

CLOUD CHARGE COLLECTOR-GREEN ENERGY

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Abstract:

“Everything we need, is within the world” to me. The rate of Industrialization is proportional to the thirst for energy. So, what we need ultimately is an “Unlimited Energy source”. Solar, Wind, Hydro, Geothermal are the members of present unlimited energy source family .I have invented a new member to this family, which I call the “Cloud Charge Collector” the C-C-C. Unlimited energy might seem to be an interesting and fictional topic , but its 100% achievable only if it satisfies

$$\text{the below simple formula.} \\ \text{Unlimited Input =Unlimited Output.}$$

Simple isn't it? .So all we need is a never-ending input. For the above mentioned members of the family , they all have an unlimited input source and that's how they are renewable and never-ending.

This paper deals with the modification of a basic lightning Arrestor into an efficient model, which can store/supply the charges from a cloud and costs just Rs.500.

Note:(By storing/supplying, I mean to store/supply the charges from a cloud, not the Lightning itself).

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I. PROBLEM WITH EXISTING LIGHTNING ARRESTORS

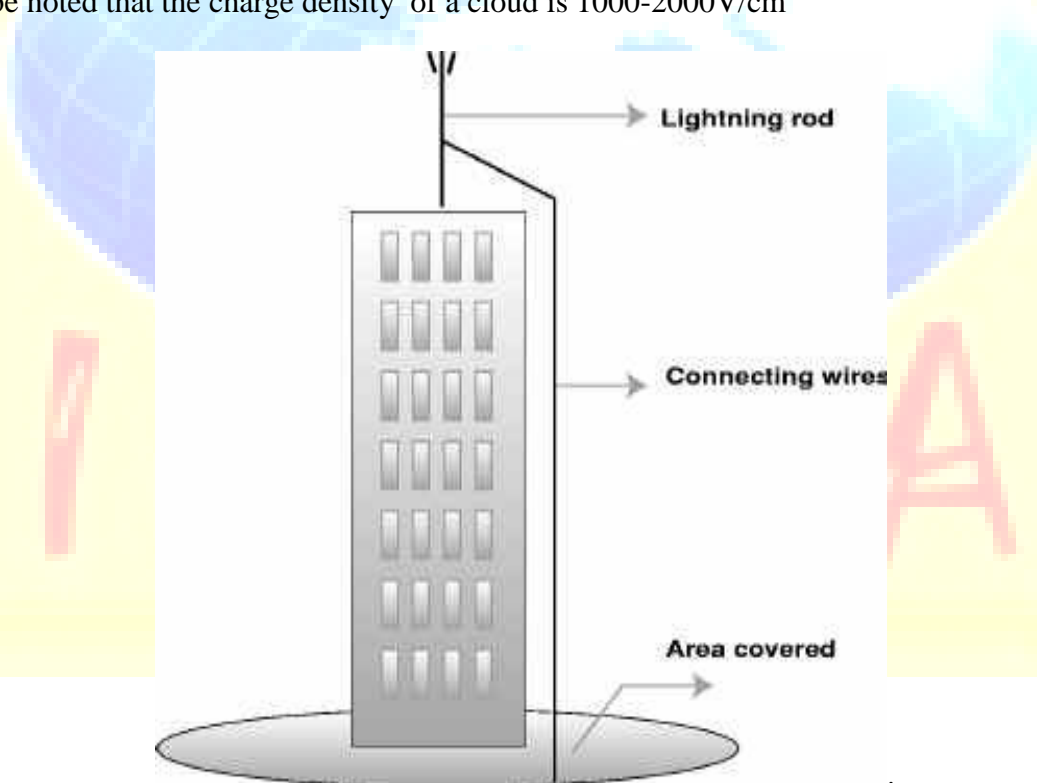
*The major drawback of a Lightning arrestor is that, it removes the electrostatically induced charges to ground.

II. SOLUTION TO THE PROBLEM USING CCC

In a way of overcoming the above stated problem, CCC will store/supply the electrostatically induced charges continuously as long as a cloud passes over the CCC installed building.

