



IEC International Standards update

Mark Coppler
TC 31 Chairman
mark.coppler@dnvgl.com



TC 31 EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

Introduction

Mark COPPLER

Chairman IEC TC 31 July 2014 - 2020

Ex-officio member IECEx Management Committee

Convenor WG 32 on creepage and clearance distances

Liaison to TC 109 on Insulation Coordination

Member 6 TC 31 maintenance teams

DTA USNC TC 31 > 10 yrs.

Involved in US & IEC standards development since early 1990s.

12 yrs. ISA Standards & Practices board Managing Director ISA

12, 82 & 92



TC 31 EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

Introduction

Mark COPPLER

Sr. Product Certification Specialist - DNV-GL 2012 - pres.

Eng. Mgr.; Sr. B.U. Compliance Engineer - AMETEK P&AI - 1997-2012

Sr. Dev. Engr.; Eng. Mgr. - Bacharach Inc. - 1987-1997

Eng. Mgr.; VP Engineering - Quasitronics Inc. - 1982-1987

Eng. Tech.; Test Tech. ; Dev. Engr. - Thermox Instruments - 1976-1982

- > 35 years employed by manufacturers, designing and certifying new products in the process analyzer, instrumentation and gas detection market as well as other equipment for use in hazardous areas.**
- > 5 years certifying equipment and QMS auditing.**



TC 31 Presentation

- **IEC and its publications**
- **TC 31 History**
- **TC 31 Structure**
- **Work in process**
- **Strategic plan**
- **Recent developments**
- **Standards development process**
- **Info resources**
- **Q & A / Discussion**



WORLD Standards Development Organizations

ITU - International Telecommunication Union

ISO - International Organization for Standardization

IEC - International Electrotechnical Commission



TC 31 EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

IEC and its Publications

IEC Publications – International Standard (IS)

A document, established by consensus and approved by IEC, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context



$\geq 2/3$ vote in favour by TC/SC P-members
 $\leq 1/4$ negative vote from all IEC members voting

IEC Publications – Technical Specification (TS)

Published when:
The subject is still under technical development.
Insufficient consensus for approval of an IS is available.
There is doubt that consensus has been achieved.
Other reason precluding immediate publication of an IS.



≥ 2/3 vote in favour by TC/SC P-members voting

IEC Publications – Publicly Available Specification (PAS)

Publication responding to an urgent market need, to speed up the standardization in areas of rapidly evolving technologies. Dual logo publication with an external organization. No conflict with existing ISs by committee concerned. Has a limited period of validity.



**Approved by simple majority of TC/SC
P-members voting**

IEC Publications – Technical Report (TR)

Informative document
 Data of a different kind, e.g.
 Scientific supporting material
 Data collection.
 Results of surveys.
 State of the art.
 Supplementary information or
 explanation.



**Approved by simple majority vote of
TC/SC P-members voting**



IEC Standards adoption

- **Widely adopted throughout the world**
 - **Some National Deviations**
- **Basis for local, regional & International certification (IECEx)**
- **Used by multinational companies & mfrs. supplying products to the world.**
- **TC 31 standards & IECEx System recognized as best practice by United Nations as ‘A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere’.**



TC 31

TC 31 History



TC 31 History

Established 1948

**To develop explosion protection techniques for
Electrical equipment in explosive atmospheres
(gases, vapours and mists)**

Expanded

**classification, installation requirements
combustible dusts
non-electrical equipment**



TC 31

TC 31 Structure

IEC/TC 31 EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

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

- Connecting with the world of standards
- Working on a global basis



Other IEEE Liaisons:

