

## Specialist Fire Protection Systems

When people think of automatic fire protection, they usually think of standard sprinkler systems. However not all situations are suitable for sprinkler systems. In some situations, sprinkler systems can even exacerbate the fire or lead to damaged goods/equipment.

The good news is that there are alternative automatic fire protection systems (also referred to as “special hazard fire protection systems”) available for a variety of occupancies.

### Types of special hazard fire protection systems

There are a multitude of types of special hazard fire protection systems including water mist, clean agent and carbon dioxide gaseous suppression, wet chemicals and foam suppression systems.

### Applications

Examples of special hazards to be protected include:

- ▼ computer data centres and call centres
- ▼ electrical equipment such as switchboards and transformers
- ▼ chemical facilities
- ▼ art galleries, archives and libraries
- ▼ restaurant kitchens.

### System selection

System selection depends on the types of hazard involved, the commodities stored and, the surrounding building structure as well as human safety and environmental impact.

For example, most gaseous suppression agents are suitable for electrical fires because they are non- electrically conductive.

Wet chemical agents are suitable for combustible oil fires because they starve the fuel of oxygen and prevent re-ignition.

Foam systems are suitable for protecting large facilities such as warehouses and aircraft hangars.

The following provides an overview of the different types of special hazard fire protection systems and suitable applications:

#### Clean Agents

##### (e.g. halocarbons and inert gases):

Clean agent fire suppression systems extinguish a fire by reducing heat or isolation of oxygen (smothering). They are electrically nonconductive and have minimal environmental impact since they leave no residue behind. However, time available to evacuate people from the area is limited since halocarbon agents can be toxic.

#### Carbon Dioxide (CO<sub>2</sub>) Suppression:

This is a low cost alternative that extinguishes the fire primarily through smothering. It is used for protecting electrical equipment, some chemical storage. However, its application is generally restricted to unoccupied areas due to its asphyxiating effect on people.

#### Wet Chemicals

##### (e.g. Ansul R-102, Aqualoy):

Wet chemical fire suppression systems place a layer or film of chemical to effectively suffocate the flames and to prevent re-ignition. They are most suitable for oil fires and therefore used in commercial kitchen deep fat fryers.

#### Water Mist Systems:

These involve high pressure water discharged through special nozzles that produce a fine mist that cools the fire while using minimal quantities of water. There is no chemical used and

it is easy to clean up. It is most suitable for suppressing hydrocarbon pool or spray fires and therefore used to protect machinery plant rooms involving diesel fuel, hydraulic oils or oil-filled transformers.

#### Foam Systems:

These systems are primarily used to combat flammable and combustible liquid fires and use an foam concentrate mixed with water that extinguish the fire by smothering and suppressing the liquid fuel vapours while cooling the liquid surface. There are different foam types depending on the application or the difference between normal and high expansion foams.



For more information:  
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