III. BRIEF ON EXISTING MODEL

Here is a basic lightning arrestor, it consists of a long thick copper rod ,its lower end is connected to a copper plate and buried deeply into the ground .When a negatively charged cloud passes over the spikes positive charge will be induced on the spikes(electrostatically) which is removed by grounding. When a positively charged cloud passes over, the vice versa happens.By this way the potential of clouds are reduced and the chances of lightning are diminished. It is to be noted that the charge density of a cloud is 1000-2000V/cm



As a cloud passes it ionises the air in its vicinity, the air will act as a dielectric medium. Just as how a capacitor works, the charges from the clouds reach the spikes. It is then removed to ground. These charges which are wasted to ground can be used by the below proposed model.

IV. CLOUD CHARGE COLLECTOR

In a basic Lightning arrestor , at any case, there will be only one kind of charges (either +ve or – ve) induced in the conductor. The requirement of an opposite polarity is the main cause to modification . The opposite polarity is achieved by the same electrostatic induction principle as shown in the picture.

When a negatively charged cloud passes over the spike ,positive charge will be induced on the spike ,this positive charge is conducted through a copper conductor and connected to another spike as shown, in order to ionize the air (dielectric medium) in the vicinity. By placing another spike in the region of ionized air ,negative charge will be electrostatically induced on it .

Now, we have both positive and negative potential terminals by simply connecting a conductor to each of the above two spikes .

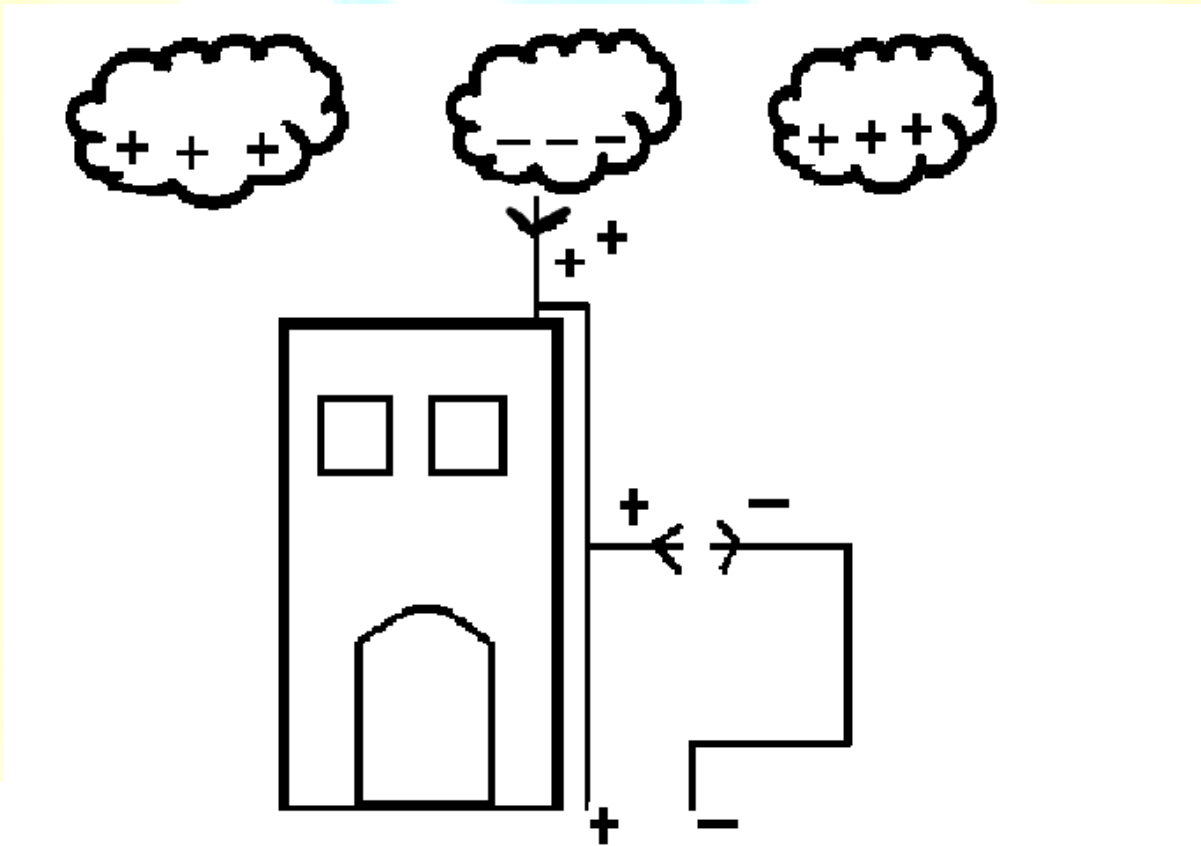


Figure 1: Lightning Arrester

There problem here is, The polarities at the output terminals are not the same always, it keeps changing depending on whether a positive or negative cloud passes over the spike.

