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CIRCULAR

Subject:- Guideline for installation of UPS & battery room - regarding.

Reference:- Internal Advice technical Committee meeting held on 23.07.2025

Guidelines for the installation of UPS and Battery Room

The following guidelines are issued for the installation of UPS and battery room in non-industrial type buildings. This guidelines are applicable for UPS with battery capacity of 50 kWh and above and not applicable for container type units like BESS.

1. A dedicated room, preferably at the periphery of the building, shall be provided for battery units and the door of the room shall open outwards.
2. The battery room should be provided with adequate ventilation system and a forced supply and positive exhaust system is recommended in battery storage and charging areas, in order to dilute the hydrogen evolved during battery charging process. The ventilation system shall ensure 6 to 12 air changes per hour for battery room, depending up on the occupancy, size of building and battery capacity and fire risk.
3. Air inlets shall be located near the floor level and outlet openings at the high point in the room.
4. In buildings with centralized AC system, it shall be ensured that the air in the battery room shall not mix with the common AHU of the building. Instead, a separate air conditioner or exhaust fan should be installed to maintain ambient temperatures within limits.
5. Exhaust outlet from the battery room shall not be directed onto air inlet of other AC unit.
6. Hydrogen gas sensor-based alarm system, which operates when hydrogen content reaches 1% by volume at STP, shall be provided.
7. The operation of fan/ventilation system in the battery room shall be interlocked with hydrogen detector. If hydrogen detectors are not installed, the fan shall run

continuously. In such case a standby fan also shall be provided. A warning/alarm to inform the failure of fan/ventilation system shall also be provided.

8. Thermal sensor should be placed between the batteries, to cutoff the battery charging or warn with alarm, when over temperature is detected, at suitable locations.
9. Arcing parts, such as the contacts of switches, circuit breakers, open fuse links and relays etc. shall not be installed within an enclosure or compartment housing a battery. If mounted, it shall be at least 100 mm below the lowest battery vent and the enclosure.
10. The batteries shall stand directly on durable, non-absorbent and non-conducting material, such as glass, porcelain or glassed earthenware. The materials shall rest on a bench which shall be kept dry and insulated from earth. If constructed of wood it shall be slatted and treated with anti-sulphuric enamel. If metal stand is used, battery body shall be suitably insulated.
11. It is recommended to provided minimum two numbers of AC units (one is in standby mode) in the UPS/ battery room.
12. The floor of the room shall be non-combustible and acid resistant, if lead acid batteries are used.
13. Maximum voltage of the string shall be limited to 1000 V and each string shall be protected by independent OC protection, both in +ve and -ve line, using DC fuse and isolator and a DC circuit breaker shall be provided for group protection. Such device shall be installed close to the battery, preferably in the battery rack or in a separate enclosure close to the battery stack.
14. Standard labels/colour coding shall be provided for each cables. Red for positive and white for negative is the recommended color code.
15. Adequate floor space, as per manufacturers data sheet shall be ensured for the UPS. Minimum 1m clearance shall be provided on sides through which air suction and throw takes place.
16. The UPS unit shall be maintained minimum 1.5 m clearance with the battery stack.
17. A fire detection and alarm system shall be provided for the battery/UPS room and each battery rooms should be treated as separate zones for fire detection and suppression purposes.
18. Four core cable shall be used for incomer supply and 4 pole circuit breaker with isolation duty shall be provided as incomer to UPS.
19. Over current and residual current protections shall be provided at the input side of UPS. At the output side, over current protection and depending upon the system earthing, residual current protection or insulation monitor shall be provided.
20. Only flameproof electrical fittings shall be used inside to battery room and no switch board for AC supply shall be installed inside.

21. Warning sign showing voltage level of battery string shall be exhibited.
22. Associated external electrical wiring and earthing shall be done as per IS 732, IS 3043 and relevant standards applicable.

Chief Electrical Inspector

To

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