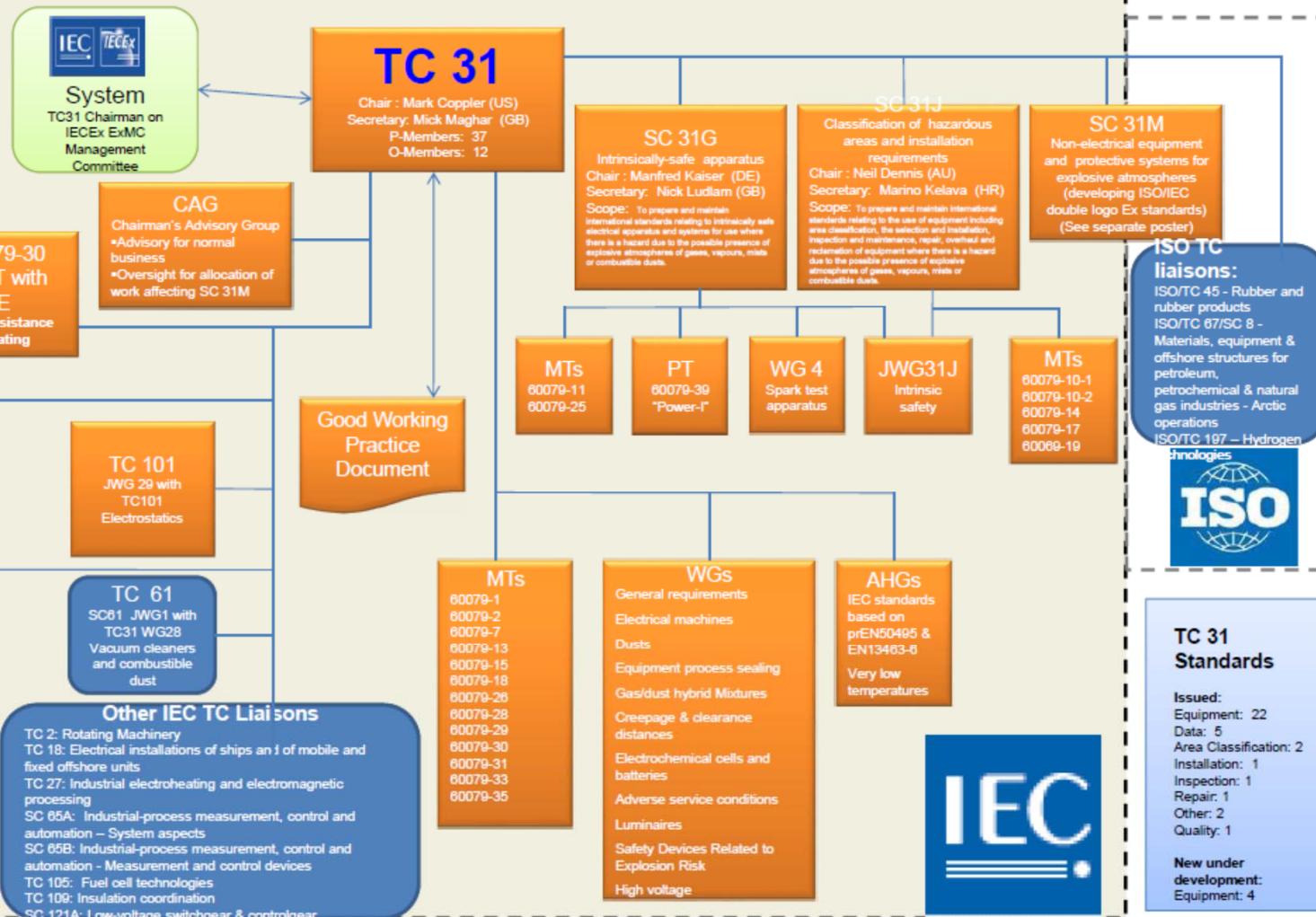
TC 31/MT60079-7
TC 31/MT60079-17



Sectoral initiative on explosive environments equipment

Some significant matters:

- Operating since 1948
- Only TC with ISO/IEC subcommittee
- First TC to develop a Good Working Practice (praised by SMB and copied by other TCs)
- Use of 'horizontal working groups' (eg motors, electrostatics, luminaires)
- Work on affect of arctic conditions
- Significant world-wide adoption of standards
- Parallel voting of standards in Europe and elsewhere.



THE START

It was decided by ISO/TMB and IEC/SMB at their meetings in June 2007, to create a new subcommittee of IEC/TC 31, IEC SC 31M, to develop double logo standards in the field of non-electrical equipment for use in explosive atmospheres and to assign the secretariat to DIN (Germany).



IEC SC with ISO secretariat as part of IEC TC 31

IEC TECHNICAL COMMITTEE 31: EQUIPMENT FOR EXPLOSIVE ATMOSPHERES

Implementation of the New IEC SC 31 M,

Minutes of meeting in Frankfurt on 2007-06-18

... On behalf of TC31 we welcome SC31M into our family of committees that is now able to address all aspects of equipment for explosive atmospheres.

Mr. George Thompson, Secretary IEC TC31

IEC SC 31M

Non-electrical equipment and protective systems for explosive atmospheres

Chair : Michael Beyer (DE)

Secretary: Anke Sachtleben (DE)

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.

