

## Abstract

Portable Safes are slowly becoming popular among people due to their portability feature and the ability to safeguard valuable belongings of people. There are different types of Portable Safes that are available in the world today. However, there are some drawbacks of these Safes. The main disadvantage is that these Safes do not have GPS tracking. Therefore, the owners cannot track down their Safes when they have been lost or stolen. The reliability and safety is another issue since any person could break in to a portable Safe within a short amount of time. These Safes do not have the ability to communicate with the owners at a long distance or detect motion. Therefore, the owners have to carry the Safes with them all the time.

The Portable Intelligent Safe that was undertaken in this project had to be carefully designed and tested to give solutions to the common issues of the existing portable Safes. There are many unique features of the Portable Intelligent Safe that sets it apart from typical portable Safes. GPS tracking, motion sensing, GSM applications are a few of the features. Since the power and energy consumption of each component was essential for the portable application, a power and energy consumption analysis was conducted for each component. The schematic diagrams were created using the Proteus software and the program code was completed using the Arduino IDE.

The AISI 5150 low carbon alloy steel was the material that was selected for the Portable Intelligent Safe to withstand many forces applied from different tools. The cost, manufacturing capabilities, mechanical properties of the materials were considered for selecting the most suitable material for the Safe. The 3D models, drawings and the finite element analysis were done using the SolidWorks software. Minor design changes had to be made for the prototype due to cost and manufacturing difficulties. Although, there were some difficulties in transmitting and receiving radio frequency waves, the prototype performed well overall.

