

Annex 6.2

DCL Fire Protection Facilities and Measures

**ANNEX 6.2: DHA COGEN POWER AND DESALINATION
PLANT FIRE PROTECTION FACILITIES AND MEASURES**

DHA COGEN POWER AND DESALINATION PLANT

Fire Protection Facilities and Measures

FIRE DETECTION AND CONTROL SYSTEM

The fire detection, control and alarm system is provided to detect a fire, to control remote released fire extinguishing system, and to warn personnel in the case of fire.

A main fire alarm panel is provided in the control room inside administration building. Fire detection loops, starting and ending at the MFAP and separate signal lines are provided in various areas of the plant and transmit signal between MFAP and eventually LFAP, fire detection, fire alarm and fire extinguishing systems.

All alarm, Operation and Trouble signals of the connected local fire alarm panel, fire pump controller, and fire extinguishing system will be transmitted to the MFAP.

Automatic electrical fire alarm detector (smoke, heat, flame) mechanical detectors (detection sprinklers) and manual call points (push buttons) are provided for buildings and outdoor facilities.

The detection devices transmit fire alarm signals to the MFAP / LFAP. All fire detection devices installed in loops are addressable. This allows to display the relevant identification number and the detector location in case of fire alarm or system trouble.

Fire Alarm

Alarm devices (horns, sirens, strobe lights) are provided inside of buildings and at outdoor facilities to warn personnel in case of a fire alarm. Alarm is indicated at the Main Fire Alarm Panel (MFAP), the concerned Local Fire Alarm Panel (LFAP) and at the alarm devices in the concerned area.

Fire Control

The remote controlled Fire Extinguishing Systems will be released from the MFAP / LFAP. All alarm operation and trouble signals will be displayed at the MFAP / LFAP.

FIRE FIGHTING WATER PUMP

The fire fighting pumps and control arrangements are provided to supply sufficient water at the required pressure to the necessary valve stations, out and indoor hydrants and hose reel systems.

The fire fighting ring main is pressurized at 12.5 bar with the help of a jockey pump which gets its suction from the underground water reservoir. In the event of a drop in pressure (9 bar), the electrical fire pump starts and if pressure can't be maintained or in the event of failure of electrical pump, the standby diesel engine driven fire pump starts at 9 bar and provides sufficient water at the valve stations.

Following building / areas are supplied by ring main using stubs.

1. Administration building
2. Guest House / Wash room lockers
3. Workshop and stores
4. Steam Turbine Building

Further, 10 outdoor (above ground) hydrants are connected with the ring main, the indoor fire hydrants are 5.

The availability of fire system is checked on weekly basis by simulating the starting of fire diesel pump and a minimum of 1.5 meters of water level is maintained in the underground water tank to fight fire, if required.

Portable fire extinguishers

Portable fire extinguishers are provided inside the buildings and all plant area. There are 13 chemical fire extinguisher { Dry Chemical Powder (DCP)} and 38 CO2 type extinguishers.

Moreover, there are two FOAM type fire extinguisher s for Steam Turbine.

For the fire protection of transformers, Spray Deluge System and Sprinklers Systems have been provided.

CO2 fire extinguishing system

CO2 is used to extinguish fire in gas turbine enclosure and its auxiliary system. CO2 is used to protect high value equipment such as gas turbine that would be damaged by a water based extinguishing system. For equipment located in a well sealed enclosure, the fire protection system design is based on a total flooding concentration concept. The CO2 is released within the sealed enclosure at a rate which produces the design concentration (37% only for surface fire (GT); 50 % for deep seated fire (PCCs) to ensure extinguishing of the fire.

The CO2 extinguishing system, powered by the fire alarm panel (FAP) consists of a solenoid valve controlled gas supply (cylinders), piping and nozzles. Each system is activated via fire detectors in a dual loop / cross zone arrangement (two separate detector loops within the same protected area). An alarm from each line must be activated either by manual push buttons at the enclosure entrances or by mechanical release at the cylinder (tank) station.

Staff Preparedness

Control Room Operators are trained to identify the fire/fault area by following the alarm indication appearing on the fire panel located in Main Control Room. The field staff is fully trained in the use of electrical fire water pump, fire diesel pump and fire hydrants etc.

Services of quality assured training providers such as M/s Haseen Habib is hired to impart training to all staff every year.

Further, in house training on fire prevention and firefighting is conducted by EHS supervisor every six months.

From the above, it is quite clear that firefighting facility in the plant is fully operational and maintained in good order at all times and manned by adequate trained staff which is fully capable to handle the fire system and meet any emergency in this respect.