P-Members: 24, O-Members: 7

THE AIM



Source RAG mining equipment

A coordinated international approach to develop Ex standards for non-electrical equipment and for protective systems on the basis of CEN standards, and similar standards from other countries, within the umbrella of IEC TC 31



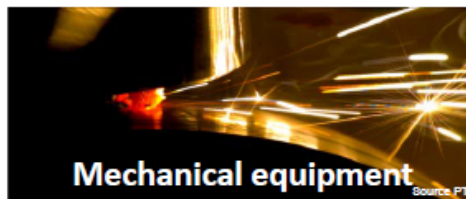
Materials & QA

Source PTB

MT 80079-20-1: Maintenance of IEC 60079-20-1 Ed. 1.0: Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data
Convenor : Mr Martin Thedens (DE)

MT 80079-20-2: Explosive atmospheres
Part 20-2: Material characteristics - Combustible dusts test methods
Convenor : Mr Don Ankele(US)

MT 80079-34: ISO/IEC 80079-34 Ed. 1.0: Explosive atmospheres - Application of quality systems for electrical and non-electrical equipment
Convenor: Mr Thierry Houeix (FR)



Mechanical equipment

Source PTB

PT 80079-36: ISO/IEC 80079-36 Ed. 1.0: Explosive atmospheres - Non-electrical equipment for use in explosive atmospheres - Basic methods and requirements
Project Leader : Mr Thierry Houeix (FR)

PT 80079-37: ISO/IEC 80079-37 Ed. 1.0: Explosive atmospheres - Non-electrical equipment for use in explosive atmospheres - Non-electrical type of protection constructional safety 'c', control of ignition sources 'b', liquid immersion 'k'
Project Leader : Mr Konrad Brehm (DE)

PT 80079-38: ISO/IEC 80079-38 Ed. 1.0: Explosive atmospheres - Non-electrical equipment for use in explosive atmospheres- Equipment and components in explosive atmospheres in underground mines
Project Leader : Mr Elmar Fuchs (DE)

PT 80079-41: ISO/IEC 80079-41 Ed. 1.0: Explosive atmospheres - Reciprocating internal combustion engines
Project Leader : Mr Elmar Fuchs (DE)



Working groups

Source PTB

WG 1 Non-electrical equipment
Task : - to produce informative document(s) on selection, installation, maintenance, repair and overhaul for non-electrical equipment);
- to provide advice and draft proposals to SC 31M on specific task assigned by SC 31M including coordination of requirements for non-electrical equipment in all standards within SC 31M
- to provide draft proposals for the revision of the informative annex(es) on non-electrical equipment in ISO/IEC 80079-34;
- to be responsible for maintenance of ISO 80079-36 (after publication)..
Convenor : Mr Thierry Houeix (FR)

AHG 5 Internal combustion engines
Task : to consider whether there is sufficient interest in such a standard;
to consider existing standards on the subject and recommend suitable material from them;
to recommend to SC 31M how this project should be carried out in co-operation with other committees.
Convenor : Mr Elmar Fuchs (DE)



TC 31 Structure

P- Members - Voting countries

O - Members - Observers

Experts are qualified and assigned by the National Committees of the member countries.

If interested - see your National Committee



TC 31

Existing publications



TC 31 published documents

Electrical equipment standards:

- IEC 60079-0 General requirements
- IEC 60079-1 Flameproof enclosure Ex d
- IEC 60079-2 Pressurization Ex p
- IEC 60079-5 Powder filling Ex q
- IEC 60079-6 Oil immersion Ex o
- IEC 60079-7 Increased safety Ex e
- IEC 60079-11 Intrinsic safety Ex i
- IEC 60079-13 pressurized room Ex p
- IEC 60079-14 Electrical installation
- IEC 60079-15 Non-Incendive Ex n
- IEC 60079-16 Analyzer Houses
- IEC 60079-17 Inspection & Maintenance
- IEC 60079-18 Encapsulation Ex m
- IEC 60079-19 Repair, Overhaul and Reclamation
- IEC 60079-25 Intrinsically safe systems
- IEC 60079-26 Equipment w/Protection Level Ga EPL Ga



TC 31 published documents

Electrical equipment standards:

IEC 60079-28	Optical radiation
IEC 60079-30-1	Trace heating General & testing reqmts
IEC 60079-30-2	Trace heating design, installation & maintenance
IEC 60079-31	Dust ignition protection by enclosure "t"
IEC 60079-33	Special protection 's'
IEC 60079-35-1	Caplights for mines - General requirements
IEC 60079-35-2	Caplights – Performance & Safety related matters
IEC TS 60079-39	Intrinsically safe systems with electronically controlled spark duration limitation
IEC TS 60079-40	Process sealing
IEC TS 60079-32-1	Electrostatic hazards, guidance
IEC 60079-32-2	Electrostatics hazards – Tests

