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Wireless Energy System

(Modulation Technique)

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Abstract : Today we are discuss about a wireless energy system whose depend on modulation technique. It's depend different modulation technique, which based on hardware and software. This system can Transmitted the energy with the high range. It is not harmful the human. This system can transmit the high voltage and low current in the atmosphere. It is suitable for the atmosphere. It is not harmful for atmosphere. Modulation is a technique of superimpose the low frequency signal on the high frequency signal. In this case we are super impose the low current at the high voltage , and transmitted on atmosphere using modulation technique. It system have to some different component which necessary for the system, like that source, converter, modulator, transmitting channel, receiver, demodulation circuit, converter, user etc. Some component is necessary to perform the operation like that laptop, arduino, CRO, power supply, multimeter and MOSFET circuit board. MOSFET circuit board switch the low frequency voltage on the high frequency voltage, and output of it input on the coil, Which transmit this high voltage in the atmosphere using the magnetic flux concept. In this operation, we are used the square frequency method its work on 1 and 0. It's that means MOSFET switching process depend on time. MOSFET sometimes is on and sometimes is off. It is means that frequency directly proportional to the time. From this system, we can operate multiple electrical and electronics instrument, using this method. It is not expensive and not harmful for the humans and new generation.

- **Introduction**

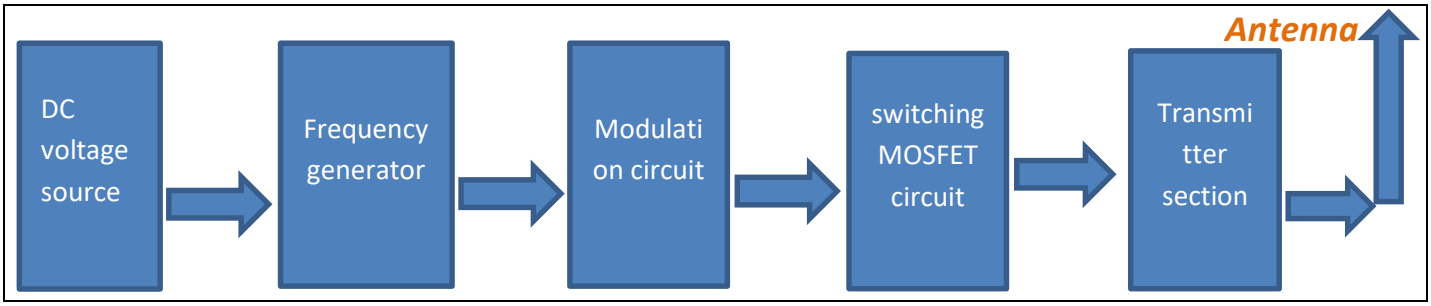
Wireless energy system first time given by Sir Nikola Tesla. It is an electrical project which can transmit the high voltage with the low current. This tutorial we shall design and electronics and electrical combined circuits which operate the wireless energy system and its transmit the energy at a long range. We can control this system by the wirelessly electronic system. I am working on this project since 2021. Finally in the year 2023 I have completed it. I had to face many difficulties in completing this project. It took me 2 whole years to make and understand it. I can also use it commercially in its features. This process is based on mobile network. In this we can cover a long area by dividing the hexagonal area. In this hexagonal area, we can transmit energy without any loss. In this process, we will lay the wire in the hexagonal shape under the ground. By using this project, future accidents due to electric poles can be reduced. Every year many people get injured by these electric poles and pulled wires. In many forests, due to these lines, fire starts, due to which the entire forest is destroyed. We will discuss further about its benefits. First we see about how to design this project and we see about its planning.

- **PROJECR PLANNING**

In the planning of the project, first of all we will see its block diagram. Through the block diagram, we will understand main components, which we will use in designing this system. Block diagram is the main component of any project. Through which we can understand about the components used in it. And its practical image which you can understand in your mind. Block diagram makes it easy to design a project. And its design also becomes easy which we can easily understand. So we will first look at the block diagram, after that we will talk about the material of the project, which components will be used in the project material and will also see its connection diagram. So first of all let us talk about the source of block diagram. Source is the component from which we will get DC supply. Then on the second number we will talk about the frequency generator which will generate the frequency. At number three we will use the modulation circuit which will generate AC of high voltage and low current by superimposing DC on low frequency. On the third number, we will talk about the transmitter coil which will transmit this voltage

in the air. Here we consider the transmission channel as air because our total energy carrier will be transmitted in the air. Then we will receive it through a receiver which will be far away from the receiver transmitter. Then demodulation of this received energy will be done. After demodulation we will convert it to its real part through transducer and use it on receiver. Through which run some electronic equipment.

