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**INTERNATIONAL ELECTROTECHNICAL COMMISSION SYSTEM FOR  
CERTIFICATION TO STANDARDS RELATING TO EQUIPENT FOR USE  
IN EXPLOSIVE ATMOSPHERES (IECEx SYSTEM)**

**To: Members of the IECEx ExMC**

**Title: AU Proposal to introduce a new IECEx Operational Document (OD) to address issues surrounding use of light sources within Ex equipment.**

**INTRODUCTION**

During the 2017 Washington meetings there was considerable discussion concerning the issue of Ex equipment containing light sources and the impact of IEC 60079-28. AU has submitted a proposal for a new OD to address this issue. The meeting will be asked to consider this AU proposal which is also to be discussed within ExTAG prior to the ExMC meeting.

This AU Proposal is to be considered during the 2018 IECEx ExTAG and ExMC Cannes meetings

**IECEx Secretariat**

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**AU Proposal for a new OD or modification to the Rules for certification of equipment producing optical radiation**

**Proposal**

The Australian Member Body of IECEx proposes that all equipment producing optical radiation for which the requirements of IEC 60079-0 Edition 7.0 Clause 6.6.4 *Lasers, luminaires and other non-divergent continuous wave optical sources* might apply, must be evaluated against IEC 60079-28 to establish:

* Whether the equipment falls within the scope of IEC 60079-28; and
* If the equipment is found to fall within the scope of IEC 60079-28, then whether the equipment complies with IEC 60079-28

To clearly address this, it recommends that the current DS2017/003, and proposed revision ExTAG/502/CD, be replaced with an IECEx operational document (OD). It may also be desirable, to introduce a modification to the Rules.

**Background**

AU is of the opinion that under the current approach of IECEx where compliance with IEC 60079-28 is treated as optional, that equipment may be certified that is non-compliant with IEC 60079-28 and hence introduce an explosion risk. As well as introducing an unacceptable safety risk, this could leave IECEx and its ExCBs open to litigation in the event of an accident.

The intent for equipment to comply with requirements of optical radiation to meet Clause 6.6.4 is made clear from IEC 60079-0 Edition 6.0 Clause 6.6.2 where it mandated compliance for requirements for EPL Ma and Mb, and EPL Da, Db and Dc. These specific EPL requirements were not included in the requirements of IEC 60079-28 at the time, as it was only at Edition 1.0. However, the intent for compliance is not clear in the wording of the current edition. In the absence of this, it is recommended that IECEx introduces clear requirements for compliance to meet this clause as part of its approach for certification.

Proposed approach

If an ExCB wants to evaluate equipment containing potentially referenced by Clause 6.6.4 (including all optical radiation such as lasers and LEDs), the ExCB must have IEC 60079-28 in its scope and an appropriate arrangement with an ExTL (internal or external) having IEC 60079-28 in its scope.

Thus all ExCBs would be required to have members of staff with competence relevant to IEC 60079-28, in particular with the knowledge to evaluate the complex scope requirements of that standard.

If a manufacturer submits equipment for certification, it must be subject to the evaluation recommended here, and if found to fall within the scope of IEC 60079-28, then the equipment must be evaluated against that standard.

The following is also proposed as part of implementing this approach:

* The result of the consideration against Clause 6.6.4 of IEC 60079-0 for IEC 60079-28 shall be recorded against that clause in the ExTR for IEC 60079-0 as to whether the equipment falls within the scope of IEC 60079-28 or not
* If the equipment is found to fall within the scope of IEC 60079-28, then compliance with IEC 60079-28 shall be established and included in the certification with all supporting documentation, such as an ExTR
* If the equipment is found not to fall within the scope of IEC 60079-28, there shall be a statement to this effect in both the ExTR for IEC 60079-0 and in the certificate for reasons of transparency, but the standard IEC 60079-28 would not appear in the list of standards, and its marking requirements would not apply

Way forward

The above proposal was discussed by ExMCWG1 during its meeting in Weimar, Germany on 20 June 2018 and gained support for the approach to be considered by ExMC. As a result AU has prepared a draft operational document for consideration during the ExMC meeting in Cannes, France in September 2018.

The draft operational document is attached to this proposal.

Jim Munro

On behalf of Australian Member Body of IECEx

17 July 2018

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**IEC system for Certification to Standards relating to Equipment for use in Explosive Atmospheres**

**IECEx OPERATIONAL DOCUMENT**

Title: Requirements for IECEx certification of equipment producing optical radiation

**INTRODUCTION**

Many items of Ex equipment produce optical radiation and the market is seeing a significant increase in such equipment. The requirements for optical radiation are contained in IEC standard IEC 60079-28. This standard is referenced in IEC 60079-0 Edition 7.0, but that standard does not make it clear under what circumstances IEC 60079-28 must be applied.