Gas Detection standards:

IEC 60079-29-1	Flammable Gas detectors Performance requirements
IEC 60079-29-2	Flam. Gas detectors Selection, installation, use & maintenance
IEC 60079-29-3	Guidance on functional safety of fixed gas detection systems
IEC 60079-29-4	Performance requirements of open path detectors

TC 31 published documents

Non-Electrical standards:

- IEC 60079-10-1 Zone Area classification – Gas
- IEC 60079-10-2 Zone Area classification – Dust
- IEC 60079-20-1 Materials - gas & vapour classification
- IEC 60079-20-2 Material characteristics - Combustible dusts test methods
- ISO/IEC 80079-34 Ex Quality Systems
- ISO/IEC 80079-36 Non-electrical equipment - Basic method and requirements
- ISO/IEC 80079-37 Non-electrical equipment - Type of protection constructional safety "c", control of ignition source "b", liquid immersion "k"
- ISO/IEC 80079-38 Equipment and components in underground mines
- IEC 61241-2-1 Method for minimum ignition temp. of dusts
- IEC TS 61241-2-2 Methods for resistivity of dust layers
- IEC 61241-2-3 Method for minimum ignition energy of dust/air mixtures



TC 31

Work in progress



Work in progress

Document	Stage	Projected Pub
• IEC 60079-0 Ed. 7.0	FDIS	2017-12
• IEC 60079-7 amd1	CDV	2018-04
• IEC 60079-11 Ed. 6	PWI	
• IEC 60079-13 Ed. 2.0	FDIS	2017-12
• IEC 60079-15 Ed. 5.0	FDIS	2017-12
• IEC 60079-18 amd1	CDV	2017-12
• IEC 60079-19 Ed. 4.0	CDV	2018-01
• IEC 60079-31 Ed. 3.0	CD	2019-04
• IEC 60079-42 Ed. 1.0	CD	2019-02
• IEC TS 60079-43 Ed. 1.0	DTS	2018-02
• IEC TS 60079-46 Ed. 1.0	DTS	2018-02
• IEC 62990-1 Ed. 1.0	CD	2018-03
• IEC 62990-2 Ed. 1.0	CD	2020-02
• ISO/IEC 80079-20-1/Ed1	FDIS	2017-06
• ISO /IEC 80079-34 Ed. 2.0	CDV	2018-05
• IEC 62990-1 Toxic Gas Det. Performance	NP	
• IEC 62990-2 Toxic Gas Det. sel/inst/maint	NP	
• Personal Competence	NP	



TC 31 Strategic Plan

Strategic plan



TC 31 Strategic Plan



SMB/6051/R

STRATEGIC BUSINESS PLAN (SBP)

IEC/TC OR SC:	SECRETARIAT:	DATE:
31	UK	2016-10-14

Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

A. STATE TITLE AND SCOPE OF TC

Are there any new or emerging trends in technology that will impact the scope and work activities of the TC? Please describe briefly.

Do you need to update your scope to reflect new and emerging technologies? If yes, will these changes impact another TC's scope or work activities?

If yes, describe how these will impact another TC(s) and list the TC(s) it would impact

IEC TC 31 Equipment for explosive atmospheres

Scope

TC 31 - 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.

B. MANAGEMENT STRUCTURE OF THE TC

Describe the management structure of the TC (use of an organizational chart is acceptable) (should be integrated by CO automatically) and, if relevant (for example an unusual structure is used), provide the rationale as to why this structure is used.

Note: Check if the information on the IEC website is complete.

When was the last time the TC reviewed its management structure? Describe any changes made. When does the TC intend to review its current management structure? In the future, will the TC change the current structure, for example due to new and emerging technologies, product withdrawal, change in regulations etc. Please describe.

Make sure the overview includes:

- any joint working groups with other committees,
- any special groups like advisory groups, editing groups, etc.

IEC/TC 31 has three subcommittees

SC 31G Intrinsically-safe apparatus

SC 31J Classification of Hazardous Areas and installation requirements

SC 31M Non-electrical equipment and protective systems for explosive atmospheres

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 in explosive atmospheres involving gases, vapours and mists. The scope has been progressively expanded to include classification, installation requirements and combustible dusts. Most recently the scope has been expanded to include non-electrical equipment as a joint ISO-IEC development.