- **TRANSMITTER SECTION**



- **DC VOLTAGE SOURCE**

I have designed a transformer as a DC source. Which further puts the 12-0-12 voltage. For this project i have used a high power full ac to dc converter which makes ac to dc. I chose 2X2 core for designing the transformer and I used the following formula for its winding.

Total length of core (L) = Length of core x Width of core

L=2x2 = 4

Timing Formula of Transformer (T) = 7/L ; Formula for designing transformer for 5 to 8 hours operation

Timing Formula of Transformer (T) = 7.5/L ; Formula for designing transformer for 12 to 16 hours operation

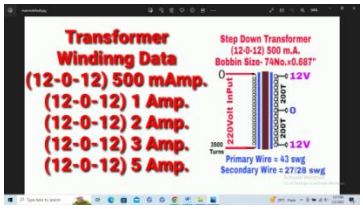
Timing Formula of Transformer (T) = 8/L ; Formula for designing transformer for 20 to 24 hours operation

The power transformer had to be used for 24 hours in the feature, so I have used the formula of 8/L.

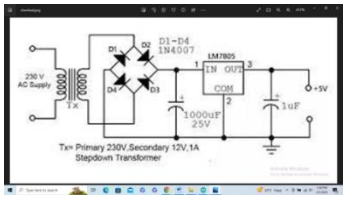
T = 8/4 = 2 Where T is = Voltage per turn

So let us talk about the primary section of the transformer. The main supply of our house is 220 volts. So the turn 2 has come on the timing ratio of our transformer. That is, 2 turns of our transformer will consume 1 volt. Accordingly, if we multiply 2 in 220, then 440 will turn out. So we will wrap 440 tons in the primary section of our transformer and design the primary section.

In the secondary section of transformer we need 12-0-12 i.e. 24 votes. So we multiply the tons per volt of the transformer by 24. So total 48 will be applied and 24 volts will be obtained. We need 2 sections of 5 ampere 24 volt and 14 ampere 24 volt in this transformer so we will use different SWG wire.



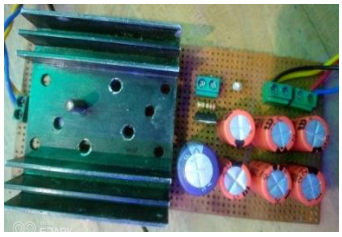
Winding Data Structure of Transformer



circuit diagram of AC to DC Converter

220 TO 12-0-12 TRANSFORMER

5Amp and 14Amp o/p



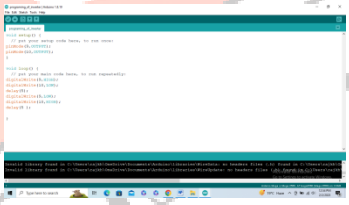
Full wave bridge rectifier

OR A.C to D.C Converter

FREQUVENCY GENRATOR

We will use arduino uno as frequency generator. Which we will program and generate different - different frequencies. And will input into the modulation circuit. Arduino will program the Uno with the arduino software.

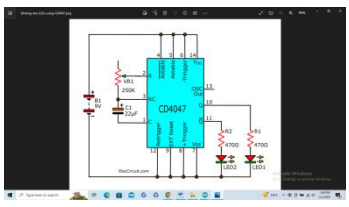
Arduino uno



Arduino Software

- **MODULATION CIRCUIT**

I have used 4047 IC as modulation circuit. Which acts like a (VCO) voltage control oscillator. We can adjust its principle by increasing or decreasing the timing register value. It can generate FREQUENCY from 1 Hz to 1 MHz, it has two output sections. But I have used only one section. whose circuit diagram is shown below.

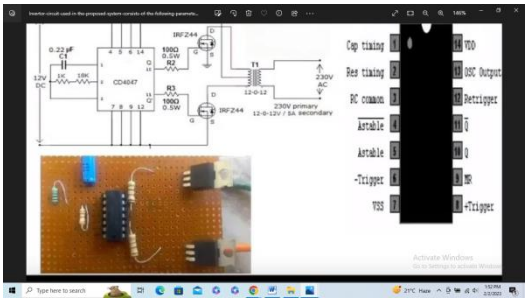


4047 Ic as a frequvency generator

Monostable Frequency Generator

- **SWITCHING MOSFET CIRCUIT**

MOSFET can switch the low frequency and high frequency at the high voltage together. In this way MOSFET does moderation by combining low frequency and high frequency, and sends this output to the transmitter.



