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Fire safety engineering —

Part 1:
Application of fire performance concepts to design objectives

Ingénierie de la sécurité contre l'incendie —

Partie 1: Application des concepts de performance aux objectifs de conception

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Contents

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of ISO technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 13387-1, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 92*, Fire safety*, Subcommittee SC 4, *Fire safety engineering*.

It is one of eight parts which outlines important aspects which need to be considered in making a fundamental approach to the provision of fire safety in buildings. The approach ignores any constraints which might apply as a consequence of regulations or codes; following the approach will not, therefore, necessarily mean compliance with national regulations.

ISO/TR 13387 consists of the following parts, under the general title *Fire safety engineering:*

— *Part 1: Application of fire performance concepts to design objectives*

— *Part 2: Design fire scenarios and design fires*

— *Part 3: Assessment and verification of mathematical fire models*

— *Part 4: Initiation and development of fire and generation of fire effluents*

— *Part 5: Movement of fire effluents*

— *Part 6: Structural response and fire spread beyond the enclosure of origin*

— *Part 7: Detection, activation and suppression*

— *Part 8: Life safety — Occupant behaviour, location and condition*

Annex D forms a normative part of this part of ISO/TR 13387. Annexes A to C and annexes E and F are for information only.

Introduction

A fire safety engineering approach may have many benefits over prescriptive approaches (see annex A). It takes into account the totality of the fire safety package and provides a more fundamental and economic solution than traditional approaches to fire safety. It may be the only viable means of achieving a satisfactory level of fire safety in some large and complex buildings. For most buildings prescriptive recommendations may be found to be adequate but the use of a fire safety engineering approach enables the more precise design necessary for the assessment of new and complex projects.

This part of ISO/TR 13387 is intended to be applicable to both new and existing buildings and can be used either to justify minor deviations from traditional/prescriptive codes or to evaluate the building design as a whole.

The interaction of fire, buildings and people gives rise to a large number of possible scenarios. Together with the wide range of building designs and uses, this makes it impractical to establish a single set of calculations and procedures that can be applied directly to all buildings. There are still many gaps in the available knowledge and it is, therefore, not possible to set down simple step-by-step procedures that can be applied to all buildings. This part of ISO/TR 13387 is, therefore, intended to provide a framework for a flexible but formalised approach to fire safety design that can be readily assessed by the statutory authorities.

The current knowledge and ability to model fire processes and the response of people requires the use of engineering judgement to compensate for gaps in, or supplement, knowledge. The approaches and procedures detailed in this part of ISO/TR 13387 should, therefore, only be used by suitably qualified and experienced fire safety professionals. It is also important that account should be taken of statutory requirements, and the appropriate approvals bodies should, where necessary, be consulted before final decisions are made about the fire safety design.