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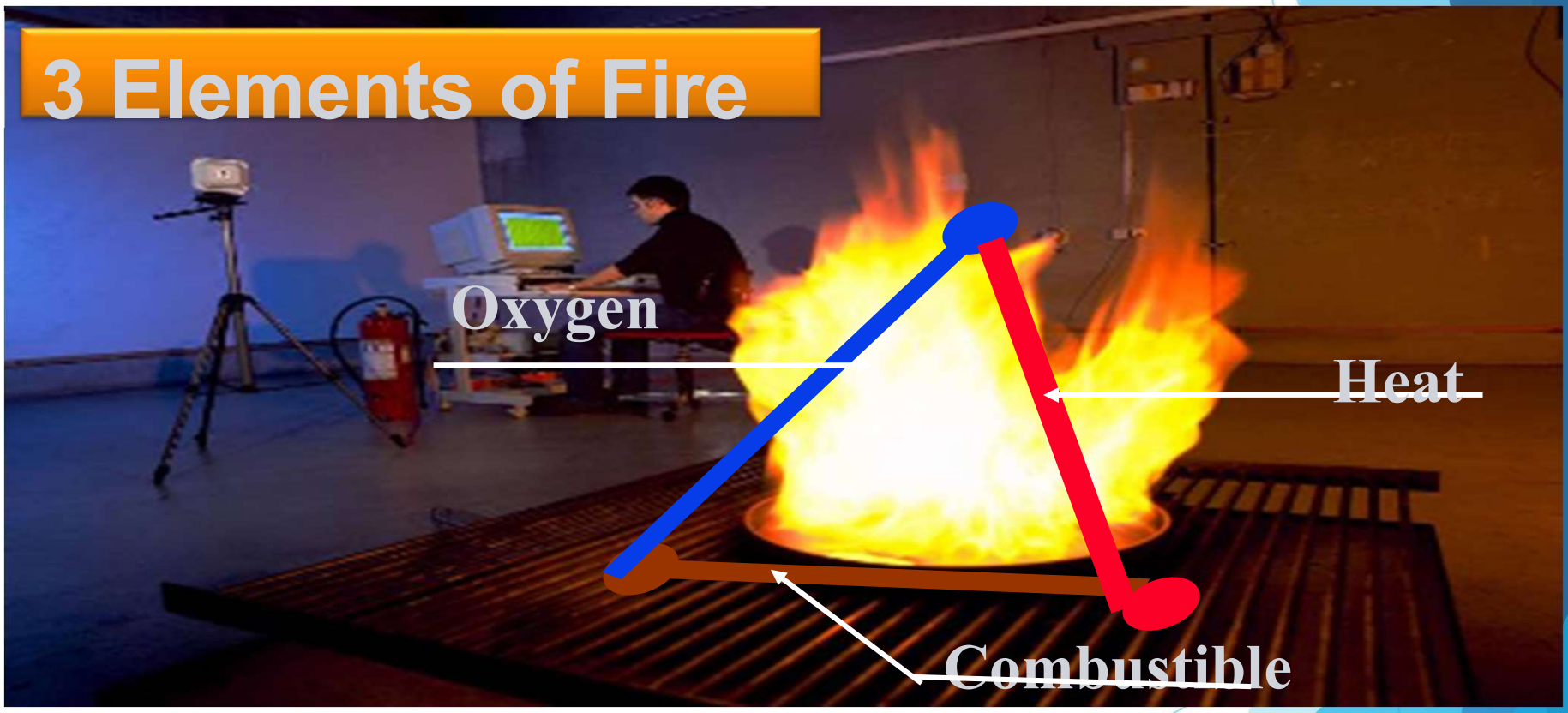
What is Fire ?

