

Proposed Solution Document

Team ID	PNT2022TMID01103
Project Name	Emerging Methods for Early Detection of Forest Fires

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Over the last few decades, forest fires are increased due to deforestation and global warming. Many trees and animals in the forest are affected by forest fires. Technology can be efficiently utilized to solve this problem. Forest fire detection is inevitable for forest fire management.
2.	Idea / Solution description	Modern fire protection systems are comprised of three main components — fire detection, alarms and notifications, and suppression, all of which must function together to provide the necessary fire protection for a given building. Designing a fire alarm and notification system requires an integrated approach that includes a comprehensive analysis of the entire fire protection system. This analysis is necessary to gain a thorough understanding of how all the main components of the overall fire protection system will work together. This analysis needs to be conducted before the system is installed.
3.	Novelty / Uniqueness	The novelty of system is real-time monitoring, early prediction, validation through UAV and fire confirmation using image processing. The proposed system presents higher true fire detection rate of about 95-98 percent.
4.	Social Impact / Customer Satisfaction	Timely information about the appearance of fire reduce the number of areas affected by this fire and thereby minimizes the costs of fire extinguishing and the damage caused in the woods. Monitoring of the potential risk areas and an early detection of fire can significantly shorten the reaction time and also reduce the potential damage caused by the forest fire.

5.	Business Model (Revenue Model)	<p>Aspirating smoke detectors continuously sample air to provide early warnings of fire hazards, helping detect threats before they escalate. Some devices provide multi-level warnings and are equipped with wide-ranging sensitivity to identify even the most negligible amounts of smoke, helping to prevent small fires from taking hold and causing widespread damage.</p> <p>Unlike traditional detection technology – which is largely passive, waiting for smoke to reach sensors – aspirating devices are designed to sample and test air near the most likely sources of fires throughout a building. Aspirating smoke devices can be positioned in hard-to-monitor places, such as ceilings, air grilles and openings, or within critical spaces, including operating and patient rooms. Early detection technologies can also draw air from targeted locations back to a central system that continuously monitors for trace amounts of smoke.</p>
6.	Scalability of the Solution	<p>Changes in the use or occupancy of a building can result in compliance issues and a fire alarm system that no longer provides sufficient protection. If future changes are anticipated, fire safety engineers can design a fire alarm system with this in mind, providing a flexible infrastructure that includes the proper wire size and additional circuits distributed in a way that accommodates future growth and change.</p> <p>Perhaps one of the most compelling reasons to design a fire alarm system that goes above and beyond the minimum requirements from the start is the fact that fire codes and other applicable regulations can and do change. And, changes that are made retroactively can trigger potentially very expensive alterations in a fire alarm system. This is also why it is so important to work with highly qualified fire safety engineers who can anticipate coming changes and proactively design your system to meet new requirements.</p>

