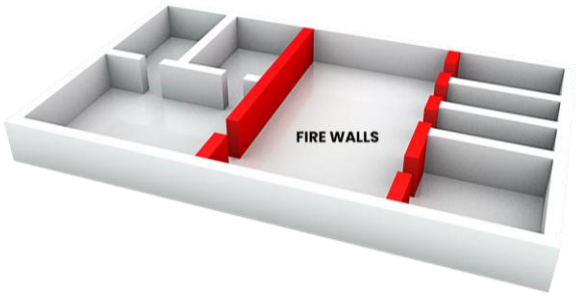
METEC
EXCEEDING EXPECTATION

FIRE PROTECTION SYSTEMS

DETAILED DESCRIPTION FOR BASIC LEARNERS

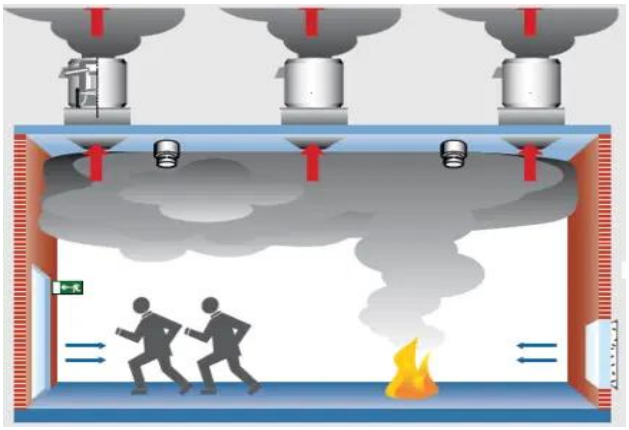
Dec 2024

LIST OF FIRE PROTECTION SYSTEMS

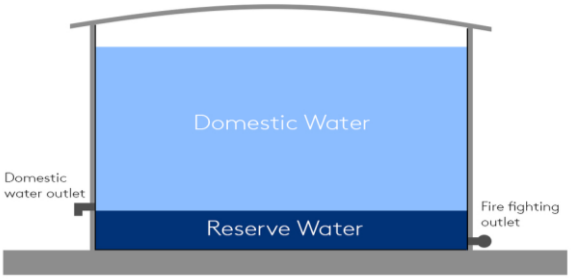
Distance between buildings	 This refers to the gap or space left between two structures to reduce the chance of fire spreading from one building to another. If buildings are too close, a fire in one can quickly engulf the other. Adequate spacing provides a natural barrier and gives firefighters better access during emergencies.
Fire Walls	 Firewalls are thick, fire-resistant walls designed to isolate sections of a building. They stop fire and smoke from moving to adjacent rooms or areas. For example, in an apartment complex, firewalls prevent a fire in one unit from affecting others, giving people more time to evacuate safely.

Fire Doors	 Fire doors are specially designed doors that close automatically when a fire is detected. They block flames and smoke from spreading to other parts of the building.
Fire shutters	 Fire shutters are rolling barriers that come down to protect large openings, like in warehouses or industrial settings.
Fire Dampers in ducts	 Fire dampers in ducts are barriers installed in air conditioning or ventilation ducts. They close when smoke or fire is detected, stopping flames and smoke from traveling through the air system.

Fire Extinguishers	 These are portable devices filled with chemicals, water, or foam to fight small fires. Fire extinguishers are classified based on the type of fire they can combat, such as electrical fires, oil fires, or wood and paper fires. They are crucial for quickly handling fires before they grow uncontrollable.
Fire Detection Systems	 • Detectors: Smoke detectors, heat detectors, and flame detectors sense the presence of fire and activate alarms. • Manual call points: These are buttons or levers located in accessible areas that allow people to manually raise an alarm when they notice a fire. • Sound and/or light alarms: Loud sirens and flashing lights warn everyone in the building to evacuate. Evacuation alarms are critical in large buildings like malls or offices.
PA System and Voice Evacuation	 A Public Address (PA) system is used to deliver clear voice instructions during a fire. This system ensures occupants are guided on how to evacuate safely, preventing panic and confusion. It is especially useful in large buildings like malls, airports, or offices where visual alarms may not be sufficient

Smoke Exhaust	 This system removes smoke from a building during a fire, reducing its harmful effects on people and improving visibility. It makes escape routes safer and reduces the risk of suffocation.
Water Reserves	 Buildings are required to have dedicated water storage for firefighting purposes. These reserves ensure an adequate water supply for fire suppression systems like sprinklers and hydrants during emergencies.
Fire Pumps	 Fire pumps are mechanical devices that boost water pressure to ensure it reaches all parts of the building through the fire protection system. For instance, in high-rise buildings, pumps are essential to deliver water to upper floors.

Retention of Fire Extinguishing Water

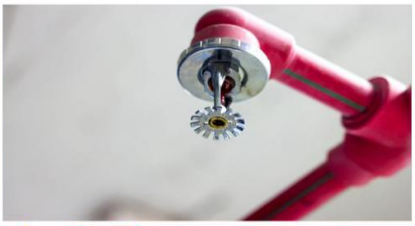


Maintaining a reserve of fire extinguishing water ensures there is an adequate supply available to address extended fire emergencies, especially in large or complex facilities. Additionally, this water retention system helps collect and manage water used during firefighting efforts, preventing flooding and minimizing environmental contamination from chemicals or debris carried by the water.