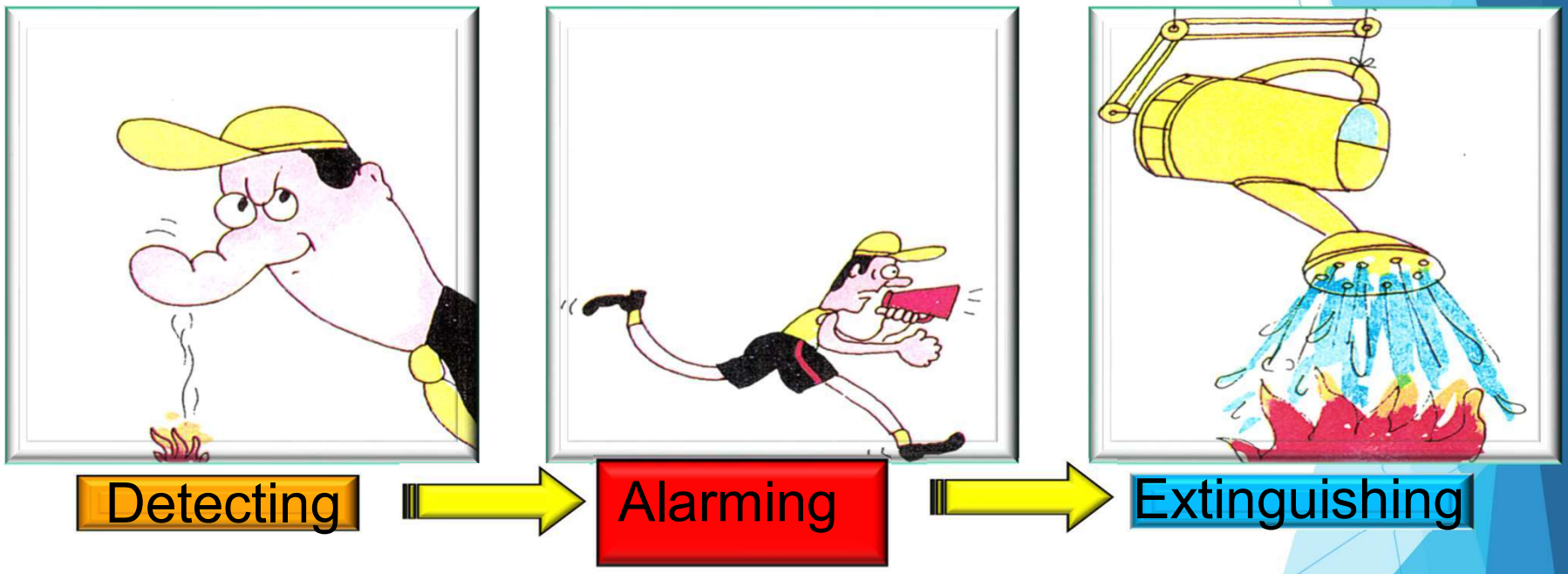


Types of Fires & Media

CLASSES OF FIRES	TYPES OF FIRES	PICTURE SYMBOL
A	Wood, paper, cloth, trash & other ordinary materials.	
B	Gasoline, oil, paint and other flammable liquids.	
C	May be used on fires involving live electrical equipment without danger to the operator.	
D	Combustible metals and combustible metal alloys.	
K	Cooking media (Vegetable or Animal Oils and Fats)	

Suitable Media	
Water	
Foam	
Gas	
D C P	
Wet Chemical	

Fire Protection Concept



Systems Involved in Fire and Security systems

Fire systems	Fire systems	Security systems
Extinguisher	Fire Alarm	Building management
Hydrant	PA	Access
Sprinkler	VESDA	Boom-barrier
Spray	WLD	CCTV
Foam	RODENT	
Gas suppression	Room integrity	
Pre Action		

WATER BASE SYSTEM

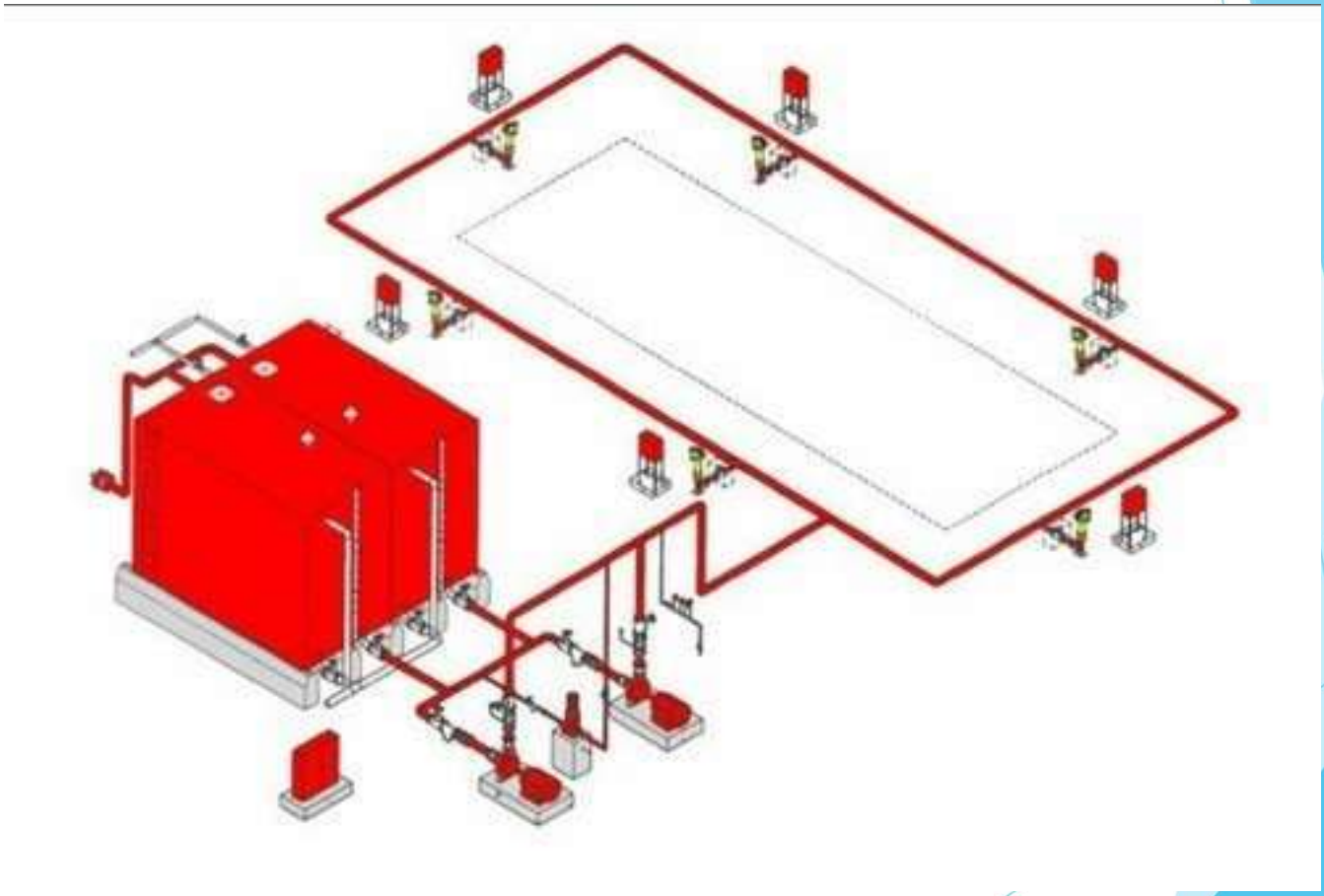
- **HYDRANT**
- **SPRINKLER**
- **SPRAY**
- **FOAM**

