

Electromagnetic Space Launcher

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Abstract: An electromagnetic space launcher was designed to boost large models. In this project we are trying to develop a strong electromagnetic field to boost a specific package into the space which can be satellite or launcher missile. EML (electromagnetic launcher) was first design by NASA for satellite launch but this project was just on paper as there are also some of the limitations accorded. We are trying to develop a launching pad which can boost a filament in a specific direction with the help of electromagnetic field. With the help of some of the references and the literature review on this paper project can be developed practically so that we can replace the conventional method of space launcher as huge amount of fuel is used. By electromagnetic space launcher; fuel which is used in conventional method can be saved as this is a main intention of this project.

Keywords:

Microcontroller 89S15, Keypad, Control, Switch, LCD, Amplifier, Transistor, BC54725, Buzzer Relay Battery (12V), Bridge Rectifier, Step Down Transformer.

I. Introduction

The basic idea to select our project is, In the conventional method there is a combustion of fuel so there is a lot of wastage of Non-Renewable Resource a very huge amount of fuel is been wasted. In electromagnetic space launch system the electromagnetic force is generated. An external power supply is been provided which provides extra force.

There is a launch pad and railgun which facilitates the launch. This method is used to carry people and payloads into space or to deliver bombs over long distance. It is a onetime setup. The launch pad can be used again to launch any other object. There is a lot of saving of resources the one time setup of the system is a bit expensive but the cost of electromagnetic space launcher is less than conventional launcher. Our system is also password protected, no one can misuse it. So we have setup a manual as well as Automatic setting, a bridge rectifier is connected as that it converts A.C. to D.C. no need of polarity or typical connection. 8051 Microcontroller is used. Because it is very flexible can be easily coded. Hundreds of transistor is mounted on single chip. It is actually a single computer on one chip. There are total forty pins present on 8051 Microcontroller which can be connected according to our convenience.

Capacitor banks are also used as a group of several capacitors of the same rating that are connected in series or parallel with each other to store electrical energy. The resulting bank is then used to correct a factor of Active Power and Reactive Power in an alternating current. Power supply BC547 is mainly used for amplification and switching purposed maximum current gain of relay is on electrically operated switch. Many relays use an electromagnet to mechanically operate a switch.

The information useful for understanding proposed ideas and research about the concept of rocket. Rocket is a vehicle, missile or aircraft which obtains thrust by the reaction to the ejection of fast moving fluid from within a rocket engine. The history of rockets goes back to at least the 13th century, possibly earlier. By the 20th century it included human spaceflight to the Moon, and in the 21st century rockets have enabled Commercial space tourism. Rocket are used for exploring the outer Space and also used for firework and weaponry, as launch vehicles for artificial satellite. In Electromagnetic Energy, we used n number of copper coil to accelerate energy Rocket used for spacecraft propulsion as well as terrestrial uses, such as missiles.

II. Literature Surveys

The idea of using Electromagnetic Space Launcher is not a new concept. It has been used at numerous ways worldwide. Various technological advancements have been proposed in several citations. The Principle of Electromagnetic launcher is conducting an electric current when subjected to magnetic field.

“Magnetic space Launcher”, Alexander Bolonkin And M krimker, from this paper we are taking the timing and the launching tube concept and used in our project. It State that’s time taken by the project completion is very less. As Hole process take very less time. In this paper they have explained importance of strong nanotubes. So, the apparatus get launched in a particular and proper direction.

“Reducing the Cost of Space Launch”, John C. Mankins, from this paper we have taken the concept of reducing the cost of space launcher. As per the concept the main objective of the Electromagnetic Space launcher is affordable and reliable launching and also reduce the cost of hardware and the cost of launching operation and increase reusability. “ELECTROMAGNETIC ROCKET LAUNCHER”, Nirmal AS and Romanuse R, in this article we have ta ken there concept of uses of electricity as compare to the convention fuel because electricity has generate greater amount of energy. Because, use of electricity energy launching is more efficient. The ratio of payload to mass can be increase and the launching cost is decrease. In this paper challenge faced by Electromagnetic launcher are thermal effect, air drag, high gravitational attack.

