

2. Fire and Life Safety of Utility Occupancies

2.1. Substations

2.1.1. General

- 2.1.1.1.** The provisions of this chapter specify the Fire and Life Safety requirements for Substations.
- 2.1.1.2.** All kinds of substations perform one or combinations of the following functions.
- Change voltage from one level to the other, up or down.
 - Regulate voltage to compensate for system voltage changes.
 - Switch transmission and distribution lines into and out of the grid system.
 - Measure electric power qualities flowing into the circuits.
 - Connect communication signals to the circuits
 - Eliminate lightning and other electrical surges from the system
 - Connect electric power generating plants to the system.
 - Make interconnections between the electric systems of more than one utility.
 - Control reactive kilovolt-amperes supplied to and the flow of reactive kilovolt-ampere in the circuits.
- 2.1.1.3.** The fire incidents and risk of fires in substations locally in the UAE and internationally have been very low.
- 2.1.1.4.** However, facility has potential fire hazards and the impact of fire can be catastrophic, severely affecting the power supply to citizens, damage to personal and neighboring property and assets.
- 2.1.1.5.** Though most of the substations are unmanned, fire can cost lives of utility personnel, Civil Defence personnel, contracting personnel and even general public, when fire grows.
- 2.1.1.6.** Fire and Life Safety requirements in this chapter are minimum guidelines. It is consultant's responsibility to follow utility provider's material specifications, risk assessments of individual facilities and further requirements of referenced documents of **2.1.1.7.**
- 2.1.1.7.** This chapter is based on the guidelines of **NFPA 850, NFPA 820, NFPA 214, OSHA, IEEE (Institute of Electrical and Electronics Engineers), SEIA (Solar Energy Industries Association), Fire Protection Research Foundation, MASDAR, DEWA Solar Energy guidelines and ADDC guidelines.**

Did You Know?

Substation fires mainly depend on equipment and systems used. Following are the major fire initiating components.

Oil-insulated transformers, Combustible insulation and jackets of cables, Oil-insulated cables, Hydrogen cooled condensers, Batteries, DC Valves, Poor Housekeeping.