LITERATURE SURVEY

INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM

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PAPER 1:

TITLE: Research on Fire Alarm Computer Monitoring System in Fire Engineering

PUBLICATION YEAR: 2021

AUTHOR NAME: Xiyang Feng and Chaofei Wang

DESCRIPTION:

The fire alarm monitoring system of fire protection engineering has formed a complete system, including alarm monitoring,automatic fire control, fire linkage control, and fire data monitoring and analysis modules. This project mainly analyzes the fire alarm computer monitoring system in fire engineering.The measuring devices and single-chip microcomputer in the intelligent fire early warning and monitoring system own many advantages in judging the fire situation. The structural form is a structure that organically combines the main network and the secondary network, so it has strong adaptability and can effectively improve the reliability of the building's fire emergency function. At the same time, the fire alarm computer monitoring system in the fire protection engineering can faithfully reflect the small changes in the monitored environmental objects, and can automatically compensate for the factors that prevent fires in the environment, it also can automatically handle the adverse effects caused by electrical interference. The use of software code programming in the system significantly improves the linkage and repairability of the system regarding fire protection.

PAPER 2:

TITLE:GPS-based fire detection system (Global Positioning System) and SMS Gateway

PUBLICATION YEAR: 2021

AUTHOR NAME:A Aryanti, I Mekongga and R S Dewi

DESCRIPTION:

The benefits of this fire detection system can detect early fire occurrence based on the detection of temperature conditions by accommodating the nature of the fire and able to detect any rise in temperature caused by the existence of the fire.To realize the system, required sensors capable of reading the temperature and smoke. The Arduino Uno microcontroller is the brain control system of the system. At a temperature of> 35 C, the system will activate the DHT 11 and MQ 2 sensors that detect smoke> 50 ppm from fire. The system will activate Buzzer as a warning in the form of the next alarm sound Global Positioning System (GPS) will provide information in the form of coordinates of the location of the point of fire through GSM SIM900 Module Short Message Service (SMS) to the user. The results obtained mq2 = 128 ppm and temperature value = 38 ° C and GPS data with latitude of -3.04798388 and a longitude of 104.78263092. From the data it is seen that the mq2 value reaches> 50ppm and the temperature value reaches> 35 ° C, and the detector outputs buzzer sound and warning notification of coordinate point in the form of SMS containing the message "FIRE available" with the coordination of the location of the fire detected by GPS.

PAPER 3:

TITLE:GSM based smart fire and high-temperature detection system

PUBLICATION YEAR: 2021

AUTHOR NAME: Ravindra Koggalage, Manjula WelihindaandHasitha Nuwan

DESCRIPTION:

This research refers to an Arduino and Global System for Mobile (GSM) based system for efficient detection of fire hazards. This purpose is industrial and domestic safety, and the primary concern is to avoid the fire hazards that occur to the employees and the properties inside the buildings. As a solution, a smart fire and high-temperature detection system is designed using GSM technology, smoke/temperature sensors, and Arduino technology. A smoke sensor is used to detect the smoke from the fire and a temperature sensor is used to detect temperature increase inside the building. In the event of a fire, an alert message will be sent to the user via short message service (SMS) via the GSM module. Furthermore, when a fire is detected, a signal will be sent to the main power supply circuit breaker via a microcontroller and then the power supply of the particular building will shut down. Results from the test are documented and discussed in this paper. This system helps users to respond immediately to the situation and so improve their safety by protecting their lives and the properties from a disaster.

PAPER 4:

TITLE: Fire Detection Using Wireless Senor Networks

PUBLICATION YEAR:2007

AUTHOR NAME: Bernardo and Oliveira et al

DESCRIPTION:

To help with fire-fighting operations, an alarm application based on Telos B motes was proposed in (Bernardo, Oliveira et al. 2007). The authors used a combination of temperature, light and humidity sensors in difficult access environments. They considered a scattered WSN consisting of several isolated WSNs. The situation, in which sensor nodes are destroyed by fire, was also taken into account. They concluded that mote longevity(avoiding synchronisation costs during idle period) can be applied in the fire situations where a timely response to destructive events is needed. In Bagheri 2007, the author utilised FWI index and his novel k-coverage algorithm to detect forest fires. K-coverage algorithm monitors each point by using k or more sensor nodes to increase fault tolerance. Therefore, some sensors can be put in standby mode to extend network lifetime. Although there are many algorithms to find the minimum number of sensors to be used, they are usually NP complete problems. The proposed k-coverage solution proved to prolong the network life time. Forest fire detection was not the focus of this work and was considered as an application for the novel k-coverage problem

PAPER 5:

TITLE: An Automated Fire Suppression Mechanism Controlled using an Arduino

PUBLISHED YEAR: 2018

AUTHOR NAME:R.I. Rashid, S.M. Rafid and A. Azad

DESCRIPTION:

Fire is an undesirable event that could cause a great loss of social wealth, human life, and confidential amenities. To prevent these losses, various extinguishing systems have already been developed, such as sprinkler heads with temperature sensitive valve and temperature sensor-based systems. These systems come with a high chance of delayed sensing and human error that can mislead the sensing and hence the whole system in general.The presented fire suppression mechanism is a self-monitoring system that detects the existence of fire between a specific range of wavelength and suppresses the fire by spreading water flowing via multiple sprinkler-heads. The controlling unit used to manipulate the fire suppression mechanism is an Arduino Uno. The major advantage of this system is its capability to detect fire fast and run water through dedicated pipes using solenoid valve.