

# Ceiling Fan into Power Generator

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**Abstract** - This technique is based on the principle of mutual induction. We used power generative assembly which is fitted on the rod of fan for the production of electricity. The electricity generative fan works on the faraday's law of electromagnetic induction. When fan is in working period, by using fan rotation energy rotates the magnets which placed around the copper winding in the power generative assembly. With the help of power generative assembly we produced electricity from the fan in its working period. By using this assembly we produce electricity more effectively and efficiently.

**Index Terms** - permanent magnet, ceiling fan, back EMF.

## 1. INTRODUCTION

World is a storehouse of energy. We all know that energy can neither be created nor be destroyed but can be transformed from one form to another. But we are wasting resources that can produce energy as if they are limitless. If we can renew and Reuse the energy we waste, it would helping some way to the problem of scarcity of energy, which is the major threat of present world. By using the concept of wind turbines Wind-generated electricity can be used for battery charging and for connection with the power grid. Beside every fan there is a tube light by a mechanism inside the fans motor or a belt that rotates and light up the bulb or store the energy in a battery which could be used to power up other machine The energy usage for each building a household are affected by the usage of electrical appliances, such as lighting system, electronic appliances and cooling appliances which carries high electricity consumption. However, the rate of energy electricity consumption is depends on surrounding factor for instance occupant, management, environmental standard, building design and construction, mechanical and electrical equipment and climate Fan is used for cooling purpose. Fan is make need of humans, in every house of India we see the fan. In all season of year, we need fan. We know

the function of fan which used electricity and give air for the cooling purpose. For this fan used electrical power. But at the time of electricity cut off we are not able to use fan and in Indian percentage of load shedding is high. So, there is no solution to use fan in load shedding period without buying the generator or inverter. The main object of the Power Fan is to give a way to use fan at the time of load shedding. For that we transform the fan into the generator. The main aim of this fan is produced electricity at the time of its working period and stored into battery. This stored power is used in the load shedding period. The Power Fan works on the principle of generator. It works on the faraday's law of electromagnetic induction. The law is state that, when an electrical conductor placed in the strong magnetic field and when the magnetic lines of force cuts the conductor then EMF is induced on the surface of the conductor. I assemble the copper winding on the shaft of the fan which is connected to the ceiling. This copper winding is act as a conductor. The copper winding is place in the circular way and around which strong magnets are place in circular way as like winding. These strong magnets are connected to the rotating disc of the fan (the disc to which blades of the fan are connected). As this disc is rotates magnets also rotates and rotating magnetic field (RMF) is produce. This RMF cuts the copper winding and EMF is induced on the surface of conductor by the principle of induction.

## 2. CONSTRUCTION AND WORKING

We used the assembly as a generator which is mounted on the rod of the fan. We used copper because copper is weakly magnetic. Copper is not affected by magnetic field. Placed or assemble this copper winding on rod of the fan (the rod or shaft which connect the fan to the ceiling). This rod is made from the nonmagnetic & non conducting material. Around this copper winding strong magnets are place in

circular way. The assemble in such a way that all magnets surround the copper winding. The air gap between the set of magnet and winding is very small in few mm. This set of strong magnets are fitted to the rotating disc with the help of thin rods and nuts & bold. This rotating disc is connected to the shaft of motor of the fan to which blades of fan also connected



As per the construction copper winding is placed on the fan rod which tie fan to the ceiling. Around the copper winding strong magnets are place and this set of magnets fitted to the rotating disc. As electrical supply given to the fan motor the shaft of motor is rotating and this shaft is connected to the rotating disc along with fan blades and small, thin rods which are fitted to the disc by nut and bolds. These rods connect the circular magnet set and disc (the disc connected to the shaft). When disc is rotates the set of magnets is also rotates around the copper winding. Due to the rotation of magnets the rotating magnetic field is produced. This RMF cuts the stationary copper winding. There is interaction between the copper winding and RMF take place and due the mutual induction EMF is generated on the copper winding. In this way we can generate electrical power by fan. The generated EMF is carry by wires and stored into the battery. The EMF generated by the assembly fitted on the rod of fan is necessary to stored. For this we used any type of rechargeable battery (we used lead -acid battery because of its long-life period). The current generated by motor is alternating current. We only store the dc current. For the conversion of ac to dc we used rectifier. Rectifier convert alternating current (A.C.) into the direct current (D.C.). Also need an inverter to convert store dc into ac. Because all home appliances are works only on ac.

### 3. ADVANTAGES AND APPLICATION

Advantages of this project

Advantages:

1. We produced electricity from fan.
2. Simple in construction.
3. The cost of manufacturing is cheap.
4. Not much affect the speed of fan, because copper winding is less magnetized.
5. Do not affect the main work of fan, means give air for cooling.

Applications:

- 1) Colleges, hospitals, hostels are equipped with at least 50fans where this energy generating mechanism may be used to light up the tube lights or charge a battery and power up other devices like computers, laptops etc.
- 2) In order to charge cell phone we need a mobile charging circuit which would give the appropriate voltage and current required for charging the mobile and will be helpful to middle class people to save energy and money

### 4. ACKNOWLEDGMENTS

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