Model code of safe practice

Part 1

The selection, installation, inspection, and maintenance of electrical and non electrical apparatus in hazardous areas

8th Edition
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FOREWORD

This model code provides guidance on the selection, installation, inspection and maintenance of electrical and non-electrical equipment and systems in the petroleum industry in areas identified as hazardous using the methodology in Energy Institute (EI) Model code of safe practice Part 15 *Area classification code for installations handling flammable fluids* (EI15). It covers hydrocarbon processing, storage and distribution facilities. It provides a summary of the main technical and UK legal issues which equipment users need to address. It also discusses sources of ignition in apparatus other than explosion protected equipment.

This model code provides references to the relevant standards which provide greater detail on each individual topic. It is recognised that standards published by the International Electrotechnical Commission (IEC) are increasingly being used as the basis for a common approach to standardisation worldwide, and developed and offered for European Union adoption as Euronorms (EN). Differences may exist between an IEC standard and the corresponding EN standard, but the differences are often minor, if any. It is intended that technical aspects of this model code be applicable Europe-wide and Internationally as well as in the UK, but this code refers specifically to the UK legal position, though the legal position in other EU countries should be similar for issues governed by EU Directives. For these reasons, EU harmonised EN standards are given as the definitive references for explosion protected apparatus and its application; elsewhere, IEC standards are given as primary references. Where no EN standard or IEC standard exists, British standards (BS), industry guidance, or published papers are referenced. A full listing of standards reference in this Model code is included in Annex H.

The definitions included in Annex A are taken from EN or IEC standards where applicable, but in some instances the text has been clarified. The modified definitions apply to this publication only.

With respect to the 7th edition, the 8th edition of this model code contains new and additional guidance on the following topics:-

- UK legislation arising from the ATEX Directives
- Ignition sources, including those associated with non-electrical apparatus
- Non-electrical apparatus and the relevant standards
- Lightning protection
- Developments in the standards for Ex ‘n’ and Ex ‘e’ high voltage motors
- The use of risk based inspection (RBI) techniques in the inspection of Ex apparatus

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Suggested revisions are invited and should be submitted to the Technical Department, Energy Institute, 61 New Cavendish Street, London, W1G 7AR, e: technical@energyinst.org
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The EI also gratefully acknowledges the support and assistance given by the Health & Safety Executive (HSE) in the preparation and revision of this model code.

Technical editing and project coordination were undertaken by Andrew Sykes (EI).
1 INTRODUCTION AND SCOPE

This model code is aimed at providing an overview of the particular issues related to the selection, installation, inspection and maintenance of explosion-protected Ex certified electrical and non-electrical apparatus in the petroleum industry, specifically in areas where there is a possibility of occurrence of a flammable atmosphere. Guidance is given on the selection of such apparatus, together with installation, inspection and maintenance practices. Where more detailed guidance on specific topics exists, the relevant references are provided.

It also addresses earthing and bonding of electrical and non-electrical apparatus and its associated cabling and support structures in order to provide protection against electric shock, and against ignition hazards from apparatus which is not explosion-protected, electrostatic discharge, and also lightning protection in hazardous areas. Ignition sources are addressed, including those in apparatus which is not explosion-protected and the ignition hazards associated with circulating stray currents and cathodic protection systems, as are the hazards associated with temporary electrical supplies.

It is applicable to both onshore and offshore facilities. It is not applicable to mines, areas where explosives are manufactured, stored or handled and areas subject to flammable dusts and similar materials such as flammable fibres. It is closely associated with EI Model code of safe practice Part 15 Area classification code for installations handling flammable fluids (EI 15).

Emerging standardisation internationally, but particularly within Europe, is beginning to address the issues associated with ignition of flammable atmospheres by non-electrical sources such as hot surfaces. These ignition sources are discussed within this model code.