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INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC SCHEME FOR CERTIFICATION TO STANDARDS FOR ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES (IECEx SCHEME)

CIRCULATED TO: Ex Management Committee (ExMC)

Title: Comments relating to ExTAG Draft agenda item 7.2

Dr Ulrich Johannes Meyer has requested that the following additional comments be issued for discussion during the Seoul ExTAG Meeting.

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Greetings
I think there are two fundamental questions;
1) What decisions are to be made in ExTAG and what decisions are to be made in the IEC?

My personal opinion is that all fundamental decisions should be made in the IEC committee. Ex TAG should confine its decision making to such matters as the format of certificates and test reports, and possibly the detail of test methods. They are entitled to discuss any subject and form a collective opinion,which should then be put to the IEC committee. Such an opinion would carry a lot of weight within the committee, and hence would warrant serious consideration.I am not sure who will be attending the Ex TAG meeting but there is unlikely to be many members with a detailed knowledge of current IS practice and standards.

If a serious defect occurs in a standard, then the IEC should act quickly to correct the error. I believe there is a mechanism for doing so. but it has not been initiated in the intrinsic safety field in the last forty years.

In the particular case, under consideration I do not believe that there is a need for a rapid decision since the debate has been going on for several years, without any known serious consequences, and it should be decided within the IEC.. If the Australians had raised the question in the IEC committee when they first became concerned,the problem would have been resolved by now. I believe they are raising the question in ExTAG because they anticipate that the IEC committee will not give them the answer they require.An interesting situation will arise if ExTAG make a decision and then the IEC committee do not agree.Who will decide then?

2) The question is what is the reliability of a soldered joint made by the normal process used in a conventional SMD assembly?

The whole arguement is being confused by the particular case of shunt diodes [presumably the analysis applies to both Zener and ordinary diodes and to any other form of shunt safety components]. I assume that the arguements are not about whether two diodes are sufficient if they are securely connected. Historically the Australians did insist on three diodes for many years, after the IEC accepted two, but that was some years ago.

If the question is about the reliability of soldered joints I believe the arguements put forward by Dr Dill are quite sound and that the SMD process produces soldered joints in well controlled circumstances which are at least as reliable, possibly more reliable, than those produced by other techniques. I believe that a cautious view is that the failure of a single soldered joint is a countable fault and two soldered joints are an infallible connection, and this is equally applicable to soldered joints made in the SMD process.This is covered by clause 8.7 case c)1) of IEC 60079-11. Personally I believe the reliability of an SMD joint is of the same order as that described in case c)2) since the component is mechanically secure before the joint is made and the joint is not likely to be subject to any tension. However I think this opinion is more contentious and would need to be considered by the committee before it could be generally accepted.

The question of components migrating when solder melts was raised within Cenelec and the current edition of EN 50020 in clause 6.2.4 contains the sentence 'Migration of components due to solder melting shall not be taken into account'. The Cenelec document is being considered by the IEC maintenance team and hence this question will be discussed.

Thank you for involving me in this debate. The opinions I have expressed are my personal opinions, but feel free to communicate them to anyone you feel appropiate. I could communicate them to ExTAG via Karen if you think this would be usefull

Regards

Chris Towle