**1. Details of Idea**

**1.1 Title of proposed idea/innovation: (1500 characters)**

Fire Fighter Unmanned Aerial Vehicle [FFUAV]

**1.2 Whether the idea involves use of existing intellectual property or not, give brief detail**

**there of: (1500 characters)**

Yes, we are going to implementour project with the existing intellectual property where we are creating a modified version in order to make the UAV efficient. We are going to use a modified UAV (HEXACOPTER) and Ball structure called as Auto Fire Off Ball (AFO).

**1.3 Briefly explain newness/uniqueness of the innovation: (1500 characters)**

We are coming up with the new ideology of a Launcher / Gripper/shooting mechanism that is we going to launch / drop / shoot the AFO ball at the desired fire captured region, with the help of HEXACOPTER and camera and some necessary tools. It is also used as multi-purpose functioning drone (UAV). kind of for transporting food & medicine in militant camp / war fields.

**1.4 Concept & Objective: (1500 characters)**

We are coming up with a hexacopter which help in reducing or preventing the fire attacks in house hold and forest areas. We are introducing a launcher / gripper /shooter mechanism which shoots precisely using a camera module and predicts the fire attacked area. Then it throws a ball like structure which contains chemical substances which has a composition of ammonium phosphate and ammonium sulphate in the ratio of (4:1).

**1.5 Specify the potential areas of application in industry/market in brief: (1500 characters)**

It can be used in areas like,

* Apartments
* Open-area
* Houses
* Companies / Infrastructure

**1.6 Briefly provide the market data for the potential idea/ innovation: (1500 characters)**

* Fires have lead to huge losses of life and property throughout history. Fast access to the fire and instant extinguishing is key to countering fire threats.
* Here are the problems firefighters face in various situations,
* Fires in high buildings/ Infrastructure: Fire fighting vehicles provide water for spraying on high building fires leading to heavy losses.
* Fires in homes: Fire fighters need to manually get into homes and fire emergency areas risking their lives to put out those fires.
* To help in all of the above situations we here propose to design a firefighting drone that can solve all these problems.

**1.7 Current Development Status of innovation: (500 characters)**

We have completed the drone making process, So we have to just resume the launching/gripping /shooting mechanism implementation.

**1.8 Expected time of completion of idea:**

Approximately, one and half months to two months ( 1 ½  months – 2 months)

**1.9 Idea Theme:**

Miscellaneous Sector

**1.10 \*Select Idea Sector:**

|  |  |
| --- | --- |
| **Sector** | **✔ Select** |
| Agriculture, Rivers & Ocean Produce based industries, fertilizers,  Agricultural Implements & Agro processing and any related sub-sector  Healthcare & Life sciences, Medical Devices, Pharmaceuticals, Biotech,  AYUSH and any related sub-sector |  |
| Power, Renewables, Electricals, Power Electronics, Energy Efficiency and  any related sub-sector |  |
| Services, Education, Hospitality, Media, Publishing, Entertainment,  Design, Wellness, Logistics, Sports and any related sub-sector |  |
| Miscellaneous Sector (Environment, Forests, Water & Sanitation; Foods,  Beverages, FMCG, Consumer Goods; Infrastructure, Construction,  Housing; IT, ITES, Electronics, White Goods, Telecommunication; Metals,  Engineering, Machinery, Automation and Transportation, Automotive, E  Vehicles, Railways, Aviation, UAV and any other sub-sector) | **✔** |

**2. Please give name of other students/Entrepreneurs associated with this project/idea, if any**

**(in the periodical order):**

|  |  |
| --- | --- |
| Name | Aadhar No/UdhyogAadhar No |
| KAVIN C | 4898 8010 5185 |
| SANJHIV A | 4066 0015 5090 |
| MITHUN N S | 2419 5009 0929 |
| RIMMON S R | 4473 9894 4411 |
| BALASUBRAMANIAN SENTHILVEL | 7189 1109 4519 |
| ABINESH P | 2324 1655 2044 |

**3. Summary of the idea. This is the section reviewers read to understand the technical**

**solution. Please state the solution clearly. Reviewers may ask: What is the actual technical**

**advancement or improvement provided by this solution? (750 characters)**

We are coming up with the new ideology of a Launcher / Gripper/shooting mechanism that is we going to launch / drop / shoot the AFO ball at the desired fire captured region, with the help of HEXACOPTER and camera and some necessary tools. It is also used as multi-purpose functioning drone (UAV). kind of for transporting food & medicine in militant camp / war fields.

**4. (a) Is it a new concept? No**

\*Yes \*No

**(b) Prior art on the concept, if any (300 characters)**

There are already so many project related to this concept we are modifying the extinguishing mechanism with help of water and Co2 gas .

