

Minutes of the Fifth Meeting of the Working Group to develop installation standard for Medium Power Application held on 19.07.2022

List of Participants are enclosed at **Annexure-I**.

Mrs. Vandana Singhal, CE (DP&R, CEA) welcomed the Members and invited them for an active and fruitful discussion to finalize the Installation Standard for Medium Power Application. She informed the Panel that a Draft document, for this purpose, was prepared by Sh. Kunnath, and the same was circulated to all the Members on 07.07.2022 for their observations.

2. **Mrs. Shivani Sharma, Director (DP&R, CEA)** suggested that the comments/ input furnished by the Panel Members may be taken up and discussed one by one.
3. **Ms. Bhaavya Pandey (AD, CEA)** enquired about the inclusion of various Terms and Definitions in the Draft document. In this regard, **Sh. Kunnath** opined that definitions of only those terms, which are used in the Draft document may be included in the finalized document. In case any such terms are left out, those may also be included when and where those terms appear.
4. **Sh. Panda** enquired whether the Document is only applicable for household applications or will it apply to industrial loads as well. It was clarified that the Document stands good for medium power industrial application as well. He then suggested to remove the phrase 'Household Electricity Supply' from the title of the Draft Document. The same was agreed to by the Members.
5. On this note, **Sh. PK Mukherjee** suggested that in addition to addressing isolated distribution systems running solely on DC, this Standard may also address systems that are capable of being connected to the grid at the same time, so that they may have dual functionality of operating on both DC and grid connected AC. He shared that such systems are already in place in many countries.
To this, the Panel opined that this setup may have a lot of practical difficulties to implement from the distribution perspective and may require the end consumer to use both AC and DC appliances which may not be a viable option for the consumer. However, the same may be explored later on.
6. **Director (DP&R, CEA)** enquired about selecting a single voltage level ,i.e., 350 V for both, Tier-4 and Tier 5, which have different power capacities. **Sh. Kunnath** clarified that a variation of $\pm 10\%$ is allowed in 350 V. He further suggested that while 350 V will be able to cater the power requirements from 800 W to 2000 W ,i.e., Tier-4 , an upper limit/cap on the power capacity of Tier 5 may be decided for this document.
7. **Director (DP&R, CEA)** further enquired about the basis of arriving at the supplementary Voltage levels that were suggested by Sh. Panda in the Draft. To this, **Sh. Panda** clarified that these values were taken from IEC 60038. However, the IEC does not provide any basis for arriving at these values.

8. **Sh. Vineet Rohtagi** suggested to adopt a wider voltage band of 200 V- 300 V for LVDC instead of a band of 315-385 V. To this, **Sh. Kunnath** opined that the selected voltage band should be in synchronization with IS/IEC. He explained that a wide band like 200-300 Volts is generally not adopted in such standard documents. **Sh. Ritwik Anand, BIS** further clarified that 200V is not accepted as a system voltage in any BIS document. He stated that the suggested range of 315-385 V made in the Draft is acceptable and should be able to cater to both household and even industrial loads.
9. **Sh. Kunnath** further stated that the suggestion of adopting other conductor sizes aside from 1.5 sqmm, especially for amperage of 16 A and above, made by **Sh. Panda** may also be adopted.
10. **Director (DP&R, CEA)** stated that in sections pertaining to the protection aspects in the subject Draft document, IEC 61200 is cited in some places. However, 61200 primarily deals with Tier-2 and Tier-3 loads. She enquired about the adequacy of provisions of IEC 61200 in the Draft document. To this, **Sh. Kunnath** explained that specifying any voltage level was not in the scope of IEC 61200. However, BIS has the option of specifying a voltage level. **Sh. Panda** added to it that IEC 61200 also mentions various means like reinforced/ secondary insulation etc. for Tier-4 and Tier-5. **CE (DP&R, CEA)** invited the views of the Members on replacing the details given in sections pertaining to Protection by giving a reference to IS/IEC. It was decided that the same may be adopted by BIS.
11. **Sh. Santanu Sen** requested the Members to have a discussion on negative terminal earthing in the DC system, as shown in the document. He stated that in all telecommunication systems, -48V is applied to equipment with +ve terminal earthed at source. He further stated that in earlier days in Kolkata, ± 200 V was employed with mid-point earthing. **Sh. Vineet Rohtagi** also suggested that ± 175 V levels may be used instead of opting for 350 V. It was clarified that 350 V is the total voltage between terminals. Hence, there is no contradiction between what prevailed in Kolkata and what is being proposed in the present Document.
12. **CE (DP&R, CEA)** sought clarification on the use of reference of Cl. 414 of 60364-4-41 in the Draft, as Cl. 414 deals with voltage levels upto 120 V DC and 50 V AC only. **Sh. Panda** clarified that although the specific clause mentions 120 V DC, it deals upto 180 V DC. He, agreed that the reference will need to be changed and agreed to provide the same.
13. **Director (DP&R, CEA)** stated that the clauses pertaining to protection aspects in this document, like provision of automatic disconnection, limiting fault current, electrical separation etc., which will need thorough discussion. She said that the discussion on protections aspects cannot be addressed adequately due to time constraints, and proposed a separate Meeting for the discussion on the same in the coming weeks. The same was agreed to by the Members.

14. **CE, DP&R** also requested the Members, who could not share their opinion due to weak connectivity or other technical issues, to furnish the same. She further requested all the Panel Members to peruse the document, especially from protections aspects, and share their observation/ views.

Meeting ended with a vote of thanks to the Chair.

Annexure-I

1. Smt. Vandana Singhal (Convener) Chief Engineer, CEA
2. Smt. Shivani Sharma Director, CEA
3. Smt. Pooja Jain Dy. Director, CEA
4. Ms. Bhaavya Pandey Asstt. Director, CEA
5. Ms. Arti Singh Asstt. Director, CEA
6. Ms. Meena Hooda Asstt. Director, CEA
7. Sh. Ritwik Anand Bureau of Indian Standards
8. Shri Rajesh Kunnath IIT Madras
9. Shri Rajesh Panda M/s Larson & Turbo
10. Shri P.K Mukherjee In Personal Capacity
11. Sh. Vineet Rohtagi Binay Opto Electronics Private Limited, Kolkata
12. Shri Santanu Sen CESC, Kolkata
13. Shri Gopa Kumar Cape India
14. Shri Chidanand Burji Schneider Electric India Private Ltd.