HYDRANT SYSTEM

Fire Hydrant System, the oldest and still one of the most effective and dependable one, consists of the following components:

- **Sufficiently large water reservoir**
- **Fire pumpsets (Main and Standby)**
- **Jockey pumpset**
- **Hydrant valves**
- **Fire fighting hoses with coupling**
- **Branch pipe with nozzles**

Hydrant System scheme



Hydrant And sprinkler Equipment's

WATER BASE SYSTEM

HYDRANT

SPRINKLER

SPRAY

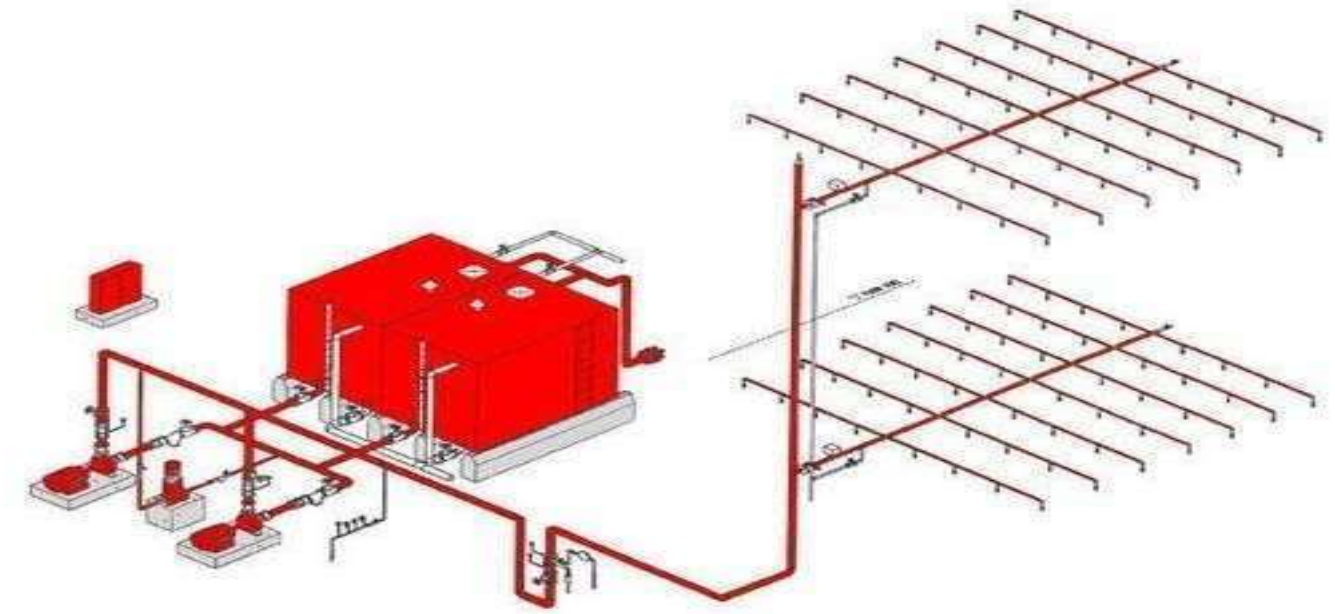
FOAM

SPRINKLER SYSTEM

A sprinkler system consists of a water supply (or supplies) and one or more sprinkler installations, each installation consist of a set of installation control valves and a pipe array fitted with sprinkler heads. The sprinkler heads are fitted at specified locations at the roof or ceiling, and where necessary between racks, below shelves, inside ovens or stoves or below obstructions.

A sprinkler has two functions to perform. It must first sense the heat, and must then provide an adequate distribution of water to control or extinguish the fire. Each function is performed separately and one is independent of the other except insofar as early detection makes extinction easier because the fire has not grown large. The classic use of the sprinkler is in the hot gas layer which forms beneath the ceiling of an enclosure in which a fire is developing.

WORKING OF A SPRINKLER SYSTEM



WATER BASE SYSTEM

HYDRANT

SPRINKLER

Spray

FOAM

SPRAY SYSTEM

A special fixed pipe system connected to a reliable source of fire protection water supply and equipped with water spray nozzles for specific water discharge and distribution over the surface or area to be protected. The piping system is connected to the water supply through an automatically actuated Deluge Valve which initiates flow of water. Automatic actuation is achieved by operation of automatic detecting equipment installed along with water spray nozzles. There are two types of systems namely High Velocity Water Spray System and Medium Velocity Water Spray System.

I) High Velocity Water Spray System

High Velocity Water spray systems are installed to extinguish fires involving liquids with flash points of 65 deg. C (150 deg. F) or higher.

