

Every two months, Dr. Martin Thedens, Chair of IEC TC 31 "Equipment for explosive atmospheres", will offer his perspective on the latest developments in the world of standards.

ip hip hooray! In August, the new edition of IEC 60079-14
was published by IEC. This edition 6 supersedes edition 5 which was published in December 2013. The responsible Maintenance Team
MT60079-14 of subcommittee IEC SC 31J "Classification of hazardous areas and installation requirements" – revised this standard completely, restructured the text and introduced a number of changes from the previous edition.

The first change is seen in the title: "EXPLOSIVE ATMOSPHERES – Part 14: Electrical installations design, selection and installation of equipment, including initial inspection". The old term "erection" was

replaced by "installation of equipment" as it is a more common wording. In order to emphasise that the first (initial) inspection after installation and before the first use is part of the overall installation process, the title was supplemented with the addition of "including initial inspection".

The MT's aim was not to make significant changes or to create additional requirements. The new edition has only seven more pages, but the structure has been completely changed. In addition to the usual clauses such as "Foreword", "Introduction", "1 Scope", "2 Normative References" and "3 Definitions" and some introductory clauses such as "4 General" and "5

Edition 6 of IEC 60079-14 is here!

Documentation", the relevant topics are divided into three clauses: "6 Design", "7 Selection" and "8 Installation". The last clause deals with the topic of "9 Initial Inspection". The related Annex O with lists of detailed initial inspection is now informative and in accordance with the lists of inspections in part IEC 60079-17 "Electrical installations inspection and maintenance"; informative because it enables the user to create an individual list for the initial inspection tailored to his system. The latest publication of IEC 60079-17 is edition 6, was published at the end of 2023.

Each of the main clauses for "6 Design", "7 Selection" and "8 Installation" are subdivided in general sections for all types of equipment and all Types of Protection. For some types of equipment, specific subclauses are relevant, such as:

- · Cables and wiring systems
- Conduits
- Entry devices and other fittings
- Luminaires and lamps
- Electrical machines
- Electrical heating systems
- · Plugs and socket outlets
- RFID tags
- Cells and batteries
- Gas detectors and related systems
- Transportable, portable and personal equipment

The clauses for "6 Design" and "8 Installation" include further subclauses for most of the Types of Protection.

For sure, there are a few major technical changes listed in the "Table of significant changes". This table is part of the foreword (the foreword and the scope of an IEC publication can be seen free of charge on the IEC webstore: https:// webstore.iec.ch/en/publication/66049). The major technical changes listed in this table are:

- New title
- Requirements for simple apparatus have been aligned with IEC 60079-11
- New flow chart: Selection of flameproof cable entry devices
- New normative Annex: Pressure test for cables – test procedure
- New informative Annex: Inspection tables for initial inspections

A new feature is a flow chart that includes the different requirements such as the use of hydrogen, cable lengths of the connecting cable or enclosures with a volume $\leq 2000 \text{ cm}^3$ when selecting a suitable flameproof cable entry device. Additional information can be found in the supporting document IEC SC31J-SD-001:Ed1/2021-03 "Background to flameproof cable gland requirements in IEC 60079-14. Review of the history and technical factors associated with cable gland selection for flameproof (Ex "d") enclosures as background to the selection criteria in IEC 60079-14" which is available free of charge via the dashboard of IEC SC 31J (https:// www.iec.ch/sc31j see: Documents / Supporting Documents).

The new normative Annex C of IEC 60079-14 describes a pressure test procedure for cables into Ex "d" enclosures, to be applied for cables if the

- Cable length > 3 m, for IIC or IIC + H2 only; or
- Cable length > 0,5 m, for rated enclosure volume > 2000 cm³ only.

This test is solely to assist a user in the determination of the type of Ex "d" cable entry device (that is, with elastomeric seal or sealing around the cores) which can be used into an Ex "d" enclosure. This test cannot not be used for any other purpose. It does not prove that the cable is 'gas tight' or 'flameproof'.

"Extensions" are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements for the design, selection and installation that were fully compliant with the previous standard. There are a lot of extensions listed in the table of significant changes, but special justifications are given for two extensions:

- The manufacturer of the RFID tag has to demonstrate and document that there is no explosion hazard.
- Additionally, to the use of a certified combination of an electrical machine in Type of Protection "eb" together with the converter, an electrical machine in the Type of Protection "eb" (type tested for converter supply) can be operated with an unspecified type of converter.

My final conclusion is that yes, edition 6 of IEC 60079-14 looks like a completely new standard, but it's nearly the same content as edition 5. The advantages of this new edition are readability and



applicability have been significantly improved and the susceptibility to errors due to misinterpretation has been significantly reduced. The section for the pure installation of Ex Equipment is only 11 pages, which are to be applied by an installer; and all of these Ex-relevant additional installation requirements (that go beyond the normal industry standard) can be found in one clause. ■

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