

Australian Oil and Gas Industry Workshop
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TC31

EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

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TC31 - Strategic Business Plan

31/789/DC [draft for comment]
eventually replaces **IEC SMB/3211/R**

IEC/TC or SC	Secretariat	Date
TC31	United Kingdom	2009-01

Scope:

To prepare and maintain international standards relating to equipment for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts

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Background

The committee TC 31 was established in July 1948 to address the need to develop techniques for ensuring electrical equipment would not provide an explosion risk when used explosive atmospheres in involving gases, vapours and mists. The scope was subsequently expanded to include combustible dusts.

Over the 60 years of its operation there have been a variety of sub-committees established and disbanded when changes have occurred to working procedures and priorities.

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Background

The most recently established sub-committee was SC 31M in 2007. This sub-committee is a joint ISO/IEC subcommittee and will be able to publish joint ISO/IEC standards covering the non-electrical field.

This represents a significant expansion in the scope of TC 31 and an expected corresponding increase in standards.

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Committee Structure

TC 31 Equipment for explosive atmospheres

SC31G Intrinsically-safe apparatus

SC31H Apparatus for use in the presence of
combustible dust

SC31J Classification of Hazardous Areas and
installation requirements

SC31M Non-electrical equipment and protective
systems for explosive atmospheres

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TC 31 Scope

- To prepare and maintain international standards relating to equipment for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts.

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SC 31G Scope

- To prepare and maintain international standards relating to intrinsically safe electrical apparatus and systems for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts.

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SC 31J Scope

- To prepare and maintain international standards relating to the use of equipment including area classification, the selection and installation, inspection and maintenance, repair, overhaul and reclamation of equipment where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts.

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SC31M Scope

- To prepare and maintain international standards relating to non-electrical equipment and protective systems for use where there is a hazard due to the possible presence of explosive atmospheres of gases, vapours, mists or combustible dusts.

Note: For the purposes of this sub-committee 'non-electrical equipment' is defined as – "equipment which can achieve its intended function mechanically".

For the purposes of this sub-committee, 'Protective system' is defined as – "devices other than components of the equipment which are intended to halt incipient explosions immediately and/or to limit the effective range of an explosion".

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Business Environment

General

Improved safety in environments where explosive atmospheres may occur is of primary concern, but there is also need for uniform operational practices in these areas to promote free trade of the products used and to assist economic development.

A recent paper published by IECEx put the annual value of the Ex market at tens of billions of US dollars in new equipment alone.

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Business Environment

General

The standards of this Technical Committee are used in any industry where explosive atmospheres of gas, vapour, mists and dusts may be present. Typical industries include oil and gas, chemical, plastics, grain, pharmaceutical, shipping, mining and coal industries.

The standards produced covered the life-cycle of equipment through design, manufacture, installation, maintenance and repair. There are also standards dedicated to installations such as those on area classification and inspection.

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Business Environment

Market demand

The market demand of the TC31 standards has been increasing significantly in recent years, with the increased adoption of the standards throughout the world.

They are used by designers, manufacturers, installers, maintenance and repair personnel, equipment users, regulators, standards bodies, accreditation bodies, certifiers and testing bodies.

Other IEC and ISO committees need to utilize the standards developed by TC 31. Formal liaisons have been put in place, to avoid duplication, contradiction and ensure good cooperation is achieved.

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Business Environment

Market demand

The standards produced by TC 31 are now widely adopted throughout the world, frequently without modification. In many instances they form the basis for legislated requirements in this field. This particularly occurs in applications such as coal mines, and ship and offshore installations. Many countries also have mandatory requirements for equipment used in explosive atmospheres in aboveground industries.

Most countries in the world now use the TC 31 standards either unchanged or with some defined national differences. The only major body of standards with significant differences are those produced in the USA.

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Business Environment

Market demand

However, USA is actively involved in the work of TC 31 and is gradually moving closer to adoption of the IEC standards.

The above has seen the use of the standards for local and regional certification and for international certification using the IECEx Scheme which is growing rapidly.