It was found however that water applied in the form of the finely broken needles to create an emulsion possessed a high resistance to electric current. This equipment is now more or less standard for live oil filled electrical gear and is quite commonly installed for the protection of electrical equipment carrying voltage of 400 KV or more

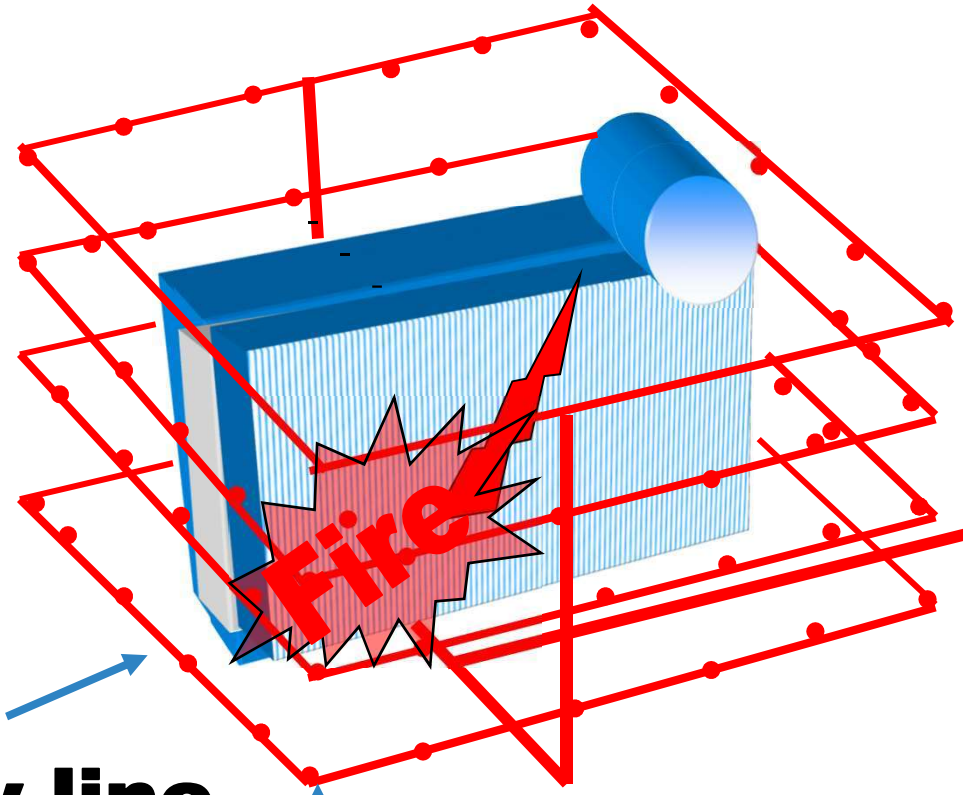
I) Medium Velocity Water Spray System

Advance in technology have brought about much wider usage in industry of highly inflammable liquids, gases and solids. The fire problems so produced have required new thinking and development of new technologies. With fire risks involving the lighter oils, liquefied petroleum gases and other flammable liquids with flash points below 65 deg.C it may not be possible or even desirable to extinguish the fire completely. Under such circumstances the aim is to achieve controlled burning. Adequate control of such fires and also protection of vessels and plant exposed to surrounding fire can be achieved by properly designed medium velocity water spray system. Cooling smothering and dilution play apart in varying degrees with such a system This type of system utilizes sprayers which produce a medium velocity water discharged with directional properties operating at a minimum water pressure of approximate 1.5 bar sprayers can be arranged for individual automatic operation or for automatic and manual operation in groups to command the plant or fire area concerned. Here again, the essence of the design is proper discharged pattern, careful hydraulic calculation and balance of flow and pressure. All systems are fitted with alarm equipment and monitoring devices as required.

General Information

Medium velocity water spray system has been developed and extensively installed for the following applications.

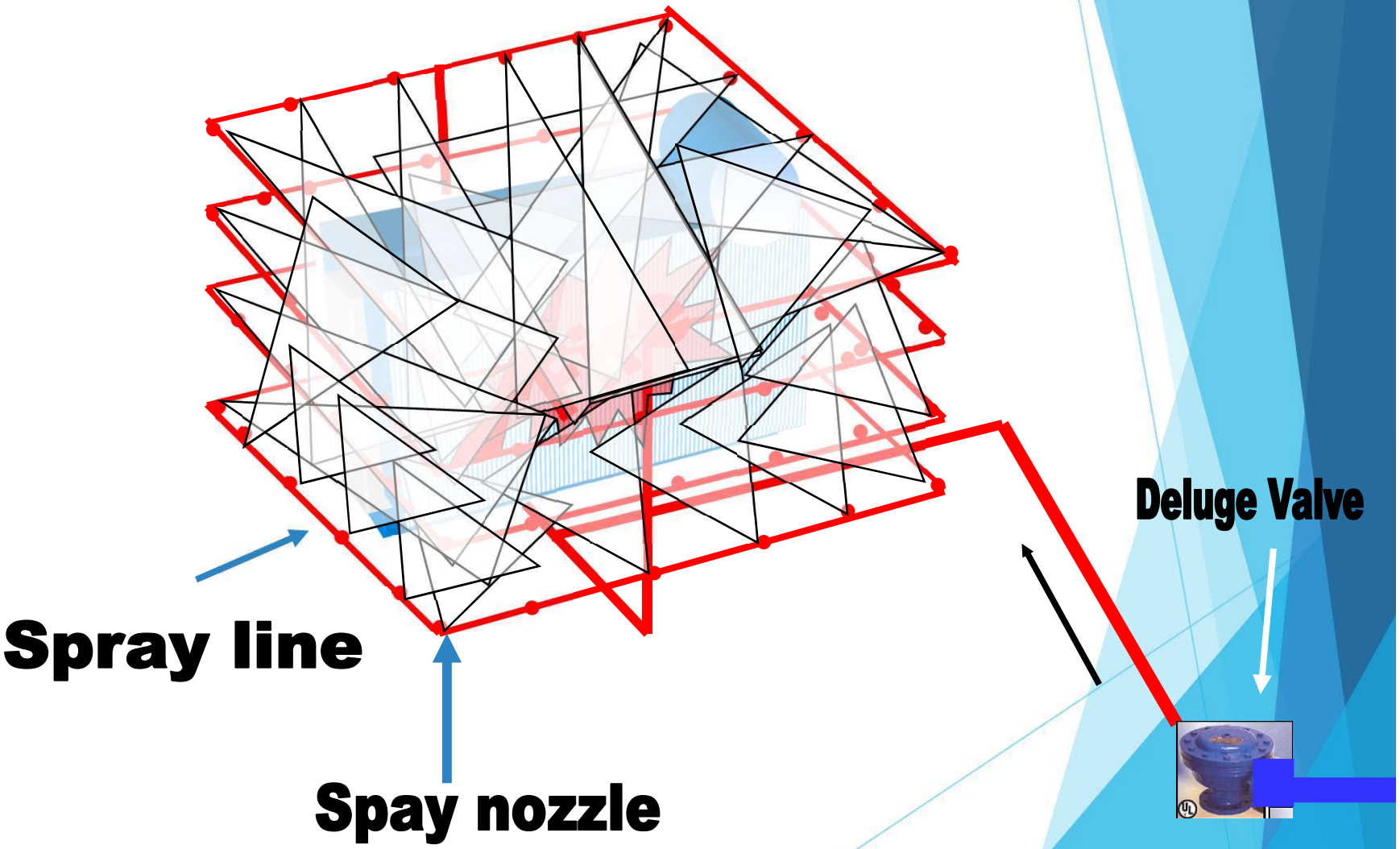
For the protection of vessels, plant, and structures exposed to heat from adjacent and surrounding fires.