Fire Water Network

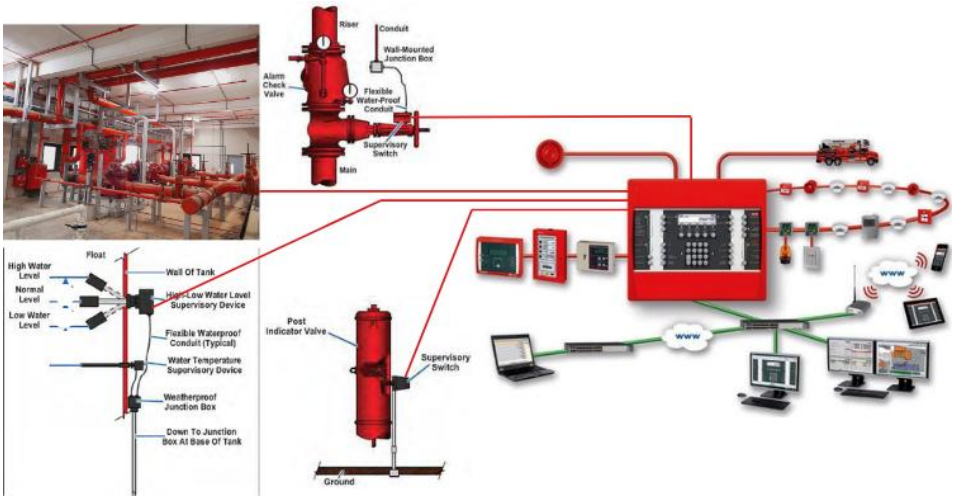
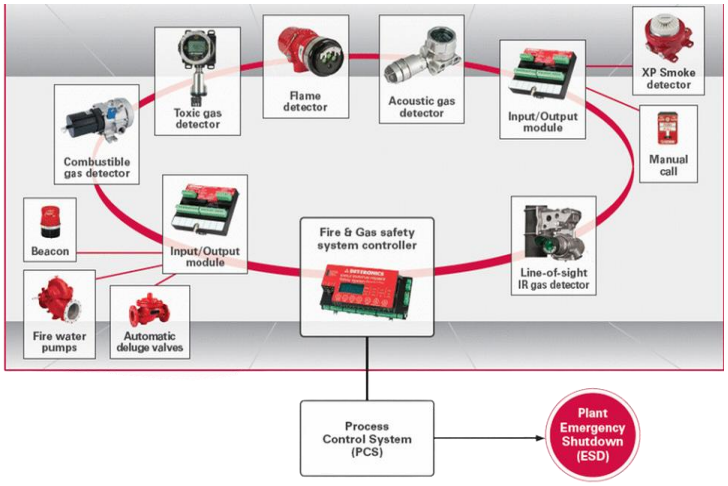
This is a system of interconnected pipes, hydrants, and hoses that supply water throughout a building or facility for firefighting. It allows firefighters to connect their hoses and access water efficiently where needed.

Automatic Extinguishing Systems



These systems activate automatically to suppress fires as soon as they are detected;

- Deluge system: Releases a large volume of water over a wide area, used in high-risk locations like chemical plants or aircraft hangars.

	• Foam system: Sprays fire-suppressing foam to cover fires caused by flammable liquids like oil or gas. • Sprinkler system: A common system that sprays water on specific areas where heat triggers it, efficiently targeting the fire. • Water mist system: Uses fine water droplets to cool the fire and reduce oxygen levels around it, effective for areas with sensitive equipment.
Supervision Systems	 These systems ensure that all fire protection equipment is in working condition. Local supervision occurs at individual workshops or rooms, while global supervision is managed from a central control room, such as a guardhouse, to monitor the entire building.
Control of Process Systems	 In industrial and manufacturing environments, process systems like machines or chemical processes can worsen fires. Control systems automatically shut down equipment or processes during a fire to minimize risks and prevent explosions or further damage.

Containment System for Fire Water	Designed to manage and control the runoff water discharged during fire system activation. These systems prevent water damage to critical areas, protect equipment, and ensure environmental compliance by capturing and directing excess water to appropriate drainage or storage facilities. Key components include containment basins, drains, valves, and sometimes pumps for efficient water removal. Properly designed systems are critical in industrial, commercial, and residential settings to mitigate risks of flooding or contamination during fire suppression.
Containment walls in liquid fire systems	 Crucial for enhancing safety and environmental protection. These walls are designed to prevent the spread of hazardous or flammable liquids in case of a leak or spill, containing the substance within a designated area. By confining the liquid, containment walls help minimize fire risks, prevent environmental contamination, and protect nearby equipment and personnel. They are essential in industries handling flammable liquids, ensuring compliance with safety regulations and reducing potential damage during fire emergencies.

These systems collectively form a robust fire safety plan, ensuring the safety of occupants, minimizing property damage, and aiding in efficient firefighting efforts.