Hence this IECEx Operational Document is provided to address IECEx certification requirements for all equipment producing optical radiation for which the requirements of IEC 60079-0 Edition 7.0 Clause 6.6.4 *Lasers, luminaires and other non-divergent continuous wave optical sources* might apply.

Requirements for IECEx certification of equipment producing optical radiation

# Scope

This IECEx Operational Document addresses IECEx certification requirements for all equipment producing optical radiation for which the requirements of IEC 60079-0 Edition 7.0 Clause 6.6.4 *Lasers, luminaires and other non-divergent continuous wave optical sources* might apply.

The document supplements IECEx 02 *IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx System) Rules of Procedure* as provided for in Clause 4.1 of those rules.

# References

IEC 60079-0 Explosive atmospheres – Part 0: Equipment – General requirements

IEC 60079-28 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation

# Background

There is a possibility under the current approach of IECEx where compliance with IEC 60079-28 is treated as optional, that equipment may be certified that is non-compliant with IEC 60079-28 and hence introduce an explosion risk.

The intent for equipment to comply with requirements of optical radiation to meet Clause 6.6.4 is made clear from IEC 60079-0 Edition 6.0 Clause 6.6.2 where it mandated compliance for requirements for EPL Ma and Mb, and EPL Da, Db and Dc. These specific EPL requirements were not included in the requirements of IEC 60079-28 at the time, as it was only at Edition 1.0 when that edition of IEC 60079-0 was published. However, the intent for mandated compliance is not clear in the wording of the current edition. In the absence of this, IECEx is introducing clear requirements for compliance to meet this clause as part of its approach for certification.

# Fundamental requirements

All equipment producing optical radiation for which the requirements of IEC 60079-0 Edition 7.0 Clause 6.6.4 *Lasers, luminaires and other non-divergent continuous wave optical sources* might apply, must be evaluated against IEC 60079-28 to establish:

* Whether the equipment falls within the scope of IEC 60079-28; and
* If the equipment is found to fall within the scope of IEC 60079-28, then whether the equipment complies with IEC 60079-28

# Proposed approach

## IECEx ExBs

If an ExCB wants to evaluate equipment containing sources of radiation potentially referenced by Clause 6.6.4 (including all optical radiation such as lasers and LEDs), the ExCB must have IEC 60079-28 in its scope and an appropriate arrangement with an ExTL (internal or external) which has IEC 60079-28 in its scope.

Thus all ExCBs would be required to have members of staff with competence relevant to IEC 60079-28, in particular with the knowledge to evaluate the complex scope requirements of that standard.

## Applications

If a manufacturer submits equipment for certification, it must be subject to the evaluation recommended here, and if the equipment is found to fall within the scope of IEC 60079-28, then the equipment must be evaluated against that standard.

The following is also proposed as part of implementing this approach:

* The result of the consideration against Clause 6.6.4 of IEC 60079-0 for IEC 60079-28 shall be recorded against that clause in the ExTR for IEC 60079-0 as to whether the equipment falls within the scope of IEC 60079-28 or not
* If the equipment is found to fall within the scope of IEC 60079-28, then compliance with IEC 60079-28 shall be established and included in the certification with all supporting documentation, such as an ExTR and a QAR with a relevant scope
* If the equipment is found not to fall within the scope of IEC 60079-28, there shall be a statement to this effect in both the ExTR for IEC 60079-0 and in the certificate for reasons of transparency, but the standard IEC 60079-28 would not appear in the list of standards, and its marking requirements would not apply

The above requirements will apply to all new applications and all later issues of existing certificates of equipment producing optical radiation.

# Implementation

These requirements will become mandatory from 31 March 2019, but ExCBs and manufacturers are encouraged to start applying the requirements on publication of this OD.

# Scope changes for ExCBs and ExTLs

## Scope extensions for ExCBs

An application for an ExCB to include IEC 60079-28 in its scope can be dealt with by a desktop review, provided:

* The ExCB has a formal arrangement with an ExTL which has IEC 60079-28 in its scope
* It has submitted a completed form ExMC/251B/Q ExCB/ExTL *Capability Declaration for Extension of Scope,* accompanied with evidence that:
* ExCB staff have received appropriate training and the competency 'matrix' for ExCB staff has been updated
* Copies of any amended of new documentation such as procedures and application forms relevant to the new approach

The scope extension addressed in the above way will be subject to confirmation at the next on-site assessment visit.

## Scope extension for ExTLs

An application for an ExTL to include IEC 60079-28 in its scope will be subject to an on-site assessment visit in accordance with current practice.

## Voting on scope extensions

A report on scope extensions of ExCBs to include IEC 60079-28 will be reported to ExMC by the IECEx Executive Secretary for endorsement at ExMC meetings.

All scope extension of ExTLs shall be subject to voting by ExMC members in the usual manner.