Spray line

Spay nozzle

Deluge Valve


Deluge Valve
Spray line
Spay nozzle

WATER BASE SYSTEM

HYDRANT

SPRINKLER

SPRAY

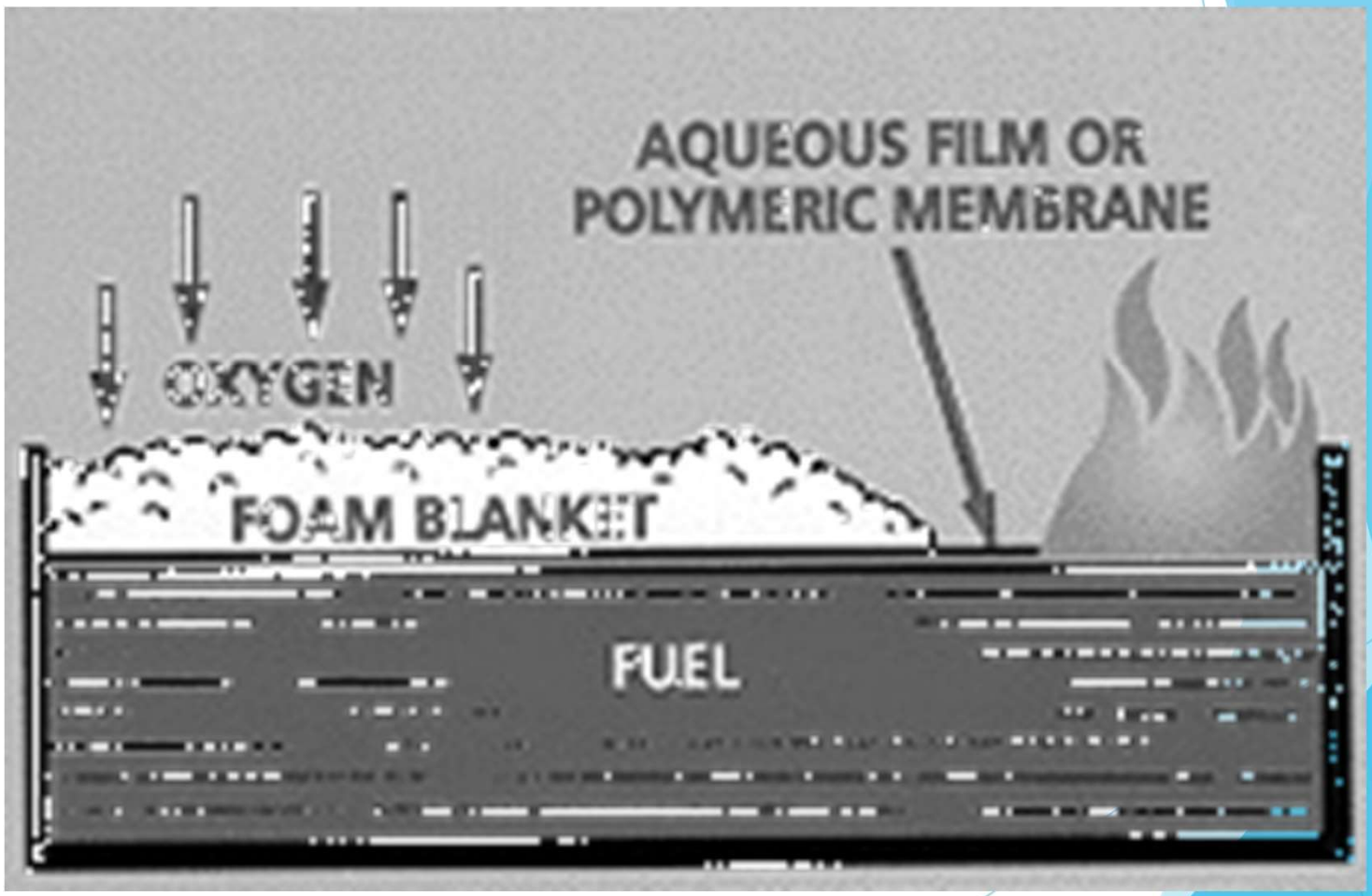
Foam

Foam

Foam for fire protection purposes is an aggregate of air-filled bubbles formed from aqueous solutions and is lower density than the lightest flammable liquids. It is principally used to form a coherent floating blanket on flammable and combustible liquid lighter than water and prevents or extinguishes fire by excluding air and cooling the fuel. It also prevents re-ignition by suppressing formation of flammable vapors. It has the property of adhering to surfaces, providing a degree of exposure protection from adjacent fires.