Over the more than 60 years of its operation there have been a variety of sub-committees



TC 31 Strategic Plan

Trends in Technology

Functional Safety

Very cold environments

Cells & batteries

Luminaries

Safety devices / explosion risk

“Power-i”

Non-electrical equipment

High Power

Refrigerants

Assemblies & Skids



TC 31 Strategic Plan

Completed Objectives

- Publish first IEC/IEEE standards for electrical resistance trace heating
- Provide summary & significance of changes
- Promote UNECE CROs incorporating adoption of TC 31 standards

In-process & New objectives

- To continually improve the effectiveness and relevance of TC 31
- Investigate the issues associated with the influence of environmental factors in adverse service conditions
- Broader coverage & integration of requirements Group I
- Inclusion of gas detection standards for toxic gases and oxygen within the IEC 60079-29 series
- Develop standards for certification of assemblies



TC 31 Strategic Plan

Recent developments



Latest Plenary & CAG items of interest

Amend IEC 60079-7 to bring “Compound Filled Sealing Boxes” from IEC 60079-15.

TC 31 decided not to include the proposals of WG 32 into TC 31 documents that would allow manufacturer assignment and users selection of different pollution degrees and overvoltage categories.

Revision of IEC 60079-6 “o” for voltages $>15\text{kV}$

Amendment of IEC 60079-18 to allow sampling on dielectric test.



Latest Plenary & CAG items of interest

NP for personal competence

Formal liaison with IECEx

Revise IEC 60079-31.

TS that would permit certification of assemblies of Ex equipment, for example skids.

Improvement of IEC 60079-7 to allow for the easier application by the users in the field.



Latest Plenary & CAG items of interest

IEC 80079-34 Annexes

Personal competence

Push stability of IEC 60079-26 to 2021 & consider adding dust requirements for separation elements.

Cable Transit Device decision sheet – clarifying requirements

Discussions on “Specific conditions of use”.



Standards development process



Standards process - New document

Project stage	Associated document	Acronym
Preliminary	Preliminary work item	PWI
Proposal	New work item proposal ^a	NP
Preparatory	Working draft(s) ^a	WD
Committee	Committee draft(s) ^a	CD
Enquiry	Enquiry draft ^b	CDV
Approval	Final Draft International Std. ^a	FDIS
Publication	International Standard	

a) These stages may be omitted

b) Draft International Standard in ISO, committee draft for vote in IEC



Standards process - Maintenance

Project stage	Associated document	Acronym
Preliminary	Preliminary work item	PWI
Proposal	New work item proposal ^a	NP
Preparatory	Working draft(s) ^a	WD
Preparatory	Questionnaire or Doc. For Comment Review Report	Q or DC RR
Committee	Committee draft(s) ^a	CD
Enquiry	Enquiry draft	CDV
Approval	Final Draft International Standard ^a	FDIS
Publication	International Standard	

a) These stages may be omitted



Information Resources



Info Resources - IEC homepage

(<http://www.iec.ch>)

IEC International Electrotechnical Commission

International Standards and Conformity Assessment for all electrical, electronic and related technologies

Forgot my password | myIEC | Subscribe | Sitemap | FAQs | Contact us

You & the IEC | About the IEC | News & views | Standards development | Conformity assessment | Members & experts | Developing countries | Webstore

Search... | Advanced search

Enabling global trade

International Standards

Conformity Assessment

Technology sectors

Feedback

IEC Making electrotechnology work for you.

Home | Work | Learn | News | Buy



Info Resources - TC 31 Dashboard

International Electrotechnical Commission
International Standards and Conformity Assessment for all electrical, electronic and related technologies

myIEC | Subscribe | Sitemap | FAQs | Contact us

You & the IEC | About the IEC | News & views | Standards development | Conformity assessment | Members & experts | Developing countries | Webstore

Standards development > How we work > Technical Committees & Subcommittees > **TC 31 Dashboard**

TC 31 Equipment for explosive atmospheres

Scope | Structure | Projects / Publications | Documents | Votes | Meetings | Collaboration Tools

Log in | En | Fr

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



Further information

Secretariat	United Kingdom
Strategic Business Plan	
Good Working Practice	
Contact	TC 31 Officers
Information on TC 31 meetings	

http://www.iec.ch/dyn/www/f?p=103:7:0:::FSP_ORG_ID,FSP_LANG_ID:1232,25



Thank you

Mark Coppler
TC 31 Chairman
mark.coppler@dnvgl.com