

A GUIDE TO THE PRESSURE TESTING OF IN-SERVICE PRESSURISED EQUIPMENT

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45 Beech Street
London
EC2Y 8AD

Tel 0171 628 7878
Fax 0171 628 7862



sales@eemua.co.uk

website

www.eemua.co.uk



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9.1	'Safety in Pressure Testing'. Guidance Note GS4 from the Health & Safety Executive.	
9.2	API 510 'Pressure Vessel Inspection Code (Maintenance Inspection, Rating, Repair and Alteration) ' Fifth Edition December 1987.	
9.3	'Guide Notes on the Safe Use of Stainless Steel in Chemical Process Plant'. Institution of Chemical Engineers. N.B. This document is mentioned in BS 5500: 5.8.3.2.	
9.4	BS 5500 British Standard Specification for 'Unfired Fusion Welded Pressure vessels', 1991.	
9.5	ANSI B 31.3 Petroleum Refinery Piping Code.	
9.6	ASME VIII Boiler and Pressure Vessel Code	
9.7	BS 5430 'Periodic Inspection; testing and maintenance of Transportable Gas Containers (excluding dissolved acetylene containers)'.	

1. INTRODUCTION AND SCOPE

1.1 Introduction

It is standard practice to test newly fabricated vessels and pipework to a pressure higher than that at which it will be used. This "acceptance" test is generally an integral part of the design code concerned, and is intended to give assurance that the equipment has been designed, fabricated and constructed to the required standards. It is also seen as the last stage of manufacture in that it beneficially causes the vessel to strain plastically at regions of stress concentration and assume its final shape (commonly known as shakedown).

It is recommended that an HSE Guidance Note covering Safety in pressure testing should be studied by those concerned with decisions about pressure testing, whether hydraulic or pneumatic (See Reference 9.1).

1.2 Scope

This document describes and provides guidance on the pressure testing which may be carried out once the service life has begun, at any stage after (but excluding) installation/commissioning.

In some countries it is a statutory obligation to carry out a pressure test on certain equipment at prescribed intervals. This is not the case in the United Kingdom, but the policies applied by EEMUA Member Companies vary considerably. This document does not seek to impose policy but rather to set out the various factors and aspects which determine if, when and how a pressure test may be carried out.

2. PURPOSE OF PRESSURE TESTING

Pressure testing of pressurised-equipment (whether vessels, heat-exchangers, pipework or pipelines) is carried out for a variety of purposes. In general, at least as far as UK practice is concerned, it is not common to apply such testing as a routine or scheduled part of inspection(except for gas cylinders). Rather, pressure-testing is applied under particular circumstances.

The overall purpose of in-service pressure testing is to give assurance that the equipment is in a safe condition for operation; this is achieved in the following specific ways by -

- a) Exposing inherent, major faults in a design or materials nature, or serious errors following a modification/repair.
- b) Ensuring that no significant defect has been missed on inspection, either inadvertently or because of inadequate access for visual or NDT examination.
- c) Levelling out of local areas of high stress following a repair, thus providing a form of mechanical stress-relief.