Foam may be used as a fire prevention, control or extinguishments agent for flammable liquid tanks or processing areas. Foam solution for these hazards may be supplied by fixed piped systems or portable foam generating systems. Foam may be applied by foam discharge outlets, which allow it to fall gently on the surface of burning fuel or it may be introduced by other means. Foam may also be applied to these hazards by portable hose streams using foam nozzles, portable towers or large capacity monitor nozzles.

Working of a foam



Gas Based System

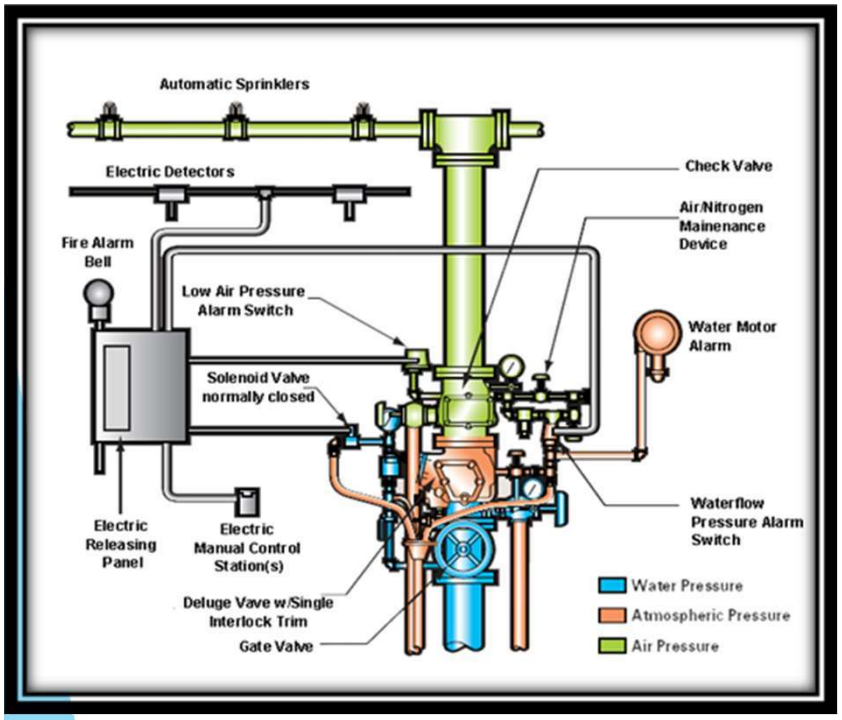
FM200/NOVEC Gas Extinguishing

FM-200/NOVEC1230® Fire Suppression agent was the first environmentally acceptable replacement for Halon 1301. FM-200® has zero ozone depleting potential, a low global warming potential and a short atmospheric lifetime. It is particularly useful where an environmentally acceptable agent is essential, where clean up of other media presents a problem, where weight versus suppression potential is a factor, where an electrically non-conductive medium is needed, and people compatibility an overriding factor.

FM-200/NOVEC 1230® is a colourless, liquefied compressed gas. It is stored as a liquid and dispensed into the hazard as a colourless, eclectically non-conductive vapour that is clear and does not obscure vision. It leaves no

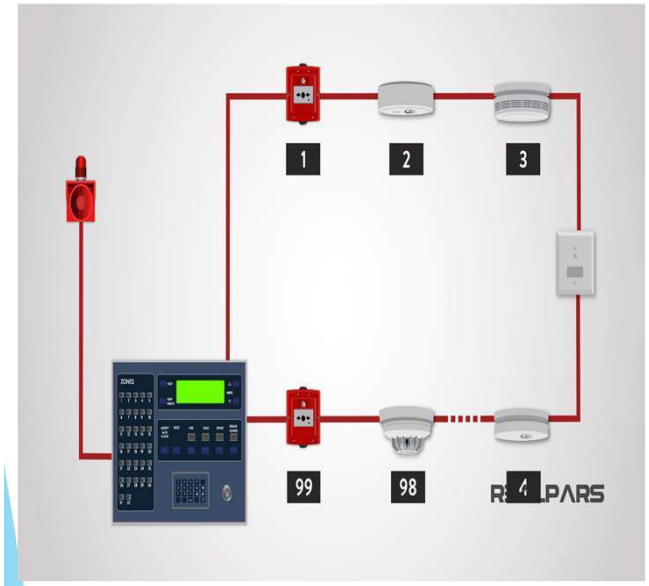
FM-200/NOVEC

Pre Action system



Pre-action fire sprinkler **systems** employ the basic concept of a dry pipe **system** in that water is not normally contained within the pipes. ... The purpose of this feature is two-fold: first to monitor piping for leaks and second to hold water from **system** piping in the event of inadvertent detector operation

