INTERNATIONAL STANDARD

IEC 60079-17

Third edition
2002-07

Electrical apparatus for explosive gas atmospheres –

Part 17: Inspection and maintenance of electrical installations in hazardous areas (other than mines)

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES –

Part 17: Inspection and maintenance of electrical installations in hazardous areas (other than mines)

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
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6) Attention is drawn to the possibility that some of the elements of this technical report may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60079-17 has been prepared by subcommittee 31J: Classification of hazardous areas and installation requirements, of IEC technical committee 31: Electrical apparatus for explosive atmospheres.

This third edition cancels and replaces the second edition, published in 1996, and constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
31J/83/FDIS	31J/85/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annex A is for information only.

The committee has decided that the contents of the publication will remain unchanged until 2007. At this date, publication will be

- reconfirmed
- withdrawn
- replaced by revised edition, or
- amended

INTRODUCTION

Electrical installations in hazardous areas possess features specially designed to render them suitable for operation in such atmospheres. It is essential, for reasons of safety in those areas, that, throughout the life of such installations, the integrity of those special features is preserved; they therefore require initial inspection and either

a) regular periodic inspections thereafter, or

b) continuous supervision by skilled personnel

in accordance with this standard and, when necessary, maintenance.

NOTE Correct functional operation of hazardous area installations does not mean, and should not be interpreted as meaning, that the integrity of the special features referred to above is preserved.

ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES –

Part 17: Inspection and maintenance of electrical installations in hazardous areas (other than mines)

1 Scope

This part of IEC 60079 is intended to be applied by users, and covers factors directly related to the inspection and maintenance of electrical installations within hazardous areas only. It does not include conventional requirements for electrical installations, nor the testing and certification of electrical apparatus. It does not cover Group I apparatus (applications for mines susceptible to firedamp).

This standard supplements the requirements laid down in IEC 60364-6-61.

2 Normative references

The following referenced documents are 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.

IEC 60079-0:2000, *Electrical apparatus for explosive gas atmospheres – Part 0: General requirements*

IEC 60079-1:2001, *Electrical apparatus for explosive gas atmospheres – Part 1: Flameproof enclosures "d"*

IEC 60079-2:2001, *Electrical apparatus for explosive gas atmospheres – Part 2: Pressurized enclosures"p"*

IEC 60079-7:2001, *Electrical apparatus for explosive gas atmospheres – Part 7: Increased safety "e"*

IEC 60079-10:1995, *Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas*

IEC 60079-11:1999, *Electrical apparatus for explosive gas atmospheres – Part 11: Intrinsic safety "i"*

IEC 60079-14:1996, *Electrical apparatus for explosive gas atmospheres – Part 14: Electrical installations in hazardous areas (other than mines)*

IEC 60079-15:2001, *Electrical apparatus for explosive gas atmospheres – Part 15: Type of protection "n"*

IEC 60364-6-61:2001, *Electrical installations of buildings – Part 6-61: Verification – Initial verification*

3 Definitions

For the purposes of this part of IEC 60079, the following definitions apply.

3.1
explosive atmosphere
mixture with air, under atmospheric conditions, of flammable substances in the form of gas, vapour, mist or dust, in which after ignition, combustion spreads throughout the unconsumed mixture

3.2
explosive gas atmosphere
mixture with air, under atmospheric conditions, of flammable substances in the form of gas or vapour, in which after ignition, combustion spreads throughout the unconsumed mixture

3.3
hazardous area
area in which an explosive gas atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of apparatus

NOTE For the purposes of this standard, an area is a three-dimensional region or space.

3.4
non-hazardous area
area in which an explosive gas atmosphere is not expected to be present in quantities such as to require special precautions for the construction, installation and use of apparatus

3.5
maintenance
combination of any actions carried out to retain an item in, or restore it to, conditions in which it is able to meet the requirements of the relevant specification and perform its required functions

3.6
inspection
action comprising careful scrutiny of an item carried out either without dismantling, or with the addition of partial dismantling as required, supplemented by means such as measurement, in order to arrive at a reliable conclusion as to the condition of an item

3.6.1
visual inspection
inspection which identifies, without the use of access equipment or tools, those defects, such as missing bolts, which will be apparent to the eye

3.6.2
close inspection
inspection which encompasses those aspects covered by a visual inspection and, in addition, identifies those defects, such as loose bolts, which will be apparent only by the use of access equipment, for example steps, (where necessary), and tools

NOTE Close inspections do not normally require the enclosure to be opened, or the equipment to be de-energized.

3.6.3
detailed inspection
inspection which encompasses those aspects covered by a close inspection and, in addition, identifies those defects, such as loose terminations, which will only be apparent by opening the enclosure, and/or using, where necessary, tools and test equipment

3.6.4
initial inspection
inspection of all electrical apparatus, systems and installations before they are brought into service

3.6.5
periodic inspection
inspection of all electrical apparatus, systems and installations carried out on routine basis

3.6.6
sample inspection
inspection of a proportion of the electrical apparatus, systems and installations

3.7
continuous supervision
frequent attendance, inspection, service, care and maintenance of the electrical installation by skilled personnel who have experience in the specific installation and its environment in order to maintain the explosion protection features of the installation in satisfactory condition

3.8
skilled personnel
people who meet the requirements for the qualification of personnel in accordance with 4.2

3.9
technical person with executive function
that person providing technical management of the skilled personnel, having adequate knowledge in the field of explosion protection, having familiarity with the local conditions, having familiarity with the installation and who has overall responsibility and control of the inspection systems for the electrical equipment within hazardous areas

3.10
associated apparatus
electrical apparatus in which the circuits or parts of circuits are not all necessarily intrinsically safe but which contains circuits that can affect the safety of the intrinsically safe circuits associated with it

NOTE The associated apparatus is normally the interface between an intrinsically safe circuit and a non-intrinsically safe circuit and is frequently located in the non-hazardous area. The associated apparatus may be, for example, shunt diode safety barriers or galvanic isolators.

4 General requirements

4.1 Documentation

For the purposes of inspection and maintenance, up-to-date documentation of the following items shall be available:

a) the classification of hazardous areas (see IEC 60079-10);

b) apparatus group and temperature class;

c) records sufficient to enable the explosion-protected equipment to be maintained in accordance with its type of protection (see IEC 60079-0) (for example list and location of apparatus, spares, technical information, manufacturer's instructions).

4.2 Qualifications of personnel

The inspection and maintenance of installations shall be carried out only by experienced personnel, whose training has included instruction on the various types of protection and installation practices, the relevant rules and regulations and on the general principles of area classification. Appropriate continuing education or training shall be undertaken by personnel on a regular basis. Evidence of the relevant experience and training claimed shall be available.

4.3 Inspections

4.3.1 General

Before plant or apparatus is brought into service, it shall be given an initial inspection.

To ensure that the installations are maintained in a satisfactory condition for continued use within a hazardous area either

a) regular periodic inspections, or

b) continuous supervision by skilled personnel

and, where necessary, maintenance shall be carried out.

Following any replacement, repair, modification or adjustment, the items concerned shall be inspected in accordance with the relevant items of the detailed column of tables 1, 2 and 3.

If, at any time, there is a change in the area classification or if any apparatus is moved from one location to another, a check shall be made to ensure that the type of protection, apparatus group and temperature class, where appropriate, are suitable for the revised conditions.