



ExMC/1291/DV
August 2017

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

Title: Proposed new Edition 3.0 of IECEx TCD 60079-19

To: Members of the IECEx Management Committee, ExMC

Introduction

This document contains a proposed new Edition 3.0 to IECEx Technical Capability Document TCD 60079-19 – covering the assessment of ExCBs when seeking acceptance to become and IECEx ExCB for issuing IECEx Certificate of Conformity to Ex Repair and Overhaul Facilities for compliance with IEC 60079-19.

This updated draft has been prepared by ExSFC in consultation with ExMC WG2 and is issued for consideration during the 2017 ExMC Washington meeting.

This revised edition represents a major change to the current version including a name change from TGD to TCD and the re-worded introduction. Given the changes this draft is represented as a clean document without tracked changes.

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TECHNICAL CAPABILITY DOCUMENT

No. TCD – 60079-19

Referenced Standards

IEC 60079 -19: 2010 Explosive atmospheres

Parts 19: Equipment repair, overhaul and reclamation

Note: This will be expanded by others to include Parts 14 & 17

Name of body:

Members of the assessment team

Name	Role

Place(s) of assessment:

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Assessment date(s):

Documentation Control

Edition	Date	Changes	Prepared by	Approved by
1		Initial release (Conversion from TGD documents)	WG2	IECEX Secretariat
2	2009 09	Updated	JSA	ExMC Melbourne 2009
3	2017 XX	Updated	ExSFC	



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1 Purpose

The purpose of this Technical Capability Document (TCD) is to provide documented evidence that applicant ExCB has the capability to assess service facilities according to the service facility's proposed or accepted scope of capability.

Completion of the TCD will be a collaborative process between the assessment team and the body being assessed. This will occur prior to and at the assessment visit. At the 2015 IECEx MC meeting it was agreed that the TCD will be completed fully at the initial application of an IEC ExCB. At the 5 year reassessment, the secretariat will send the TCD that is on file to the ExCB to update in time for the reassessment. For bodies that have not previously completed the TCD, they will be asked by the secretariat to complete it before the next full reassessment. More details are given later.

Unless otherwise stated by the assessment team, it is also assumed that if an ExCB meets the requirements of the respective sections of this TCD, the ExCB is also capable of meeting the requirements of older editions of standards.

The TCD does not cover all requirements of the IEC 60079 series of Standards, but focuses on the most important requirements of the standards in order to establish that the necessary personnel knowledge and expertise exists within the ExCB to assess service facility procedures, processes and the equipment available. It is expected that the ExCB under assessment will have self-assessed to the complete relevant standards as the assessor may explore areas not covered by this TCD.

Sections within the TCD contain duplication of information from previous sections. To simplify the use of the TCD, the user may put information in the first section/s and reference the section that has the full details.

2 How to complete this TCD

Each part of IEC 60079 in this TCD is split into 3 sections as follows:

2.1 ExCB Personnel:

This section is to identify the knowledge level of the ExCBs employees regarding the requirements and interpretations of IEC 60079-19 and the respective parts of the IEC 60079 series contained in this document.

Prior to the assessment, the body being assessed shall assess each individual nominated by the ExCB as an auditor of Ex Service Facility taking into account as a minimum the requirements of competency detailed in Section 3

The rest of this section will normally be completed by the assessment team during the site assessment visit. But the body being assessed might also like to use it as a self-assessment tool.

This section should be initially completed by the ExCB prior to the assessment

2.2 ExCB Procedures:

This section is to identify the procedures used for carrying out the assessment of service facilities related to IEC 60079-19 and the IEC 60079 services series as detailed in the following clauses 4 – 11 of IEC 60079-19. In particular this section will include procedures for the assessment of competency of service facility personnel as required in Section 4. If there are any contracted or subcontracted assessments, a procedure must be included that meets the subcontracting requirements of ISO/IEC 17025.

This section should be initially completed by the ExCB prior to the assessment.

Body assessed:

Date:

2.2.1 ExCB Procedures

Relevant procedures (to be listed by body under assessment):

Procedure title	No	Clause(s) covered

2.3 ExCB assessment of Service Facility Personnel:

This section is to identify the procedures of the ExCB to assess the knowledge level of the service facility employees regarding the requirements and interpretations of the respective parts of the IEC 60079 series contained in this document.

Prior to the assessment, the service facility being assessed should complete the first columns for its scope to show the personnel deemed competent for that standard.

The rest of this section will normally be completed by the assessment team during the site assessment visit. But the service facility being assessed might also like to use it as a self-assessment tool.

2.4 ExCB assessment of Service Facility Procedures:

This section is to identify the procedures of the ExCB to assess the validity and effectiveness of procedures and processes used by a service facility for carrying out the tasks related to IEC 60079 services series capability as detailed in its scope. The knowledge of these procedures may be assessed in Section 3.

If there are any contracted or subcontracted of work, a procedure must be included that meets the subcontracting requirements of ISO/IEC 17025.

2.5 ExCB assessment of Service facility equipment and tests:

This section is to identify the procedures of the ExCB to identify together with the service facility the equipment relevant for the service facility scope and test & measurement equipment for the part of the standard.

It then looks, for each test, at the availability and adequacy of equipment, maintenance and calibration of the equipment, and capability to perform the test correctly.

It is expected that the ExCB will understand the minimum test and measurement equipment required by the service facility to meet the service facility scope.