Fire Detection Alarm



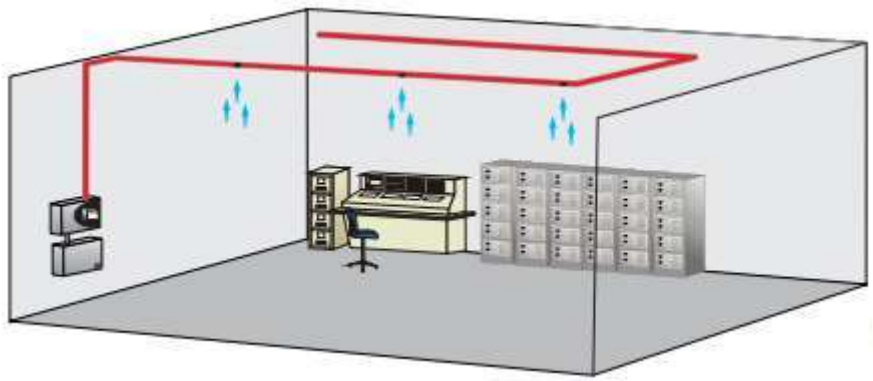
Fire detection systems have increased in complexity and sophistication as technology has advanced. In particular, the increased computing power now available through the development of low cost processors has enabled system designers to improve functionally through incorporating numerous features and options into the fire detection system, both in the detector head and in the control panel.

There are four elements of a fire system :
a) The Detectors
b) The Control Panel
c) The warning sounders and strobes
d) Ancillary devices such as door closers and fan shut-down units

Public Address System

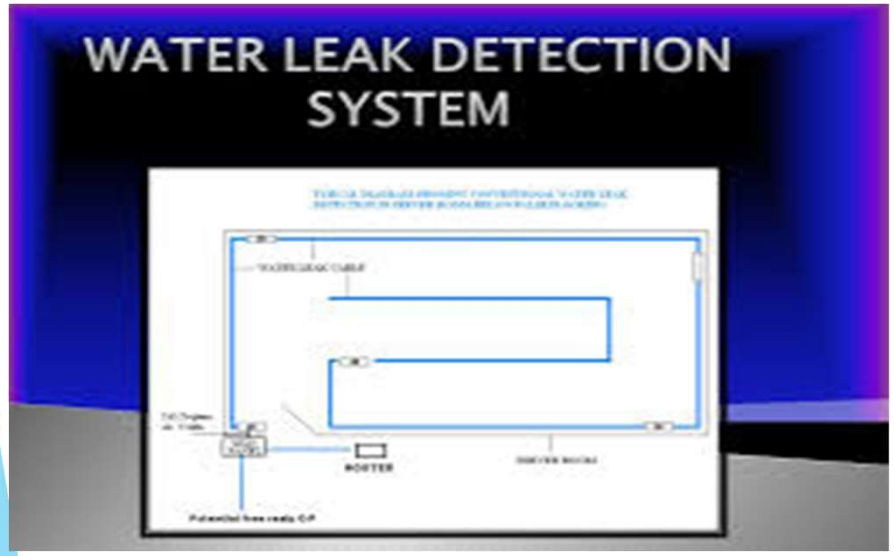
Public Address System (PA *system*) is an electronic sound amplification and distribution *system* with a microphone, amplifier and loudspeakers, used to allow a person to *address* a large *public*, for example for announcements of movements at large and noisy air and rail terminals.

Very early smoke detection alarm (VESDA)



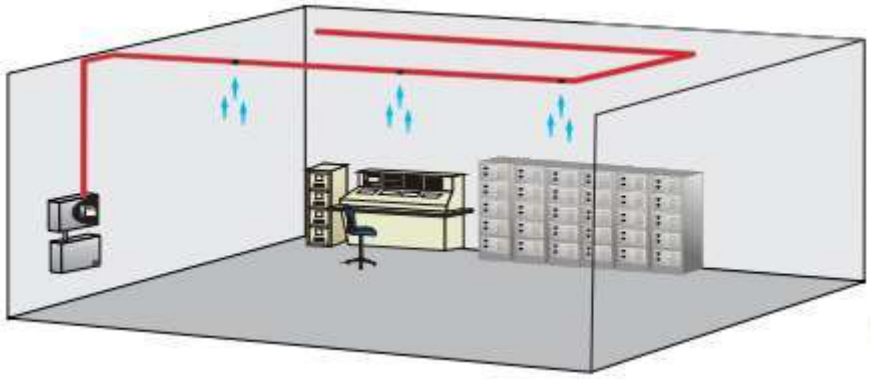
VESDA Systems are aspirating smoke detection used for early warning applications where response to a fire is critical. **VESDA®** works by continually drawing air into the pipe network via a high efficiency aspirator. A sample of this air is then passed through a dual stage filter.

Water leak detection system



The water leak detection & flooding sensor monitors for the presence of water in the critical rooms which is useful in industrial and commercial purpose.

