



## CHAPTER 5

### ELECTRICAL POWER SUPPLIES

#### 5.1 INSTALLATION

**5.1.1** The installation, control and distribution of wiring of electrical equipment in buildings shall be in accordance with BS 7671, Requirements for electrical Installations

#### 5.2 PRIMARY AND SECONDARY SUPPLIES

**5.2.1** Where any of the following installations is required by this Code or other Codes/Regulations, its primary and secondary source of power supplies shall comply with the corresponding Code of Practice stated therein:

- (a) Where electrical passenger or goods lift is required, its electrical installations, inclusive of battery and other form of secondary power supply, shall comply with BS EN 81 – 20; safety rules for the construction and installation of lifts, lifts for the transport of persons and goods. Where the provision of fire lift is required by this Code, installation of the primary and secondary supplies shall also comply with the above mentioned Code of Practice.
- (b) Where electrical fire alarm system is required, its primary power supply as well as type and capacity of battery shall comply with BS 5839; fire detection and fire alarm systems for buildings
- (c) Where exit or emergency lighting system is required, its electrical wiring, type and capacity of battery or other form of secondary power supply shall comply with BS 5266; Code of practice for Emergency Lighting of premises.
- (d) Where an emergency voice communication system is required, its electrical wiring shall be fire rated or otherwise fire protected in accordance with BS 5839; Code of practice for the design, installation, commissioning and maintaining of Emergency Voice communication systems. Appropriate type and capacity of secondary source of supply shall also be provided accordingly
- (e) Where a wet rising main system is required, the relevant electrical supply shall be installed in accordance BS 9990; Code of Practice for Fire Hydrant and Rising Mains and BS 5306 Code of practice for fire extinguishing installations and equipment on premises. A secondary source of power supply with capacity stipulated in BS 9990 shall be provided for the wet rising main pumps



- (f) Installation of electrical supply for sprinkler system shall comply with BS EN 12845; Fixed Fighting systems, Automatic sprinkler systems. Capacity of secondary source of supply, where required, shall satisfy the operation requirements under the respective hazard category.
- (g) *Secondary source of supply*  
Mechanical ventilation where required for the following rooms or spaces shall be provided with secondary source of supply.
- (i) exit staircases and exit passageways;
  - (ii) smoke stop and firefighting lobbies;
  - (iii) areas of refuge within the same building
  - (iv) basement car parks;
  - (v) fire command centres;
  - (vi) flammable liquid/gas storage rooms;
  - (vii) emergency power generator room, and engine driven fire pump room;
  - (viii) car park smoke purging system;
  - (ix) powered smoke control systems;
  - (x) any other fire precautionary measure
- (h) Where mechanical ventilation is installed to provide air for the operation of the following equipment, secondary source of supply shall be provided:
- (i) emergency generator;
  - (ii) engine driven fire pump
- (i) ***Cable installation***  
Power supply cables for equipment that is required to operate during a fire emergency shall be of fire resistant type. The fire-resistant cables shall comply with BS 6387
- (j) All motors and their control equipment as well as the associated wiring and accessories shall be suitable for their particular application and for the environment they are exposed to.
- i. High Rupturing Capacity Fuses (HRC) or Moulded Case Circuit Breakers (MCCB) with magnetic release shall be installed and capable of protecting the cable connections to the motor, and carrying the stalled current of the motor for a period of not less than 75% of the period which such a current would cause the motor windings to fail;
  - ii. Any no-volt release mechanism shall be of the automatic resetting type such that on restoration of supply the motor can start automatically;



- iii. Thermal overload trips shall not be permitted;
- iv. Magnetic (short circuit) trips are permitted for use in motor circuits of mechanical ventilation systems serving essential services.

**5.2.2** The following systems shall be provided with secondary source of supply:

- (a) Atrium smoke control system, including associated AHUs forming part of the system;
- (b) All smoke control systems where required by this Code.

**5.2.3** *Emergency generator*

Where emergency generators are provided as a secondary source of supply, they shall comply with BS ISO 8528; Reciprocating internal combustion engine driven alternating current generating sets.