Say, we connect a motor to the output terminals, The motor will be running in one direction when a -ve cloud passes over the spike, and in the other direction when a +ve cloud passes.

To avoid this, I tried to maintain the polarities on the output terminal same no matter what type of cloud passes over the spike using **Light Controlled Polarity Switch (LCPS)**. The coordinated work of LCPS and CCC is explained below.

V. WORKING OF LCPS

Light controlled Polarity Switch (LCPS) is a combination of LED, Light controlled relay switch operating on a polarity reversal switch. The change in polarity can be interpreted by the use of LED, We know that an LED is ON only when its Anode is connected to +ve and cathode to -ve terminals, otherwise it is OFF.

When the LED is ON- The Light controlled Relay operates to reverse the polarity using the polarity reversal switch .

When the LED is OFF- The Light Controlled relay doesn't work and the polarities are not reversed.

VI. WORKING OF CCC WHEN A -VE CLOUD PASSES OVER

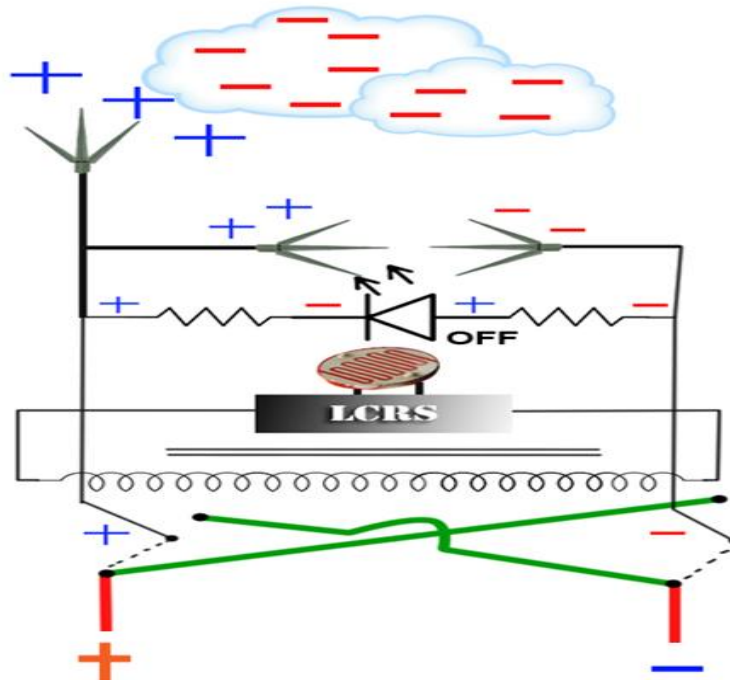


Figure 2: CCC using LCPS (When a -ve Cloud Approaches)

As long as the cloud above the spike is -ve, the LED won't turn on, as it is connected in wrong polarities.

So, the black wires will be in contact with the red wires.

