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

**Title: ExTAG/563/CD** - **Draft ExTAG Decision Sheet – Compounded wire-feedthrough constructions between motor frame and terminal box.**

**Circulated to: ExTAG – IECEx Testing and Assessment Group**

**INTRODUCTION**

This document, *ExTAG/563/CD* *Draft ExTAG Decision Sheet -* C*ompounded wire-feedthrough constructions between motor frame and terminal box* has been prepared by CNEX Global, NL, and is issued for consideration by ExTAG.

In accordance with OD 035 this document is issued for a six week comment period.

Please submit comments on this new Draft DS using the comments table, a separate document, by –

**2019 08 09**

**to**

[**Christine Kane**](mailto:christine.kane@iecex.com)

**Julien Gauthier**

**ExTAG Secretary**

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| **Address:**  **IECEx Secretariat**  **Level 33 Australia Square**  **264 George Street**  **Sydney NSW 2000**  **Australia**  **Web:** [**www.iecex.com**](file://C:\Users\christine.kane\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\christine.kane\AppData\Local\Microsoft\Windows\christine.kane\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Content.Outlook\AppData\Local\Users\horn02\AppData\Local\christine.kane\AppData\Local\Microsoft\christine.kane\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\Christine.Kane\AppData\Local\Microsoft\Windows\Temporary%20Internet%20Files\AppData\Local\jugauthier\AppData\Local\Temp\notesC9812B\www.iecex.com) | **ExTAG Secretary**  **Mr Julien Gauthier**  **LCIE S.A.**  **33 Avenue du General Leclerc**  **92260 Fontenay-aux-Roses**  **FRANCE**  **Tel: +33 1 40 95 55 26**  **Fax: +33 1 40 95 89 37**  **Email :** [**julien.gauthier@fr.bureauveritas.com**](mailto:julien.gauthier@fr.bureauveritas.com) |

**COLLECTION OF IECEx / ExTAG DECISION**

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| **Standard:**  IEC 60079-1:2014  (Edition 7.0) | Clause:  6, 13.7, C.2.1.4 | **Draft Decision Sheet:**  ExTAG/563/CD |
| **Subject:**  Compounded wire-feedthrough constructions between motor frame and terminal box  **Status of document:**  Draft | **Key words:**   * Cemented joints * Bushing specific to an enclosure | **Date: 2019 06 28**  **Originator of proposal**:  CNEX-Global  **TC/SC involved:**  IEC/TC 31 MT 60079-1 |
| **Background**  In the construction of flameproof motors to IEC 60079-1, the electrical connections between stator windings and the terminals in the terminal box, can be established in general in three ways:  1. the stator winding wires are connected to separately certified flameproof bushings within the motor frame housing.  The motor frame and the terminal box are tested as separate flameproof enclosures.  2. the stator winding wires are led through an opening between the stator frame and the terminal box, after which this opening is compounded to create separate flameproof enclosures for the frame and the terminal box.  The motor frame and the terminal box are tested as separate flameproof enclosures.  3. the stator winding wires are led through an opening between the stator frame and the terminal box, after which this opening is NOT compounded, but remains open.  The motor frame and the terminal box are tested together as one enclosure with intercommunicating volumes.  This draft DS considers the requirements for the second option only, as the requirements for the first and third option are considered to be clearly stated in the standards.  The compounded wire-feedthrough construction is basically a hole with wires which is closed by filling the hole with hardening compound.  It is not really a cemented joint, as a cemented joint is normally considered as an application of cement in the flameproof joint between two parts of a flameproof enclosure, where the flameproof joint cannot, or does not, comply with the joint requirements from the Tables 2 and 3 in the IEC 60079-1. A hole with wires which is filled with compound is not really a cemented joint between two parts of a flameproof enclosure.  It is also not really a ‘bushing’, as a bushing typically is a separate device (separately certified or not), where the wires are led through a (mostly-) cylindrical opening in a removable device that is installed in the wall of a flameproof enclosure (per IEC 60079-1 cl. 13.7).  So a compounded wire-feedthrough does not really fit in the current standard requirements. This leads to different testing/certification practices among ExTLs.    **Question:**  Should a compounded wire-feedthrough (as described above) be evaluated and tested as being a ‘Bushing specific to an enclosure’, conform IEC 60079-1 cl. C.2.1.4 - Bushings?  **Answer:**  Yes.  Regardless of the shape and size of the construction of the compounded wire-feedthrough, the construction it is to be evaluated and tested as a bushing that is formed by molding insulation compound on metallic parts and regarding it as being a bushing specific for a flameproof enclosure (that type/size of flameproof motor). The joints between compound and metal housing, and between compound and wires, are considered as cemented joints.  Required tests: per IEC 60079-1 cl. 6.1.2 – Cemented joints – Mechanical strength.  Note:  A compounded wire-feedthrough construction, formed by an intermediate plate (e.g. a separate plate between stator frame and terminal box containing the compounded wire-feedthrough), can be certified as flameproof component, if all tests per (IEC 60079-1 cl. 6.1.2) have been passed successfully. The component certificate shall specify the maximum allowed explosion pressure on both sides of the component. | | |