III. System Descriptions

BLOCK DIAGRAM

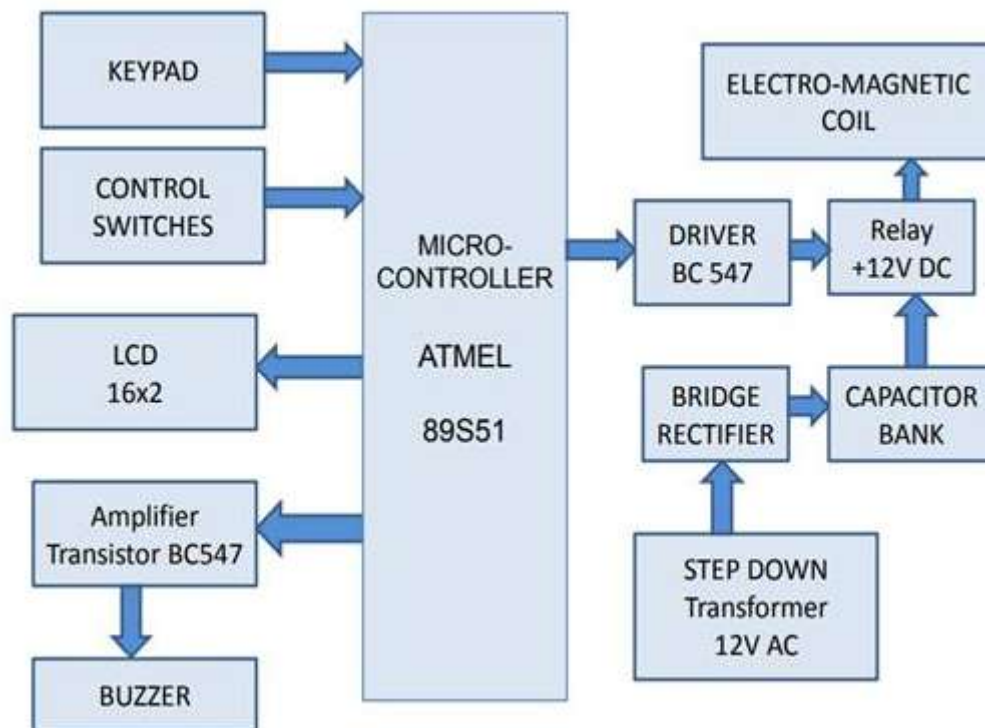


Fig.3 Block Diagram of EMSL

A power supply of 12v is been given. The power should not be more than 15v. A On/Off switch is also present. Switch On the circuit. A bridge rectifier is used so no polarity specific to be connected. The whole system is password protected. So first we have to provide the set password. The set password is entered with the help of keypad. There are two modes auto mode and manual mode. In manual mode we can set the timing of our choice. And press the start button. In auto mode timings are predefined so we just need to select the timings and the launching would take place accordingly.

IV. Proposed Methodology

The Proposed Methodology of the project is briefly explained below;

1. Initially, circuit diagram of the proposed system will be Design and finalize.
2. All the hardware components will be soldered on their respective printed circuit board with the help of soldering iron, solder and flux accordingly.
3. Code or program of the proposed system will be developed using C Language with the help of software platform (Keil Compiler).
4. The hex code of the program being created by the software platform will be burnt into the code memory of the Microcontroller IC8051.
5. 6. Testing will be done at various levels to finalize the appropriate program for the most proper working of the system.
6. When the power is turned on a message (“Enter the password”) will display on LCD. This whole Project has been password protected so unauthorized person does not access.
7. After the Enter Password it wills we shows on Display Operate Manually or Auto Mode.
8. In Manual Mode User Can Select Any Time of Launching and In Auto Mode Time Will We Fixed.
9. After The Hole Process LCD Display (“Process Star) Enter The Star Button And Press OK After Thus Place The Rocket In Side The Launchers Thus It Lunch After This LED Display Enter The Password To Further start The Process.

V. Expected Results

Here we use Electromagnetic Energy to launch a rocket in a low level manner .The technology for using electromagnetic energy pulses to accelerate materials to extremely high speed is now sufficiently advanced to evaluate the survivability of space structures. In fact, electromagnetic energy is now capable of accelerating objects to travel in sum distance in high level project But we just implement in a low level to check that's it work

In this project we are expecting same result by two types of method one is manual and another is automatic. In manual we first set the timer according to the launch but in automatic timer will set automatically if any error occurs we can hold the process and restart the launching manually or it can also be automatically.

VI. Conclusion

As we know conventional fuel level in the world is decreasing day by day. So, the conventional fuel launching system for space launchers can be replaced by electromagnetic space launchers. This project shows that electromagnetic space launchers can be built by current technology. So, the cost of the space launchers and also the cost of installation can be significantly reduced. This project will be more efficient if many new studies and researches are conducted in this field so that, it will simplifies its construction.

Acknowledgement

We would like to express sincere gratitude to our guide Mrs. Sonam Kandalgaonkar. for taking out time from her busy schedule to provide us help and encourage us to work diligently for our project. We have been utterly benefited from her skills and experience. We are thankful to our college ELEX HOD Mrs. Disha Bhosale and all staff members of electronics department who have provided us with various facilities and guided us whenever we required. We would also like to express gratitude towards our parents and all those who encouraged us to accomplish our work.

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