Literature Survey

Industry-specific intelligent fire management system

To detect fire, numerous techniques are available. In forthcoming sections, reviewed some fire detection techniques. A. Fire Detection Using Smoke and Gas Sensors The smoke detector alone based fire detection have high false alarming rate. Alarm having no verified smoke is known as false alarming rate. To overcome this problem fire detection based on smoke detector and gas sensors is developed. The fire detection system consists of smoke detector, CO sensor, CO2 sensor, data processing module, fire alarm algorithm and fire status report module. This fire detection system detect fire by detecting levels of CO, CO2 and smoke by using gas sensors and smoke detector. Generate alarm if rates of increase of these levels exceeds their predefined threshold rate. This system is used in closed areas such as buildings, ship compartments, aircraft cargo compartments. It detect fire like smoldering to combustion. Smoke concentration is detected by using light scattering method. A photoelectric smoke detector is used here. The light radiated from the LED is passed to the place being detected and received to the photodiode. The obtained light intensity is decreased due to scattering from smoke particles. Generate alarm if the light intensity is below a specified threshold rate. CO and CO2 sensors based on the method of diode laser absorption spectroscopy is utilized for detecting concentrations of CO and CO2. To measure the concentration of gases diode laser absorption spectroscopy is one of the best technique. The wavelength of diode laser is tuned over the absorption line of gases. This causes a reduction of light intensity due to absorption. The light intensity is measured by using photodiode and it then used to detect gas concentration. Wavelength of diode laser is tuned by adjusting its temperature and injection current. Diode laser used here is a distributed feedback (DFB) diode laser. After detecting the levels of CO, CO2 and smoke its output is fed to data processing module.