Electro Magnetic Space Shuttle Launcher
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Abstract— Due to extensive use of natural resources now a days the resources are at brink of extinction. So it is very much fortunate to use different alternatives. The space agency’s too face such problems the fuel required costs a lot in the project. So an alternative is very much the need of time. So for an alternative to the engine fuel our project is related to it. Our project is a small but powerful innovation that can be an alternative to this engine fuel. Our project uses the electromagnetic forces to shoot the space shuttle. By using microcontroller, copper coils, and a supply of about 18volt.

Key words: Magnetic, Space Shuttle

I. INTRODUCTION

Now a days where the natural resources are getting extinct we need to find different alternative for this. As we know FUEL is one of the most important part of human race and the resources which we use are slowly getting extinct to the human race without fuel can come to a halt.

So thinking about this our project is about the electromagnetic force that can be used for the space satellite or the rockets to be launched where presently we are using huge amount of fuel which pollutes the environment as well as high cost for the fuel which adds to the cost of space projects.

So to cut down the cost, nature friendly space launches and also to get a new alternative for fuel we can launch the space projects and rockets, we can use electromagnetic force that we are generating in our project with the help of the copper coil.

The launcher will get launched only when capsule inserted in the projectile shall get magnetised. The microcontroller is programmed in such a way that, it shall display the time required to magnetized each coil, increment & decrement of time on the LCD display.

When fire key is pressed, each of the coil is magnetised one after another such that it will throw i.e it will launch the capsule inserted in the projectile through electromagnetic relays used for magnetizing each coil.

This process is so critical, therefore microcontroller is used for programming the time required for coil to get magnetized and drive the relay circuit.

A. Circuit Description:

The circuit diagram of project. It mainly consists of microcontroller l.c.d display, switches, transistors, relays and electromagnets. Microcontroller is the heart of this project as it drives the lcd display, relay contacting time through transistors. Lcd display is used to display the time set by the programmer to drive the capsule out which can be adjusted by up, down key. Port 1 is connected to up, down and fire button. Port 0 is connected to LCD display and Port 2 is used to drive the electromagnets. The electromagnets are connected in series and given +18v supply and conned to normally open contact of the relay. Electromagnetic relays are used for switching because it can pass the high current through it by means of switching and thus helps in activating each of the coil.

When the fire button is activated i.e. pressed the output is taken from Port 2. The output signal is weak therefore it is given to the transistors. The base is triggered, transistors get ON ,supply flows to ground, electromagnets get magnetized and contacter is closed for the particular time set by the programmer therefore 15-20A current is passed through the coil and the capsule is attracted towards it. As soon as it reaches the 1st coil, it gets demagnetized and 2nd coil is magnetised and the coil attracted towards 1st coil will again come to 2nd coil and son on and thus the velocity is attained by the capsule to get launched.
B. Microcontroller:

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 4K bytes of In-System Programmable Flash memory. The device is manufactured using Atmel’s high-density non-volatile memory technology and is compatible with the industry-standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer.

By combining a versatile 8-bit CPU with In-System Programmable Flash on a monolithic chip, the Atmel AT89S51 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.

The AT89S51 provides the following standard features: 4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, two 16-bit timer/counters, a five vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S51 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes.

The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next external interrupt or hardware reset.

C. Rail Gun Using Copper Coil:

Rail gun is nothing but a hollow pipe. Copper wire will be wounded on this hollow pipe. A small iron rod (projectile) which will illustrate the shuttle will be placed inside the hollow tube and it will be fired by this rail gun. The construction is shown below.

D. Power Supply:

As our project generates a lot of magnetic energy by just using the coils. We need to give a high amount of voltage in order to get a required magnetic field output. So the total amount of voltage we are applying is of about 18v and a total of 3amp.

E. Application:

- It has main application in space technology.
- In military and army.
- In huge nasa projects.
- In places where humans cannot reach.
- It can be used in any terrain except water.
- It can used as a spy robot.

II. CONCLUSION

Electromagnetic space shuttle launcher is a small less powered yet a very powerful project. It actually provides with a alternative to the space technology field with respect to the fuel that is been utilized for the take off.

REFERENCES

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