SLOVENSKI STANDARD
SIST-TS CEN/TS 54-14:2004

01-oktober-2004

Sistemi za odkrivanje in javljanje požara ter alarmiranje – 14. del: Smernice za načrtovanje, projektiranje, vgradnjo, preverjanje, uporabo in vzdrževanje

Fire detection and fire alarm systems - Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance

Brandmeldeanlagen - Teil 14: Leitfaden für Planung, Projektierung, Montage, Inbetriebnahme, Betrieb und Instandhaltung

Systemes de détection et d'alarme incendie - Partie 14: Guide d'application pour la planification, la conception, l'installation, la mise en service, l'utilisation et la maintenance

Ta slovenski standard je istoveten z: **CEN/TS 54-14:2004**

ICS:

13.220.20	Požarna zaščita	Fire protection
13.320	Alarmni in opozorilni sistemi	Alarm and warning systems

SIST-TS CEN/TS 54-14:2004 **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 54-14

July 2004

ICS 13.220.20

English version

Fire detection and fire alarm systems - Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance

Systèmes de détection et d'alarme incendie - Partie 14: Guide d'application pour la planification, la conception, l'installation, la mise en service, l'utilisation et la maintenance

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Ref. No. CEN/TS 54-14:2004: E

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Foreword

This document (CEN/TS 54-14:2004) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

This document has been prepared in cooperation with the CEA (Comité Européen des Assurances) and with EURALARM (Association of European Manufacturers of Fire and Intruder Alarm Systems).

This document is part of the EN 54 series of standards.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Guidelines covering fire detection and fire alarm systems are published by many different organisations within Europe. The intention of this document is to draw together these many different documents, so as to provide a unified set of guidelines which can give a reasonable Technical Specification of planning, design, installation, commissioning, use and maintenance for fire detection and fire alarm systems throughout Europe.

It is not intended that these guidelines should override existing documents. It is expected for a considerable (and as yet unspecified) period that these guidelines will coexist with the other documents. But it is hoped that the availability of a common set of guidelines will assist in the gradual harmonisation of practice and standards of fire detection and fire alarm systems throughout Europe.

The recommendations within these guidelines are not of themselves mandatory, and have no direct power. They can however be made mandatory by being specified within another document which is itself mandatory. For example, an authority having power under local or national legislation can require compliance with the guidelines, or a contract between a purchaser and a supplier can specify compliance (which may then become mandatory for that system under contract law). The detailed methods by which recommendations become mandatory are not specified within this document, and are a matter for whichever organisation has the necessary authorities.

The main principles on which the guidelines are based are given in the body of the standard. Detailed recommendations by which these principles may be satisfied are given in Annexes.

1 Scope

This document provides guidelines for the application of automatic fire detection and fire alarm systems in and around buildings. The Technical Specification covers planning, design, installation, commissioning, use and maintenance of the systems.

The guidelines cover systems intended for the protection of life and/or the protection of property.

The guidelines cover systems with at least one fire detector. The systems may be capable of providing signals to initiate, in the event of a fire, the operation of ancillary equipment (such as fixed fire extinguishing systems) and other precautions and actions (such as machinery shutdown), but the guidelines do not cover the ancillary services themselves.

The guidelines do not cover systems combining fire alarm functions with other non-fire related functions.

The guidelines do not recommend whether or not an automatic fire detection and/or fire alarm system should be installed in any given premises.

It has been assumed in the drafting of this Part of EN 54 that the execution of its provisions will been trusted to appropriately competent persons. However, guidance is also given to other persons purchasing or using a fire detection or fire alarm system.

2 Normative references

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 54-1:1996, *Fire detection and fire alarm systems – Part 1: Introduction*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 54-1:1996 and the following apply.

3.1
acceptance
decision that the installed system meets the requirements of a previously agreed specification

3.2
alarm load
maximum power (normally electrical) that might be required under the fire condition

3.3
ancillary equipment
equipment which can initiate or be initiated by the fire detection and alarm system

3.4
approval
agreement by a third party that the installed system satisfies the requirements of the third party

3.5
approval body
body accepted by an authority having jurisdiction or other competent organisation as having the expertise necessary to assess the compliance of the installed system with this standard

3.6
authority having jurisdiction
body having powers provided under local, regional, national or European legislation

3.7
beam detector
more commonly used term for 'smoke detector - line detector using a transmitted light beam' (see EN 54-12)

3.8
circuit
interconnected assembly of cables, components and elements, terminated at the control and indicating equipment in such a way that its only connection to other parts of the fire detection and alarm system is through the control and indicating equipment and controlled by the control and indicating equipment

NOTE 1 A circuit may have more than one link to the control and indicating equipment (as in a loop circuit, connected to the control and indicating equipment at both ends).

NOTE 2 If two or more cables are directly linked together inside the control and indicating equipment, without the possibility of control by the link, then they are part of the same circuit.

3.9
commissioning
process by which it is verified that the installed system meets the defined requirements

3.10
commissioning engineer
person who carries out the process of commissioning

3.11
competent person
person who, in relation to the work undertaken, has the necessary knowledge, skill and experience to complete the work satisfactorily and without danger or injury to any person

3.12
component
device which is defined as a component type I or component type II in EN 54-13

3.13
designer
person or organisation taking responsibility for the work outlined in Clause 6

3.14
false alarm
fire alarm caused by reasons other than fire

NOTE Information on false alarms is given in Annex B.

