LITERATURE SURVEY

INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM

- Fire alarm systems are only effective if they can generate reliable and fast fire alerts with exact location of fire. There is a direct correlation between the amount of damage caused by fire and interventions time in various fire alarm systems. As the time of intervention decreases, the damage also decreases.
- The most important factor in a fire alarm system is the reaction or response time of fire alarm system, that is, the time between fire detection and extinguishing.
- Fire smoke detectors are most critical and front end component of any fire detection & alarm system. These front end sensors have also evolved over the time and its' their advancement which has contributed in making conventional fire alarm System, intelligent & smart-because without these smart, fast, reliable and addressable front line sensors, no fire alarm system could have been made smart or intelligent.
- The evolution of these front line sensors can be divided into four generations based on their developments, improvement, and merging with the electronic technology industry.
- The first & second generation so the sensors were 'Analogue', however from 3rd and 4th generations of sensors/detectors the shift began towards solid state sensors and later to 'Addressable' type of intelligent systems in which a detector compares its current sensor value with the configured threshold to make the alarm decision, which is then transmitted to the panel when the sensor is interrogated.
- Simple Panel requiring no special skill sets is needed to operate. Systems use devices that match the radiation energy &are sensitive to ember, charcoal, or actual fire of sufficient intensity to activate the detector and trigger the alarm.

[1] : The first generation of smoke detectors started in 1930 when first electronic smoke detector was actually made by Swiss physicist named Walter Jaeger leading to the invention of the first electronic device for smoke detection. Later he developed the first patented smoke detector

[2] : The second generation of smoke detectors was developed a radioactive source for ionization, was used for application in the electronics industry. Photoelectric smoke detectors operate on the light beam interruption principle, having a light source, usually white light or more often low-power laser, and a photoelectric module.

[3] : The third generation of smoke detectors is characterized by an increased interest in smoke detectors. With the development of electronics and integrated circuits, there is a decrease in the volume of the detector components, which directly contributes to physical size reduction of the detector, a decrease in energy consumption and an improved reliability.

[4] : The fourth generation of smoke detectors is characterized by the use of multiple detectors in a loop, and application of algorithms. Some basic evaluation and decision-making functions can be integrated in the detector. Temperature and smoke was developed as a detector that uses smart “OR” and “AND” logic. Major changes in smoke detectors technology were introduced by the development of smart detectors. Such smoke detectors provided option to regulate the alarm threshold via a central control panel.

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