The standards are also extensively used by multinational companies. These may be users such as those in the petrochemical industries, or manufacturers building or marketing their products throughout the world.

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Business Environment

Market demand

This impacts on the work of the committee through:

- ❖ Greater pressure on TC 31 to produce acceptable documents in shorter time frames.
- ❖ Larger and more active representation at meetings and more critical comments on documents, as countries or groups of countries seek to have their practices and preferences included.
- ❖ Increased scrutiny of standards as they are used for certification and testing.
- ❖ Pressure to expand the scope of the standards produced by the committee.

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Business Environment

Trends in technology

The technology used in the protective design standards is fairly mature and stable. Hence significant development is not required in these areas. However, there is still a need to cater for trends in areas such as electronic devices, fibre optics, manufacturing techniques and materials development.

Liaison has been established with IEC TC 105 Fuel cells, IEC TC18 Electrical installations of ships and of mobile and fixed offshore units, ISO/TC 197 Hydrogen technologies, and the Petroleum and Chemical Industry Committee of IEEE to help keep pace with trends in technology or to ensure the standards produce can meet the needs of the market.

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Business Environment

Market trends

The market trend for demand for the standards of TC 31 is expected to continue to increase. It is anticipated that this trend will also occur for the new non-electrical standards that will be produced.

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Business Environment

Ecological environment

The TC 31 standards contribute to safer and more efficient operations in the industries concerned, and prevent loss of life and destruction to the environment. Major environmental problems can occur as a result of explosions rupturing vessels, for example, an explosion on a super tanker, and the resultant release of materials due to that explosion into the environment.

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Major Objectives

The following are the major objectives for TC 31.

- ★ Objective 1
 - ❖ To integrate gas and dust requirements into the same standards where feasible.
- ★ Objective 2
 - ❖ To incorporate equipment protection levels (EPLs) into all relevant standards
- ★ Objective 3
 - ❖ To prove the process of production of dual logo/dual badged standards in SC 31M
- ★ Objective 4
 - ❖ To integrate standards requirements for intrinsic safety and FISCO/FINICO into one standard

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TC31 Current Working Groups [WG]

WG22 Responsible for IEC60079-0, IEC60079-5. IEC60079-6, maintenance of IEC 60050.426 and other specific tasks assigned by TC 31

WG27 Electric Machines (motors and generators)

WG28 Dusts

WG30 Equipment process sealing

WG31 Gas/dust hybrid mixtures

WG32 Creepage and clearance distances

JWG29 JWG with TC 101 - Electrostatics

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TC31 Current Maintenance Teams [MT]

MT60079-1 Maintenance of IEC 60079-1

MT60079-7 Maintenance of IEC 60079-7

MT60079-15 Maintenance of IEC 60079-15

MT60079-18 Maintenance of IEC 60079-18

MT60079-20-1 Maintenance of IEC 60079-1-1;
-4; -4A; -12; -20

MT60079-26 Maintenance of IEC 60079-26

MT60079-28 Risk of ignition by radiation from optical
equipment

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TC31 Current Maintenance Teams [MT]

MT60079-29 Maintenance of IEC60079-29 series

MT60079-30 Maintenance for IEC60079-30-1
and IEC60079-30-2

MT60079-31 Maintenance of IEC60079-31

MT60079-2/13 Maintenance of IEC60079-2,
IEC60079-13 & IEC60079-16

MT62013 Maintenance of IEC62013-1
and IEC 60213-2

TC31 Current Project Teams [PT]

PT60079-33 New work for IEC 60079-33

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SC31G Current Working Groups

JWG31J Intrinsic safety "i" systems document

SC31G Current Maintenance Teams

MT 60079-11 - Maintenance of IEC 60079-11

MT 60079-25 - Maintenance of IEC 60079-25

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SC31J Current Maintenance Teams