Rodent system

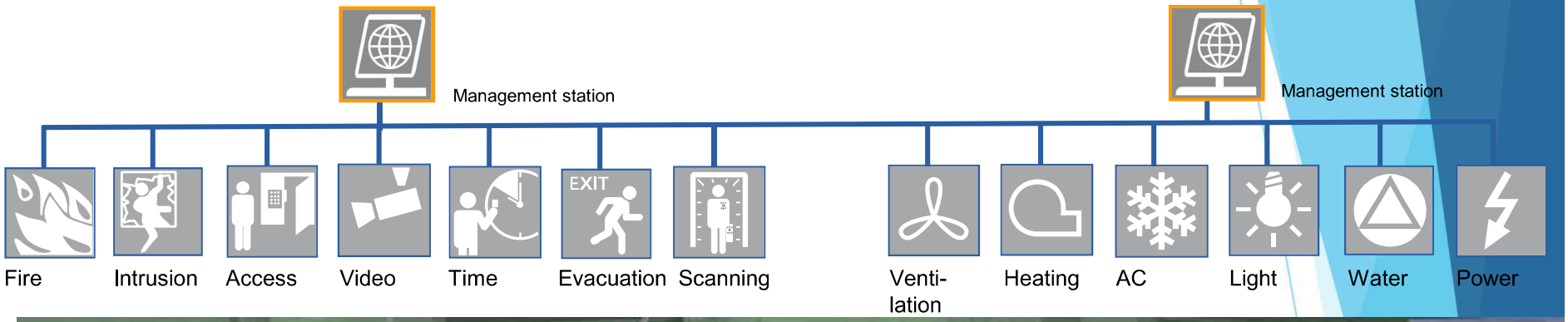


"Ultrasonic **Rodent** Repellent" to chase **rodent**, rat or mice permanently. These units are very compact, safe, environmentally friendly and non-irritating pest repeller. A total revolutionary **rodent** control unit to protect you against any **rodent** menace

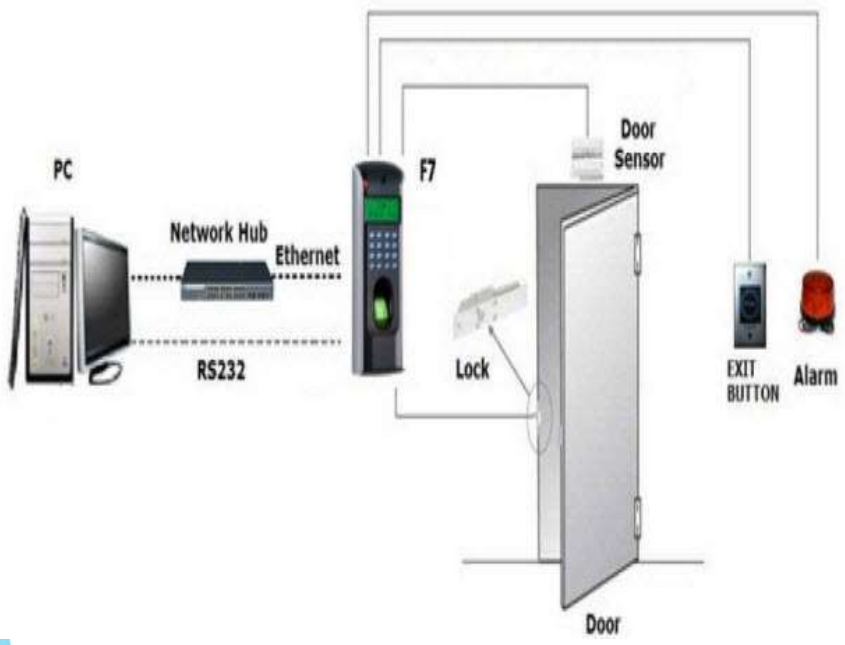
Room integrity system

An **Integrity** test predicts how long fire suppressant agents take to descend to a given level in the **room** without having to release the agent itself. The **Integrity** test is carried out using: • Modular adjustable panels for the door frame which adjusts to fit a wide variety of door sizes

Building Management system (BMS) for the Total Building Solution (TBS) – the integrated approach for the entire building

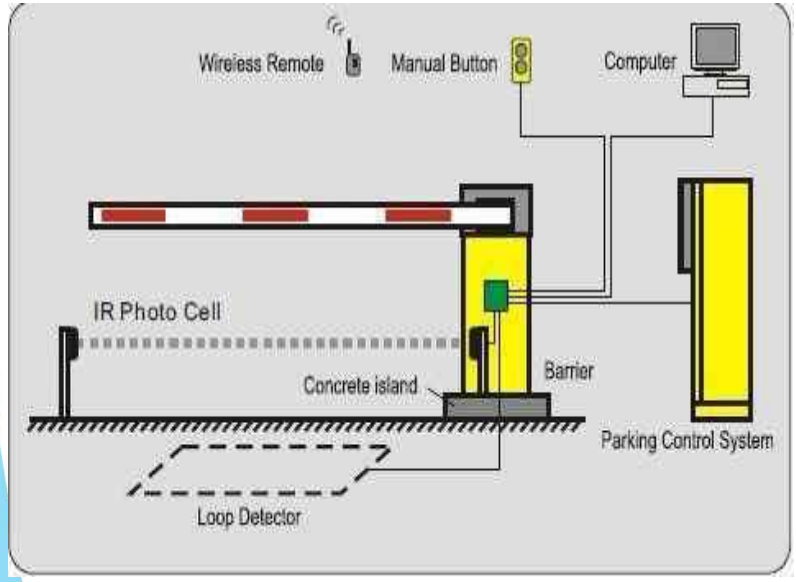


Access Control system



Access control system is one of the most common used *system* in electronic door *control* using a card or a magnetic stripe which can be accessed by swiping through a reader on the door. ... By this card *access control systems* allows *access* to enter into the premises limiting people to one side of the door

Boom barrier and tripod system



A **boom barrier**, also known as a **boom gate**, is a bar, or pole pivoted to allow the **boom** to block vehicular or pedestrian access through a controlled point. Typically the tip of a **boom gate** rises in a vertical arc to a near vertical position. **Boom gates** are often counterweighted, so the pole is easily tipped.

CCTV system

When it comes to securing your business, there are many different types of ***CCTV*** to choose from. Surveillance plays a huge part in today's society, and with cameras all around us, our day-to-day lives are experiencing higher levels of security each day.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