Alarm Detector vs MDG Haze and Fog

Technical Notes - MDG Fog Generators Ltd.

They are different types of smoke or fire detectors, manufactured by hundreds of companies all around the world, and unfortunately they have not been created equal. Therefore it is impossible to explicitly list the ones which might be triggered by MDG haze or fog, and the concentration conditions.

This document tries to give some useful information, but if you are uncertain of what type of smoke detector you have, do not hesitate to consult your technical staff or, as a last resort, notify the fire department and do a test run.

Fire and smoke detectors are identified according to their operating principles, but they may also be a combination of each type.

Heat Detectors

This type of sensors detects the heat from the fire, and sounds an alarm or triggers a water sprinkler system. They either detect a fixed temperature (most of common cases) or a rise of the temperature.

Heat detectors will not be triggered by MDG haze or fog.

Photoelectric Detectors

Photoelectric detectors operate on one of three different principles:

- **Light obscuration alarm**

  These detectors operate by projecting a light beam onto a photosensitive device. As particles enter the chamber between the light source and the photosensitive device, the light intensity diminishes and initiates an alarm at a predetermined level.

  These detectors should not be triggered by haze, but will be triggered as soon as the fog concentration will increase above the obscuration alarm level.

- **Light scattering alarm**

  These detectors operate by projecting a light beam onto a photosensitive device, however, unlike the light obscuration detector, the photosensitive device is not in the light beam path. As particles enter the sensing chamber, light is reflected (scattered) from the particles onto the photosensitive device causing the detector to respond.

  These detectors should not be triggered by haze, but will be triggered as soon as the fog concentration will increase above the scattering alarm level.

- **Cloud Chamber alarm**

  These detectors used a high humidity chamber. If smoke particles are in suspension, the moisture condenses on the particles and forms a cloud, measured by optical sensor.

  Very sensitive, this detector is mainly used for early warning, especially in clean rooms.

  These detectors will be probably triggered by haze, even at low concentration, and by fog.

Ionization Sensors

Ionizing sensors contain a small amount a radioactive material, emitting alpha particles between two metal plates, one positively charged and the other carrying negative charges. Alpha particles make air conductive by ionizing the molecules, and a small electric current flows the air between the two charged electrodes. When particles enter the sensing chamber, the flow of electric current is reduced. When the current flow reaches a set level the detector responds and an alarm is sounded.

These detectors should not be triggered by haze, but will be triggered as soon as the fog concentration will increase above the sensor level.

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Optical Flame Detectors

Flame detectors are designed to respond to a specific range of radiations emitted by fire, mainly in the invisible spectrum. They are three general types of optical detectors

- Infrared (IR) type flame detectors
- Ultraviolet (UV) type flame detectors
- Combination IR/UV or IR/IR type flame detectors

These detectors will not be triggered by MDG haze or fog, but they can be blinded by fog.

Gas sensors

These detectors measure the concentration of certain type of gas, mainly carbon monoxide, via an electro-chemical sensor.

These detectors should not be triggered by MDG haze or fog, in open areas.

Carbon dioxide detectors may reacts if you are using CO_2 as propellant gas to your for machine.

Laser Detectors

Laser technology is emerging as a technology for detecting smoke and fire. It is quite similar to light obscuration detectors, but the laser beam path can reach several tenths of meters. They are used in some industries and large building systems.

These detectors should not be triggered by haze, but will be triggered as soon as the fog concentration will increase above a certain level of opacity.

Camera system

The newest innovations can use infrared cameras, pyrometers, video image detection coupled to computerized systems with algorithms which analyse the visible effects of fire and inappropriate movement. This is more common in industrial areas.

These systems should not be triggered by haze, but fog will probably trigger alarm when the opacity will blinded the system vision.