Sustainability Report

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Abstract:

Sustainability plays a major role whenever a product is being created. It is important to know what resources are being utilized in the final product and what kind of impact that has on the world. The impacts of a product spans to a multitude of different facets such as environmental, economical, social, and political concerns.

Introduction:

Sustainability plays a huge role in the design of a fire fighting drone. It is important that the drone is able to follow all of these standards to ensure that production leaves a positive footprint on the world. The fire fighting drone will have an environmental impact , with its material use and the ability to reduce, reuse, and recycle. The energy use plays a big role in sustainability with either how much it utilizes and how it is disposed of. Societal impact would be how it interacts with people around them, such as safety issues or health issues. There is also an economic impact with the money saved or money spent.

Environmental Impact

Most of the issues presented that would impact the environment would be the material use and its disposal. There are a myriad of materials being used on the drone. Some of the more common materials used on the drone are different types of metals. The metals are zinc, copper, fiberglass, and ferrite. Other materials used are PLA filament, wood, plastics, rubber, and latex. The copper is found in the soldered components and pcb's. Zinc is mostly used in the frame of the drone and in order to process the material, it does have negative effects. The processing impacts water, soil, and crops and extended durations of it negatively affects humans. Copper is another material with a similar footprint to zinc. Copper is relatively easy to recycle with little negative impact on the environment. If the project was to continue and turn into a final sellable product, we would move into Carbon Fiber REinforced Composite. Carbon fiber is a strong and lightweight material that is easily recyclable through methods such as chemical, mechanical and thermal.

Energy use

In order to power the UAV. 4s LIPO battery will be used as the main power source. A LIPO battery is a lithium polymer battery used for its high current capacity and watt hour. A lipo battery is a reharble source of energy which allows for multiple uses before needing to be disposed of. The main issue with this type of battery is the difficulty of disposal. If they are not properly disposed of they will take 100 years to degrade. For future projects we would opt to use solar powered batteries. Ths

Pollution Issues:

The pollution issues that will stem from the drone will be whatever debris that might be left over after a mission. Currently after a mission is complete there will be balloon debris left over. The latex in the balloon could take up to four years to degrade, which can harm the local wildlife. The lithium polymer batteries also add to the pollutiom issues. These

Conclusion:

If none of the code of ethics were violated, the innocent men that were killed in the missile explosion as well as the people involved in the Challenger space rocket catastrophe would have lived to see another day. These cases show the importance of abiding by these codes and the reasons why they are put in place. In each case, there was pressure to complete the given task to meet a certain deadline in time and this led to the managers being careless and negligent. Whether it is pressure or not, nothing should lead to negligence. As an engineer, you must follow the code of ethics and ensure that the safety and wellbeing of the workers and the public are being considered first and foremost. More problems will be caused by not following these codes and at the end of the day, the deadlines won't be reached, and companies could possibly be faced with lawsuits instead. It is imperative that enough data is collected, and simulations run to ensure that a task will be completed successfully and safely. It is more important to delay development if there is not enough data to prove that the procedure can be done safely. And if an issue is brought up, it should not be ignored. Lastly, even though not everyone is held to the same standard as engineers, as the engineer you must stress that the code of ethics is to be followed and support one another in their findings and knowledge. By following these ethics codes, this is the only way engineers can positively affect the quality of life around the world.