2.6 Completion of TCDs

All new applicants ExCBs are to have a TCD completed as part of the original assessment. The Secretariat is to send the TCD to the applicant so it can be partly completed and forwarded to the assessment team with sufficient time for the assessor to review. At the time of the assessment, the respective parts of the TCD are to be completed between the assessment team and the applicant.

Body assessed:

Date:



3 IEC 60079-19 Equipment repair, overhaul and reclamation

Edition(s) covered by this TCD
IEC 60079 Series & IEC 60079-19: Iss. 3.0 + AMD1

1. Personnel

Names of personnel deemed competent by the IECEx CB to assess- an Ex Service Facility for this standard	Abbreviation (eg initials) used below (if needed)	Interviewed (Y/N)

IEC 60079 Series	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • What is explosion protection? • What are the equipment groups? • What are EPLs? • What is meant by ambient temperature? • Temperature Classification • External heating or cooling • What is meant by service temperature? • Circulating currents • Retention of gaskets • Fasteners • Special fasteners • Ex Components • Entries into enclosure - entry holes and cable entry devices etc. • Rotating machines • Switchgear 	
IEC 60079-19 – Section 4 General	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Service facility plant & equipment • Measuring instruments • Competency assessment of Responsible Person • Annex B • Responsibility & authority of responsible person • Initial assessment of Ex Equipment • Certification status agreement with user 	

Body assessed:

Date:

<ul style="list-style-type: none"> • Traceability of measurements • Process control procedures • Omission of tests • Documentation - drawings, instructions etc. • Service facility records • Training records • Job report for the user • Repaired component record • Competency of operatives • Purchase control procedures • Spare part validation • Reclamation methods <ul style="list-style-type: none"> ○ Metal spray ○ Welding ○ Electroplating ○ Metal stitching ○ Re-machining ○ Threaded holes for fasteners • Component reclamation verification • Alterations & Modifications • Winding removal • Core reclamation verification • Core flux test methods • Proprietary core flux testers • Ring flux testing • Equipment marking • Annex A 	
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IEC 60079-19 – Section 5 Ex “d”

<p>Check of competence (typical topics to cover include):</p>	<p>Comments by IECEx Assessor</p>
<ul style="list-style-type: none"> • Flameproof joint surface finish • Flameproof joint gap • Reduced gaps • Annex C • Special Condition of Use “X” • Flameproof joint reclamation • Threaded holes for fasteners inspection & reclamation • Overpressure testing • Stator & rotor winding reclamation • Cable & conduit entries • Component reclamation methods <ul style="list-style-type: none"> ○ Metal spray bond strength • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor • Alternative tests when Locked Rotor test omitted 	

Body assessed:

Date:



IEC 60079-19 – Section 6 Ex “i”	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Competence of operators • Manufacturer’s information • Selection of replacement electrical components • Printed circuit boards • Soldered connections • Conformal coatings • Shunt diode safety barrier & galvanic isolators • Optocouplers & piezoelectric components • Fuses • Relays • Batteries • Testing 	
IEC 60079-19 – Section 7 Ex “p”	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Leakage rates • Ingress protection • Stator rewinding & purging ducts • Reclamation validation • Pressure sensors • Flow sensors • Purging & pressurisation system verification • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor 	
IEC 60079-19 – Section 8 Ex “e”	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Copy rewind requirements • Core reclamation verification • Air-gap verification • EASA/AEMT Rewind study Best Practice guidance • Terminal bloc replacement • Defective imbedded temperature detectors • Plastic fan material resistance • Fan clearances • HV winding incendivity testing • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor 	
IEC 60079-19 – Section 9 Ex “n”	

Body assessed:

Date:

Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Copy rewind requirements • Core reclamation verification • Air-gap verification • Terminal bloc replacement • Defective imbedded temperature detectors • Plastic fan material resistance • Fan clearances • HV winding incendivity testing • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor 	
IEC 60079-19 – Section 10 IEC 60079-26	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Requirement for manufacturer's information • No certificate documentation 	
IEC 60079-19 – Section 11 Ex “t”	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Ingress protection • Copy rewind requirements • Core reclamation verification • Shaft seals • Defective imbedded temperature detectors • Plastic fan material resistance • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor 	
IEC 60079-19 – Section 12 Ex “pD”	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Leakage rates • Ingress protection • Stator rewinding & purging ducts • Pressure sensors • Flow sensors • Purging & pressurisation system verification • Rotating machine testing <ul style="list-style-type: none"> ○ IR. ○ Stator winding resistance ○ No Load run ○ Locked rotor 	

Body assessed:

Date:



IEC 60079-19 – Annex A	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Identification of repaired equipment • Certification status R in square • Certification status R in inverted triangle • Modified equipment marking 	
IEC 60079-19 – Annex B	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Training records • Method of assessing competency of RP • Method of assessing competency of Operative 	
IEC 60079-19 – Annex C	
Check of competence (typical topics to cover include):	Comments by IECEx Assessor
<ul style="list-style-type: none"> • Flameproof joint gap • Special Condition of Use "X" • Table C-1 • Figure C-1 Flow Chart 	

4: General requirements

Ex Service Facility Minimum testing capability

Internal & external micrometres, vernier's, straight edges, feeler gauges, thread gauges, surface table, surface roughness gauge/comparator, insulation resistance meters, resistance meters, voltage, current & watt meters, rpm meter,

Ex Service Facility Minimum Equipment capability

Stator winding removal equipment, core test, coil winding, curing oven, copper storage, insulation storage, varnish/resin impregnation system, bearing storage, reclamation machinery lathes, milling, boring, welding, metal spray,

Body assessed:

Date: