

Research Article

Autonomous Fire-Retardant Vehicle (AFRV)

Phung Zhen Xuan¹, and Isaac Mak Min Tze²

¹ Sekolah Menengah Kebangsaan Seafield; m-11176534@moe-dl.edu.my;  0009-0001-5864-93852

² Sekolah Menengah Kebangsaan Seafield; isaacmak.mt@gmail.com ;  ORCID ID 0009-0000-6537-9734

Abstract: Solving the problem related to forest fires spreading because of inadequate water supplies, inability to access highly flammable and inaccessible locations. Solving the problem by using an autonomous mobile fire-retardant vehicle that uses fire quenching particulates like salt to deprive fires of oxygen that fuels the combustion of fire.

Keywords: Autonomous; fire; vehicle.



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1. INTRODUCTION

When you think about Malaysia what is the first thing that comes to your mind, is it the food or the magnificent locations, but unfortunately the most common answer is the yearly occurrence of haze which suspends all activities and our economy for a period. But why does it happen? well, it's all because of forest fires. every year, there always seems to be a disastrous forest fire rampaging through forests. a few years ago, bush fires in Australia almost wiped out 13 million hectares of land and the amazon rainforest was hit by forest fires which wiped out more than 85 million hectares of land. It took months to extinguish the fires, which was extremely expensive for the government. our innovation is to put an end to this.

2. METHOD & MATERIAL

Our innovation, the AFRV, is a small car which will be planted into the forest its tires are inspired from monster trucks which allow the vehicle to traverse through bumpy terrains and climb up small ledges. it is equipped with heat sensors which help the vehicle to detect fires the vehicle drives towards the fire and a cover under the bottle is opened to release the salt and a fan will activate to blow the salt on to the fire. it has small cameras inputted inside of it to survey the area and for the firefighters to see. on any occasion which the AFRV encounters a dangerous situation, it will quickly flee the area. for much more serious situations, it will send a signal to the firefighters indicating it has broken down.

3. FINDINGS

How does the AFRV extinguish the fires? The AFRV works by blowing a powder like substance such as salt or sand towards a fire when it is detected. for our model, we are using salt but how does

salt put out fires? First, we must understand the fire triangle. It requires heat, fuel, and oxygen if any one of these three is removed the fire will be extinguished so when salt is blown on a fire it will displace the oxygen thus putting out the fire.

4. DISCUSSION

Forest fires have become a bit of an issue lately. There have been quite a few forest fires in the past few years which will cost governments thousands of millions of dollars just to put them out. Well, our innovation can put an end to that. Not only is it reliable, but it is also very cheap to implement as they can reach the area quickly and prevent the fire from spreading any further.

