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

**Title: ExTAG/622B/CD Draft ExTAG Decision - Sheet Certification of equipment/assemblies using temperature monitoring/adjustment techniques to adjust internal ambient temperatures**

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

**INTRODUCTION**

This document, *ExTAG/622B/CD* *Draft ExTAG Decision Sheet - Sheet Certification of equipment/assemblies using temperature monitoring/adjustment techniques to adjust internal ambient temperatures* has been prepared for consideration by ExTAG.

This revised version of the document has been prepared to take into account comments received on ExTAG/622A/CD, and contained in ExTAG/640/CC. Changes are shown via tracking.

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 –

**2021 04 24**

to

**Christine Kane**

**For Dr Frank Lienesch,**

**ExTAG Chair**

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COLLECTION OF IECEx / ExTAG DECISION

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| Standard: IEC 60079-0:2017 (Ed. 7.0)  IEC 60079-0:2011 (Ed. 6.0) | **Clause:**  1  1 | **Draft Decision Sheet:** |
| **Subject:**  Certification of equipment/assemblies using temperature monitoring/adjustment techniques to adjust internal ambient temperatures  **Status of document:**  Draft | **Key words:**   * Ambient temperature | Date: March 2021 **Originator of proposal:**  UL LLC  **TC/SC involved:** WG22 |
| Background:  Equipment assemblers and manufacturers have made requests to certify equipment with a rated ambient temperature range beyond that of some incorporated internal devices.  An example of this is a control panel containing a power supply, an intrinsic safety barrier, and other switchgear.  The power supply and IS barrier are rated (-20C to +40C), but the panel manufacturer wants the complete control panel to be rated for (-40C to +50C).  To mitigate this issue when the equipment is energized, manufacturers have proposed to install heaters or refrigerators with interlocked sensors, or other methods of ensuring that the internal devices (for example, power supply or IS barrier) cannot be energized unless the internal surrounding air is within the rated ambient range for those internal devices within the assembly.  However, this ambient temperature concern can also be an issue when the equipment is not energized, including when switched off. Damage to internal devices may occur when subjected to these temperatures, which may influence the type of protection for the equipment. Examples of possible damage include: components shearing from printed wiring boards due to contraction of protective encapsulation, cracking and loss of adhesion of encapsulation for “ Ex m” devices, damage to elastomers in “Ex t” enclosures, or cracking of a “Ex d” cemented joint.  Questions:  Consider a scenario in which an overall piece of equipment is intended for use in an ambient temperature range beyond that of some internal devices, and, if these internal devices were exposed to temperatures beyond their rated ambient temperatures, the Type of Protection for the equipment could be impaired.    Q1: Regarding when this overall piece of equipment is energized during normal operation, is it acceptable to incorporate an internal temperature monitoring and temperature control system, to ensure the internal devices remain within their rated ambient temperatures?  Q2: Regarding when this overall piece of equipment (including the internal temperature monitor and temperature control system) is not energized (for example when switched off), is it necessary to ensure all internal devices remain within their rated ambient temperatures specified by the internal device manufacturer(s)?  Answers:  A1: Yes, it is acceptable to incorporate a temperature monitoring and temperature control system to ensure internal devices remain within their rated ambient temperature range. The assessment would include assuring that the extra devices used for temperature monitoring and temperature control are rated for the application and that the devices are not operated outside of their ambient temperature specifications.  A2: Storage conditions are, in general, not within the scope of the TC31 standards.  However, for situations where an Ignition Hazard Assessment or similar risk analysis is required, for example, ISO/IEC 80079-36, the condition of abnormal shutoff of the heating and/or cooling system, in combination with the internal device manufacturer’s specifications, shall be considered. | | |