**5. Main Problem being addressed in the Project (Every solution targets a certain problem.**

**Please use this section to highlight the specific problem the solution addresses. This section**

**can be as short or as long as needed to describe the precise problem the solution addresses)**

**(500 characters)**

There is a need to design drones and robots that can solve some of the pressing challenges of India such as handling medical emergencies, search and rescue operations, etc.

**6. Background for getting the idea?**

* To reduce the financial damage occurred due to the fire accident.
* Human life saver (reducing the injuries taken by fire fighters)
* Implementation of new methodology with low cost .

**a. Who is it for? (300 characters)**

Fire department and public

**b. What will it do? (300 characters)**

Extinguishes the fire.

**c. Any unique features? Explain? (300 characters)**

* Using AFO 147 mm Fire Extinguisher Ball, Capacity: 1.3KG – 3 kg .
* The Fire Ball can be used for active or passive fire mitigation and prevention. Actively, the user can throw the ball toward flames, engaging the release of fire suppression material.
* Launcher / gripper / shooting mechanism.

**7. How simple or complex will the idea’s execution or implementation be? What are the**

**risk factors involved in executing the idea? (200 characters)**

It is a simple and compact methodology, It cannot be used in large scale.

example, forest fire because it needs more number of UAV to cover the fire captured region.

**8. How soon could the idea be put into operation? (TRL of prototype) (300 characters)**

One year

**9. How much investment would you need for prototyping of the Idea? (200 characters)**

Rs.70,000 – 80,000

**10. (a) How do you intend to protect your idea (i.e. your intellectual property or IP)? Status**

**of IPR (If any) (300 characters)**

We have planned to protect our idea by filing for a patent to safeguard the unique aspects

of the technology and its applications

**b) Related Background. This section is used to highlight information that can be used by**

**the reviewers or patent attorney to help put the solution in proper context. You can think of**

**this section as something similar to the introduction section of an academic publication.**

**This section is specifically reserved for other people’s work (please include competitive**

**work) as well as your past work that you believe will aid the reviewers in understanding the**

**technical landscape. Data related to or supporting your solution should not be in this**

**section, it should be in Section III: “How is this Solution Made and Used.” (500 characters)**

* Fires have lead to huge losses of life and property throughout history. Fast access to the fire and instant extinguishing is key to countering fire threats.
* Here are the problems firefighters face in various situations,
* Fires in high buildings: Fire fighting vehicles provide water for spraying on high building fires leading to heavy losses.
* Fires in homes: Fire fighters need to manually get into homes and fire emergency areas risking their lives to put out those fires.
* To help in all of the above situations we here propose to design a fire fighting drone that can solve all these problems. The drone allows for easy fire extinguishing without risking life. Also it can access forest areas in an instant which would require hours for fire trucks or humans to arrive at and instantly reach high building windows with fire extinguisher.
* Our drone makes use of casing PVC balls with dry chemical agents**(MONO AMMONIUM PHOSPHATE**) for extinguishing the fire instantly with a small blast. The system makes use of drones to deliver the fire extinguisher balls into the fire. On coming in contact with fire the balls explode with fire extinguishers to put out the fire.

**11. How is this project made and used: Please describe in as much detail as possible how**

**the innovation is implemented. This includes details on how you actually make, assemble,**

**synthesize, or build the solution and details on how the solution is used once it is made.**

**Reviewers will ask: How does the technical innovation actually work – or – what is the**

**detailed process to achieve the technical innovation? Please help convince the reviewers**

**with supporting statements using as much of the following that is available: your thoughts,**

**logic, supporting literature, and/or experiments. (500 characters)**

* AFO (AUTO FIRE OFF) Plastic Fire Extinguisher Ball (Standard, Orange) .
* The outer layer of the ball is made of pent form of 11mm thick shield by polyvinyl chloride film. It contains Non-Toxic Mono Ammonium Phosphate fire extinguishing agent that make its highly effective against different fire types.
* What is the range of the fire extinguisher ball?
* AFO 147 mm Fire Extinguisher Ball, Capacity: 1.3KG.
* The Fire Ball can be used for active or passive fire mitigation and prevention. Actively, the user can throw the ball toward flames, engaging the release of fire suppression material.

**Materials required:**

* Brushless Motors
* Drone Camera
* Propellers
* Servo Motor
* Drone Frame
* Drone Controller
* Transmitter
* Remote
* Drone Receivers
* Gripper Arms
* Gripper Base Frame
* Supporting Frame Fire Extinguisher Ball (AFO) Landing GearsMounts and JointsScrews and Bolts

**12. Images of Block diagram/ flow chart/ Circuit Diagram/Pictures**