*****The main idea is to obtain the same polarity in output terminals at any time (using polarity switch)*****

VII. WORKING OF CCC WHEN A +VE CLOUD PASSES OVER

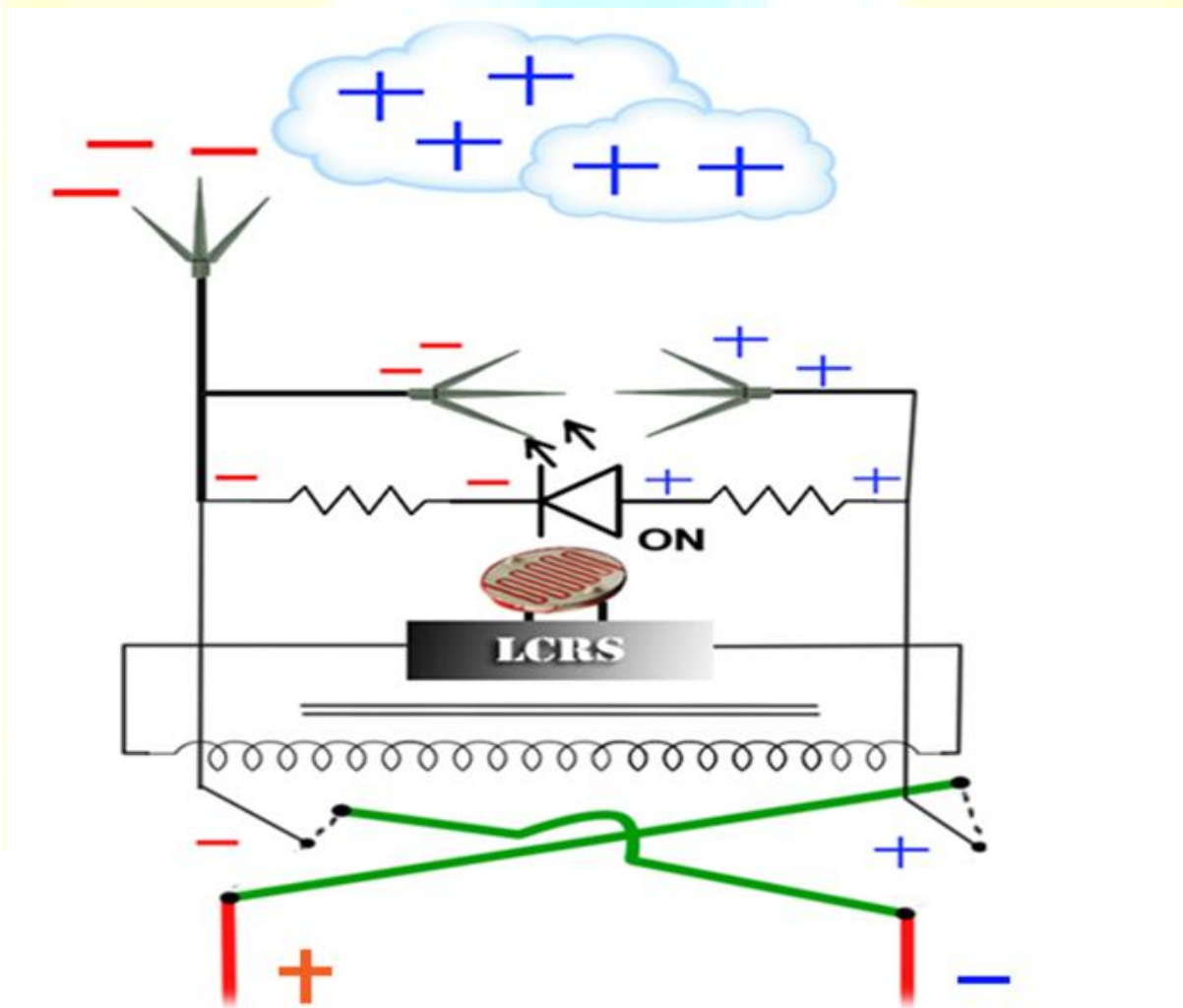


Figure 3 :CCC using LCPS (When a +ve Cloud approaches)

When a +ve charged cloud comes over the spike every polarities in the system gets reversed. Now the LED is connected in correct polarity and it turns ON.

The light from the LED falls on a LDR which triggers the relay to operate the polarity switch.

So, the black wires will be connected to the green wires(which reverses the polarity).

As you can see, the output polarity is the **same** for both +ve and -ve clouds.

VIII.PROTECTION TO THE SYSTEM FROM LIGHTNING

Inorder to protect the system from lightning strike, an humidity sensor tuned to rain indication is used, So that whenever it rains ,the system will be removed from the lightning rod and it acts as a normal lightning arrestor.

IX.MERITS

- It doesnot require a separate tower , it can be used along in a wind turbine or towers or tall buildings.
- Clean(No Pollution problems) and Renewable.
- Serves Dual Purposes, Suppresses the chances of lightning and also collects the charges.
- Compact structure
- Low cost(**The whole setup can be made in just Rs.500**)

X.CONCLUSION

Energy thirst is growing exponentially every year, it is vital to find a new source before we run out of fuels. Cloud Charge Collector will be an helping hand to this state.

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