3.15
fault
failure within the system in such a way as to jeopardise the correct functioning of the system

3.16
fault signal
signal intended to indicate the occurrence of a fault

3.17
fault warning
fault signal perceptible to a person

3.18
fire
pyrolysis or combustion needing investigation and/or corrective action in order to prevent danger to life or property

3.19
fire alarm
visual, audible or tactile indication of fire

3.20
fire alarm response strategy
pre-planned procedures which are expected to be followed when a fire alarm occurs

3.21
fire attendance
time between alarm and arrival of trained fire fighters

3.22
fire compartment
compartment whose boundary components are required by regulations to have a defined fire resistance

3.23
fire signal
signal intended to indicate the occurrence of a fire

3.24
hierarchical system
networked system in which one control and indicating equipment is designated as the main control and indicating equipment, and in which the main control and indicating equipment is able to:

a) receive signals from and/or transmit signals to subsidiary control and indicating equipment;

b) indicate the status of the subsidiary control and indicating equipment.

3.25
inspection
routine processes by which the system, its functioning and its indications are manually checked at pre-determined intervals

3.26
installation
work of fixing and interconnecting the components and elements of a system. Installation may be carried out by one or more parties (also see 8.2)

3.27
installed system
system after installation and commissioning has been completed

3.28
installer
person or organisation having responsibility for all or part of the process of installation

3.29
integrated system
system in which the fire detection and alarm functions are integrated with other non-fire functions

3.30
maintenance
work of inspection, servicing and repair necessary in order to maintain the efficient operation of the installed system

3.31
mimic diagram
diagrammatic representation of the building, carrying active indications which are directly related to the building layout

3.32
national document
document, published by a national standards body, giving national recommendations or requirements for installed systems, but not having general application within all CEN countries

3.33
networked system
fire detection and fire alarm system in which several control and indicating equipment are interconnected and able to exchange information

3.34
pre-warning
warning given when the signal from a sensor exceeds the normal level but has not yet reached the fire level

3.35
purchaser
person or organisation taking primary responsibility for payment for the installed system

3.36
qualified
satisfying any relevant national, regional or local standards for competence

3.37
quiescent condition
condition of the installed system when it is supplied by power from its main power source, and has no indicated fire alarms, fault warnings or disablements

3.38
repair
non-routine work necessary to restore the efficient operation of the installed system

3.39
repeat indicating panel
panel which replicates all or some of the indications of the control and indicating equipment,

3.40
search distance
distance that a person has to travel within the affected zone in order to visually determine the position of the fire

3.41
servicing
routine processes of work on the system (including cleaning, re-alignment, adjustment and replacement) carried out at pre-determined intervals

3.42
standby load
power taken by the system under failure of the main power source but otherwise quiescent condition

3.43
supplier
organisation from which all or part of the hardware and/or software for the installed system is purchased

NOTE If all the hardware and/or software for an installed system is purchased from a single organisation, then that organisation is called the system supplier.

3.44
third party
body or organisation other than the installer, supplier or customer

3.45
user
person or organisation having control of the building (or part of the building) in which the fire detection and alarm system is installed

3.46
verification
process by which the installer or other contractor satisfies the customer that the installed system meets the defined requirements

3.47
zone
geographical sub-division of the protected premises in which a function may be carried out separately from any other sub-division

NOTE 1 The function may, for instance, be:
- the indication of the occurrence of a fire (detection zone);
- the giving of a fire alarm (alarm zone).

NOTE 2 Zoning for different functions need not be identical.

3.48
zone card
portable zone map, covering one or more individual zones

3.49
zone map
diagram showing the geographic boundaries of zones and, if necessary access routes to zones

4 General

4.1 Guideline usage

These guidelines provide recommendations for planning, design, installation, commissioning, use and maintenance of fire detection and fire alarm systems. In this form they are not mandatory, but are believed to provide a suitable basis for the provision and usage of good systems. Since the recommendations are not mandatory, they specify what “should” be done, rather than giving requirements on what “shall” be done.

Also see A.4.1.

4.2 Guideline format

It is appreciated that the guidelines cannot cover every possible case that might arise. For this reason, departure from the recommendations are possible, provided that they have been discussed and agreed between all interested parties (see 5.2).

These guidelines have been drawn up as if the provision and use of an installed system will follow the pattern shown in Figure 1.

It is assumed that the first step in the design process is to assess the needs of the building for fire detection and fire alarm (see Clause 5). This may include an assessment of:

a) whether part or all of the building is to be protected;

b) the type of system to be installed;

c) the interaction of the system with other fire protection measures.

The second step is planning and design of the system (see Clause 6). This may include:

d) the selection of detector type and siting for the various parts of the building;

e) subdivision of the building into detection and/or alarm zones;

f) provision for control of the system and for the display of its indications;

g) the provision of power supplies.

The third step is the process of mounting and interconnecting the equipment (see Clause 7).

The fourth step is the commissioning of the system and verification of correct operation (see Clause 8). The guidelines assume that initial commissioning will be done by a contractor, following which verification will be carried out in association with the purchaser or his agent. Some systems will require approval by a third party. These guidelines do not give recommendations on whether or not third party approval is necessary, but do give recommendations on how it should be carried out (see Clause 9).

Once the system has been handed over to the purchaser, satisfactory performance will depend on proper usage, maintenance and servicing (see Clause 10, 11).