terminal
sponsored by IEEE
ISSUE 3
JANUARY 2015
Govt. Model Engineering College
Kochi

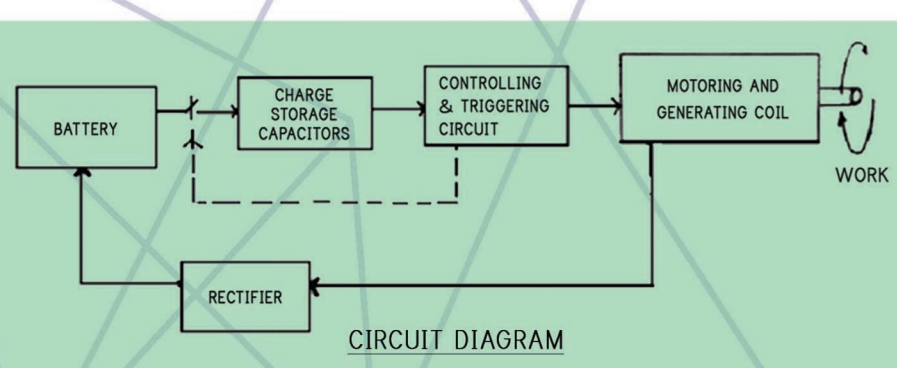
HOW TO BE AN INVENTOR?

- Ejaz Mirzan

Now we are living in a world where, everything near you is changing rapidly. Let's take a look at how many new gadgets that were introduced this year - Sony introduced their glorious 4K screen, LG bought their OLED TVs which is capable of adding vibrant colors to your movies. Samsung, the global electronics products leader, brought curved ultra-thin TV's. It isn't only in the case of television, moving from TV screens to mobile phones, you can see more companies with new products, from the Lumia 535 to the Apple iPhone 6. So as a conclusion we can identify numerous new products introduced in market every year. These products offer new services and much more advanced features.

Now let us take a look at the phones that you used earlier. Most of them were CDMA phones of companies like Reliance, Tata, etc. Then came the Nokia phones, further on to the Samsung java phones and finally now we have the smart phone. May I ask what happened to your old stuff? Answer must be "I don't know where it is", "I exchanged it for a new one" and someone ended up dumping it. I am not going to blame you. I have done this too. But now it's time to wake up, all these years you were trapped in the magical world of marketing.

Have you heard of E-Waste? Electronic Waste. Do you know who is responsible for it? Honestly saying, we are responsible for it. We, the Engineers are meant to be good designers. If you can build a wonderful product from unused things, solve a real life problem, then only society calls you an Engineer. It is not about the marks you got. It is all about how you apply things learned, in a situation. You know, the idea of sixth sense technology came from an old ball based computer mouse. If you look at the history of inventions, sparks for ideas comes from such things. I am not telling you to invent something. If you can use your old PC's SMPS as a power supply, set up a PC from electronic garbage, design a music system using your old speakers, power amplifier, etc. you can build new computing devices of your own. It can be given as a gift to your loved ones. It is easy to gift an electronic gadget to a friend: Go online, order one and get it delivered, but building a simple gadget for that friend will always remain a better option. So start building your own things that ease your life. One day you will end up with a new invention.



CIRCUIT DIAGRAM

SELF RUNNING GENERATOR

Energy is one of the most fundamental parts of our universe. We use energy to do work. Energy lights our cities. Energy powers our vehicles, trains, planes and rockets. The world is facing energy crisis and above all we still follow the conventional way of producing electricity which includes hydel, thermal, nuclear. A Self Running Generator develops clean and eco-friendly energy which is easy to install and maintain when compared to other energy generation methods. The self-running generator was one of the innovative projects undertaken by the students of our college. The device doesn't require any external source for its running and it is extremely cost efficient. Shown in the picture is the prototype for the self-running energy generator which can easily produce about five watts of power. The underlying principle of the device is to the capture the available electromagnetic energy for recycling into the system as stored energy. The method of creating back EMF is the result of coupling/uncoupling a voltage source to and from a coil.

The basic elements in the set up includes :

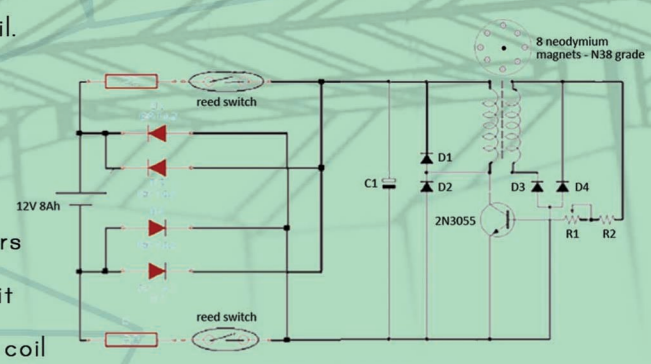
Battery

Charge storage capacitors

Control and trigger circuit

Motoring and generating coil

Rectifiers



CIRCUIT DIAGRAM

A lead acid battery with 12v 8 Ah specification is used as the load. A small amount of charge is taken initially from the battery to compensate the decrease in charge of the capacitor and then onwards it is charged without the help of any external power supply i.e. from generated power itself. The most important part of the project is the motoring and generating coils along with N38 Neodymium magnets (Powerful permanent magnets). Both the coils work together in perfect timing so that motoring coil will consume power from the capacitor during single pulse and when pulse dies off the generating coil generates and the power thus generated is used to charge the battery. After the capacitor is fully charged the circuit runs by the power from the capacitor. Any drop in the charge of capacitor is compensated with the help of generated voltage and battery voltage. Controlling and triggering circuit controls the charging of capacitor and avoids excessive charging. It also produces triggering pulses at the required time for the motoring coil and thus consumes only very small power from capacitor.

This project was undertaken by students of the 2014 EEE batch :- Aravind Devaraj, Deepak Hariharan, Amal M Asok, Anand Viswanath, Amal S Karanchira, along with the guidance and support of their Project Guide Mr. Arunprasad K M.

Feedback: terminal@mec.ac.in