MT60079-10-1	Maintenance of IEC60079-10-1
MT60079-10-2	Maintenance of IEC61241-10, 61241-2-1, 61241-2-2 and 61241-2-3
MT60079-14	Maintenance of IEC60079-14
MT60079-17	Maintenance of IEC60079-17
MT60079-19	Maintenance of IEC60079-19

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SC31M Current Working Groups

WGAHG-1 Mining equipment

WGAHG-2 Non-electrical equipment and components.
Ignition hazard assessment, basic methods and requirements

WGAHG-3 Protective systems

SC31M Current Project Teams

PT 80079-34 - ISO/IEC80079-34 Ed. 1.0: Explosive atmospheres - Application of quality systems for [manufacture of] electrical and non-electrical equipment

TC31 – Reference Standards

IEC 60079-0 (2008-12) Ed.5.0	Part 0: General requirements
IEC 60079-1 (2007-04) Ed. 6.0	Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-2 (2007-02) Ed. 5.0	Part 2: Equipment protection by pressurized enclosures "p"
IEC 60079-4 (1975-01) Ed. 2.0	Part 4: Method of test for ignition temperature
IEC 60079-5 (2007-03) Ed. 3.0	Part 5: Equipment protection by powder filling "q"
IEC 60079-6 (2007-03) Ed. 3.0	Part 6: Equipment protection by oil immersion "o"
IEC 60079-7 (2006-07) Ed. 4.0	Part 7: Equipment protection by increased safety "e"
IEC 60079-10-1 (2008-12) Ed. 1.0	Part 10-1: Classification of areas - Explosive gas atmospheres
IEC 60079-11 (2006-07) Ed. 5.0	Part 11: Equipment protection by intrinsic safety "i"
IEC/TR60079-13 (1982-01) Ed. 1.0	Part 13: Construction and use of rooms or buildings protected by pressurization
IEC 60079-14 (2007-12) Ed. 4.0	Part 14: Electrical installations design, selection and erection
IEC 60079-15 (2005-03) Ed. 3.0	Part 15: Construction, test and marking of type of protection "n" electrical apparatus
IEC/TR 60079-16 (1990-05) Ed. 1.0	Part 16: Artificial ventilation for the protection of analyser(s) houses
IEC 60079-17 (2007-08) Ed. 4.0	Part 17: Electrical installations inspection and maintenance
IEC 60079-18 (2004-03) Ed. 2.0	Part 18: Construction, test and marking of type of protection encapsulation "m" electrical apparatus

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IEC 60079-19 (2006-10) Ed. 2.0	Part 19: Equipment repair, overhaul and reclamation
IEC/TR 60079-20 (1996-10) Ed. 1.0	Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus
IEC 60079-25 (2003-08) Ed. 1.0	Part 25: Intrinsically safe systems
IEC 60079-26 (2006-08) Ed. 2.0	Part 26: Equipment with equipment protection level (EPL) Ga
IEC 60079-27 (2008-01) Ed. 2.0	Part 27: Fieldbus intrinsically safe concept (FISCO)
IEC 60079-28 (2006-08) Ed. 1.0	Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-29-1 (2007-08) Ed. 1.0	Part 29-1: Gas detectors - Performance requirements of detectors for flammable gases
IEC 60079-29-2 (2007-08) Ed. 1.0	Part 29-2: Gas detectors - Selection, installation, use and maintenance of detectors for flammable gases and oxygen
IEC 60079-30-1 (2007-01) Ed. 1.0	Part 30-1: Electrical resistance trace heating - General and testing requirements
IEC 60079-30-2 (2007-01) Ed. 1.0	Part 30-2: Electrical resistance trace heating - Application guide for design, installation and maintenance
IEC 60079-31 (2008-11) Ed. 1.0	Part 31: Equipment dust ignition protection by enclosure "t"
IEC 62013-1 (2005-10) Ed. 2.0	Caplights for use in mines susceptible to firedamp - Part 1: General requirements - Construction and testing in relation to the risk of explosion
IEC 62013-2 (2005-10) Ed. 2.0	Caplights for use in mines susceptible to firedamp - Part 2: Performance and other safety-related matters

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