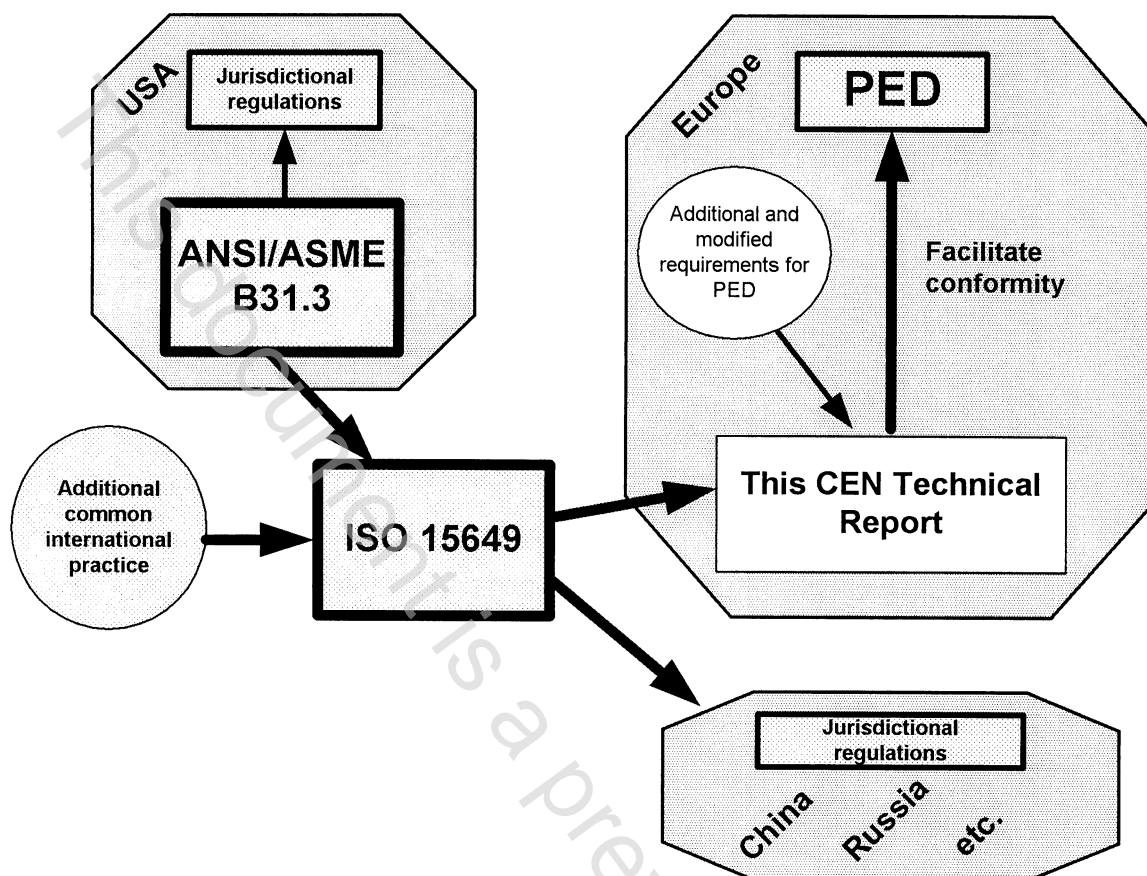


Figure 1 - Sketch of relationship

NOTE The scope of the PED itself is defined therein, in particular in the Preamble and in Article 1.

2 Normative References

This Technical Report incorporates by dated or undated reference, provisions from other publications. These references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Technical Report only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 764-4, *Pressure equipment – Part 4: Establishment of technical delivery conditions for metallic materials*.

EN 10204, *Metallic products - Types of inspection documents*.

ISO 15649:2001, *Petroleum and natural gas industries – Piping*.

Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (published in the Official Journal of the European Communities No L 181, 9.7.97). (Note: the full text of the PED is online, see Ref. 4 below).

PED – Information Resource Centre – The European Commission DGEnterprise website for the PED: <http://ped.eurodyn.com/>.

Guidelines related to the application of the Pressure Equipment Directive 97/23/EC, web page: <http://ped.eurodyn.com/Guidelines/Guid-Intro.html>.

European Pressure Equipment Directive – A guide for the oil industry [Europa]. <http://europa.standardsline.net/> and connect to "Pressure Equipment Directive".

ANSI/ASME B31.3:1999, Process Piping (including ANSI/ASME B31.3a – 2000 Addenda).

ASME QAI-1:1998, Qualifications for Authorized Inspection.

EEMUA Publication 196, Valves Purchasers' Guide to the PED.

3 Terms and definitions

For the purposes of this Technical Report, the terms and definitions given in ISO 15649:2001, ANSI/ASME B31.3:1999 and the PED apply. Piping is defined in Article 1, sub-clause 2.1.2 of the PED applied.

4 General

4.1 Scope of the PED

The PED applies to the design, manufacture and conformity assessment of pressure equipment and assemblies with a maximum allowable pressure greater than 0,5 bar. "Pressure equipment" means vessels, piping, safety accessories (devices to prevent overpressure, e.g. safety valves) and pressure accessories (operational devices with pressure-bearing housings, e.g. valves). "Assemblies" means several pieces of pressure equipment assembled to constitute an integrated and functional whole (see Guidelines 3/8 and 3/9). This scope differs from the scope of ANSI/ASME B31.3, for example piping systems for less than 1 bar pressure and for non-flammable, non-toxic etc. service are excluded from ANSI/ASME B31.3.

The PED applies to new equipment. For further details see the PED Preamble and Article 1. Repairs to piping are not covered by the PED, but may be covered by national regulations (Guideline 1/3). A modification where the content, main purpose and safety systems remain essentially the same, may be regarded as non-important and outside the scope of the PED (Guideline 1/4).

For further guidance on assemblies, see also other Guidelines prefaced "3/"

4.2 Responsibilities

ISO 15649 and ANSI/ASME B31.3 specify responsibilities for owner, designer, manufacturer and fabricator/assembler. ANSI/ASME B31.3 does not address the issue of third party involvement, this would be a requirement of jurisdictional regulations.

However, under the PED the "manufacturer" is responsible for design including certain design conditions, for manufacture and for conformance with the PED. The manufacturer's responsibilities as defined in the PED could fall to a designer, an importer, an owner, or an engineering contractor. The assigning of the manufacturer's responsibilities would be agreed by the parties to a contract, and may need to be defined for each component and assembly. (For further information on the responsibilities of the manufacturer, the reader is referred to the European Commission's *Guide to the Implementation of Directives based on the New Approach and the Global Approach*.)

4.3 Fluid groups

The manufacturer is responsible for classifying the fluid as Group 1 or 2, as required by PED Article 9, in accordance with Table 1 below.