MOSFET switching circuit Using 4047 IC

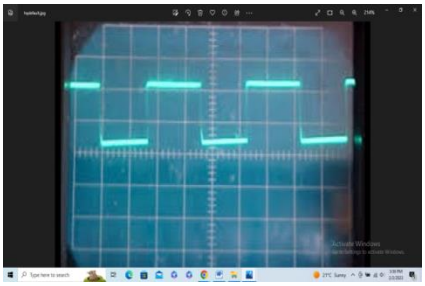
- **TRANSMITTER TOWER**

The transmitter part inputs the output of the switching circuit, and converts it into high voltage and transmits it in the form of caustic energy. It also acts as an antenna, because the antenna transmits caustic energy. This transmit caustic energy is passed through air. Air itself acts as a channel for this.

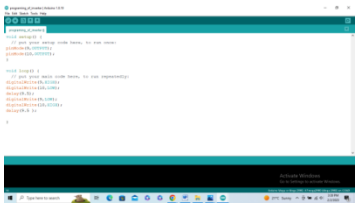
Transmitter antenna

- **FREQVENCY RESPONS AT 55.44Hz AND CARRIER FREQUVENCY 1.084 MHz**

Base band frequency



Output of base band frequency on CRO



Programming of base band frequency 55.44Hz

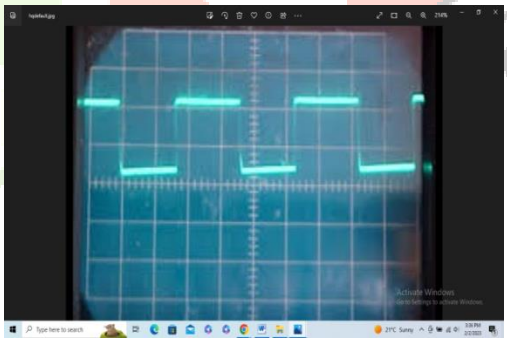
Carrier frequency 1.084MHz

Output Modulating High Voltage

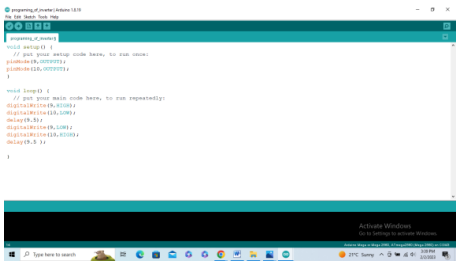
Output AC voltage 2meter

- **FREQVENCY RESPONS AT 55.44Hz AND CARRIER FREQUVENCY 1.967 MHz**

Base band frequency



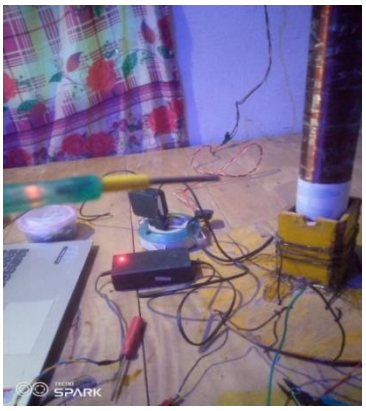
Output of base band frequency on CRO



Programming of base band frequency 55.44Hz

Carrier frequency 1.967MHz

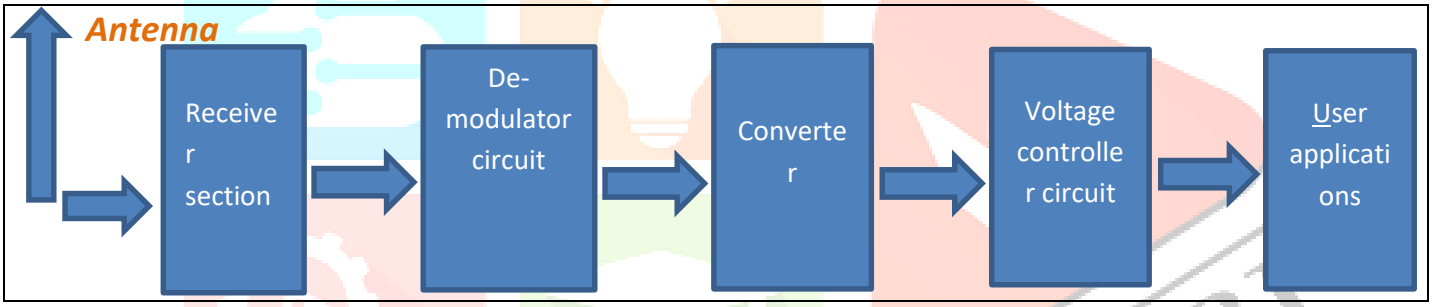
Output Modulating High Voltage



Output AC voltage 2meter

- **RECEIVER SECTION**

In the receiver section, we receive the caustic energy through the antenna. And by demodulating this energy, convert AC to DC. And by controlling this voltage we use home application. This process is parallel to that of the transmitter section, but in reverse where we first receive the signal and do the demodulation. Then install AC to DC converter. After that, by controlling the received output, it is input into the electronic circuit, and it uses home appliances.

