



Indian Institute of Science

Office of Laboratory Safety & Environmental Health

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GUIDELINES FOR UPS & BATTERIES

This document outlines OLSEH guidelines to ensure for Guidelines for UPS & Batteries.

1. Initial Checking:

Perform the following checking operations prior to the UPS installation.

- Visually examine any damp, water, or damage inside and outside the UPS packing, products and battery equipments due to the transportation. Report any such damage to the shipper immediately.
- Verify the product label and confirm the correctness of the equipment. The equipment label is attached to the back of the front door. The UPS model, capacity and main parameters are marked on the label.
- Verify correctness of the accessories. If there are any mistakes for accessories, contact with shipper or provider.

2. Battery Room:

The battery will generate some amount of hydrogen and oxygen at the end of charging, so the fresh air volume of the battery installation environment must meet EN50272-2001 requirements. The ambient temperature of the battery must be stable. Ambient temperature is a major factor in determining the battery capacity and life. The nominal operating temperature of the battery is 20°C. Operating above this temperature will reduce the battery life, and operation below this temperature will reduce the battery capacity. If the average operating temperature of the battery is increased from 20°C to 30°C, then the service life of the battery will be reduced by 50%. If the operating temperature of the battery is above 40°C, then the battery service life will be decreased in exponent rate. In a normal installation, the battery temperature is maintained between 15°C and 25°C. Keep batteries away from heat sources or air outlets.

As such there is no control on the ambient temperature. 15-25 degC can be achieved only in air-conditioned rooms for most part of the year. For Indian conditions, the battery manufacturers specify 27 to 32degC as nominal. However batteries are operated even at higher temperatures. From safety point of view, ambient temperature is not the issue. One need not worry too much about battery capacity. It is not under our control. Removal of gases generated due to gassing voltage is the important issue. In this context, the battery room should be well ventilated. Ventilators are more important than the windows.

Alternately, an inverted funnel will piping can be done for each battery. The piping will lead the gases through outlets provided in the room. This is always a preferred method even if good ventilation is present. Exhaust fans or blowers may be switched ON if excess gases are detected by gas sensors.

3. Guidelines for UPS & Battery Room:

- Battery rooms must be maintained at a safe temperature range for performance reasons and for health and safety considerations.
- UPS room should have a functioning ventilation system that is able to maintain an ambient temperature that protects human health and maintains equipment performance.
- According to OSHA, personal protective equipment for the battery room should include acid-resistant face shields, goggles, gloves, aprons, and boots.
- The battery room environment must be dry and well ventilated. The ventilation is provided with the help of ventilation fans.
- Batteries of the unsealed type shall be located in enclosures with outside vents or in well ventilated rooms. They shall be arranged so as to prevent the escape of fumes, gases, or electrolyte spray into other areas.
- Ventilation shall be provided to ensure the diffusion of the gases from the battery and to prevent the accumulation of an explosive mixture.
- Racks and trays shall be substantial and shall be treated to make them resistant to the electrolyte.
- Floors shall be acid resistant construction unless protected from acid accumulations.
- Face shields, aprons, and rubber gloves shall be provided for workers handling acids or batteries.
- Facilities for quick drenching of the eyes and body shall be provided within 25 feet (7.62 m) of battery handling areas.
- Battery charging installations shall be located in areas designated for that purpose.
- Prevent any source of ignition.

NOTE:

- A battery distribution panel with breakers and protections should be used for safe interconnection of batteries, UPS and load.
- It is preferable to have the batteries located as some distance from the UPS. In fact, the batteries can be located in a separate room, with a DC bus installed to the location of the UPS and loads.

4. Emergency Response Directory:

Emergency Response Service: 5555/108 (080-2293-5555 from non IISc Phones)

Security office: 080-22932400/22932225

Health Centre/ Ambulance: 080-22932227/22932234

Dharmendra Singh, Safety Officer: 080-22933199

M.S Ramaiah hospital: 080-23608888,

Snake Rescue volunteer: 080-22932506

Electricity-General: 080-22932206/22932018