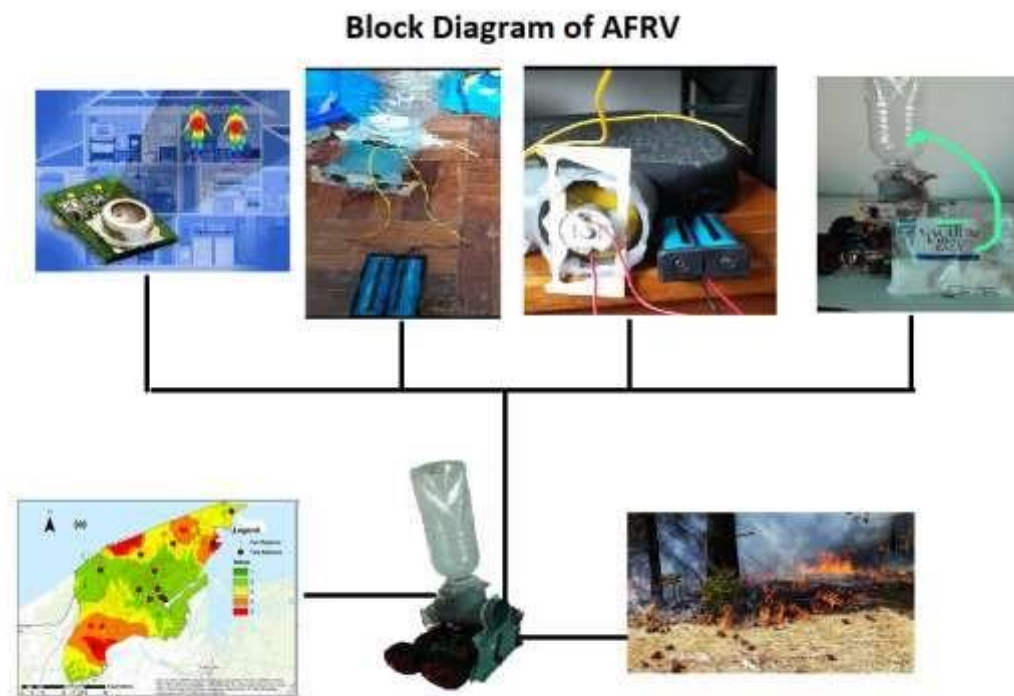


Figure 1. Block Diagram of Autonomous Fire-Retardant Vehicle

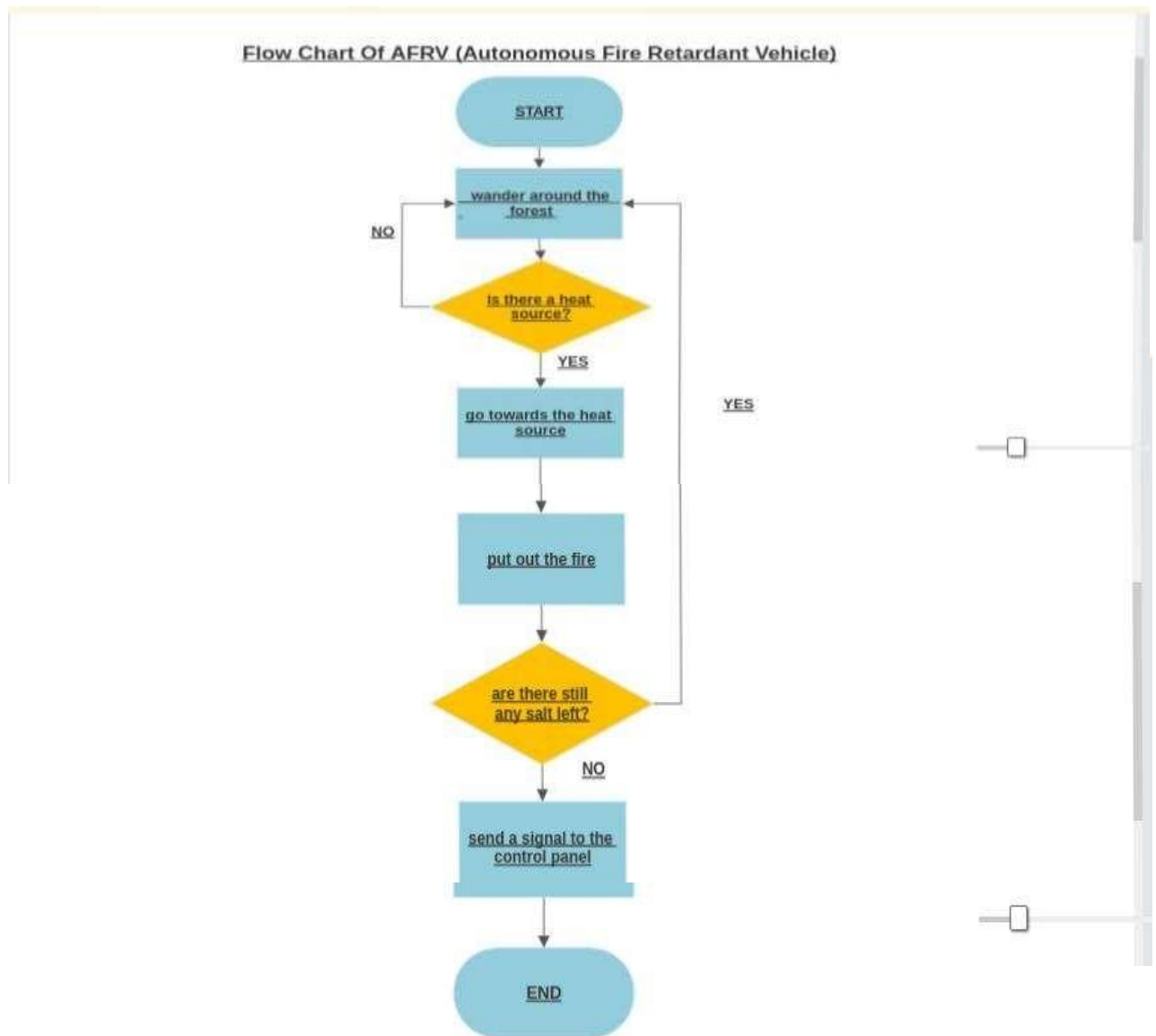


Figure 2. Flow Chart of Autonomous Fire-Retardant Vehicle (AFRV)

5. CONCLUSION

Forest fires can be devastating but if preventive measures are taken, we could possibly save many other forests from burning down into crisps and ashes. We can also preserve many forests if forest fires are prevented as early as possible. AFRV facilitates these preventive actions.

Reference

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