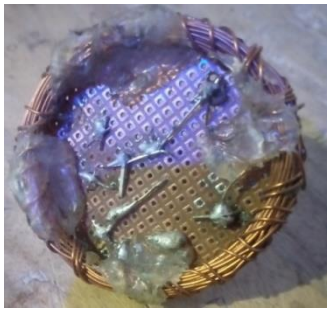


Block diagram of receiver section

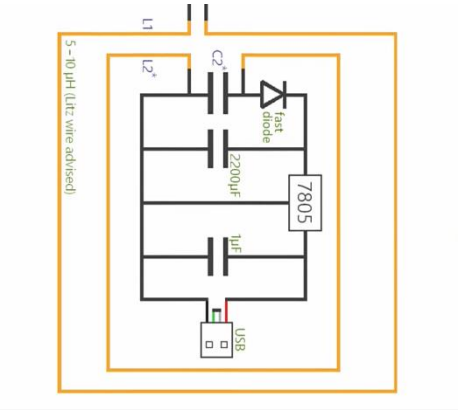
In the receiver section, I have used a caustic energy receiver coil, which receives the caustic energy being transmitted from the transmitter antenna. A filter capacity is attached to this coil as shown in the block diagram. This filter capacity filters the caustic energy and changes it in such a section. The output of the filter is the input to the schottky diode. Schottky diode is a high-frequency diode, which works on fast searching blocks the frequency of acoustic energy. And passes the DC signal. This DC signal is very powerful. Its voltage is very high, so a capital is used to filter it. The DC capacitor which is the output of the DC capacitor is input into the 7805 IC and it steps down the voltage. After stepping down the voltage, a 220 Ohm resistor is used. and it controls that and inputs it into an LED and it glows.

Check the accuracy between transmitter and receiver

Circuit diagram of receiver



Caustic energy receiver antenna coil



Block of receiver for other work

. Power increment of modulating Signal using 2N3055 transistors

Energy was being transmitted over long distances from the wireless energy system. But the power of this energy was very less. So I am using 2N3055 transistor to increase the power of the modulating signal, increase the power as well as increase the input voltage and amperes. I input 24V 9A DC supply in it and get better result on PUR, as in below image we show you circuit of 2N 3055 and output energy.

2N3055 NPN power transistor

Power increment circuit of 2N3055

Output frequency response of modulating signal

Output of wireless energy system after increasing the power of modulating signal

I improved the output response by increasing the power of the modulating signal, so that it can cover a wider range and provide better output.

- **Conclusion-**

  Wireless transmission can also be used at the commercial level. The advantage of this is that future accidents can be prevented, during thunderstorms, electric poles fall on the road and this causes many accidents, and people die. All these accidents can be prevented in future. It costs a lot to pull the transmission line. This process is very expensive. And also takes a lot of time for repairing. Therefore, it will be better to use wireless energy in the coming times, so that in future energy can be transmitted from one place to another completely wirelessly, and this energy can be received and used in all homes through antennas. Go It is completely safe, energy will be fully utilized, it has less resistance, so losses are also less in it. This is a better technology for energy transmission, which can be used in many things and they will get better results. Wireless transmission saves time, saves money, and reduces accidents.

- **Reference-**

1. In this project face the many problems to create this transmitter and receiver section. so it take 2 year complete this project. This is project depend on future technology. In the future this project is use for the electronics and electrical circuit.

2. This projectile does not harm the atmosphere, nor does it ionize the gases in the atmosphere. There is no change in its resistance in the rainy season. This positive phase transmits in the air. We get neutral from the land. In this way the circuit is completed. Neutral is also called reference voltage.

3. It was amazing that I very efficiently transferred and received wireless energy up to 4 meters and was able to design a receiver circuit and receive the energy. By increasing the height of the transmitter tower and by increasing the frequency and power, we can be able to transmit the energy over longer distances. This is a minor project, which I made for demo.

4. Scientifically, it is a very good way to transmit and receive energy, in this we can transmit the signal to a long distance by increasing the power and frequency of the signal.

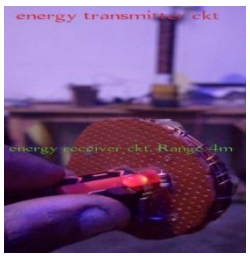
- **Result**

  In virus energy transmission, I got a range of 2 meters by modulating at 1MHz frequency. After that I modulated the signal in it at 2MHz. so i got 3 meter range. The result of this project was very good. It took me 2 years to complete this project.

Output of transmitter section

50mm spark gap

Phase transmission in open channel



Energy receive at long range