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POWER SAVING IN ELECTRICAL FAN

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ABSTRACT :

In electrical fan incase of power shutdown time it will run by means of stored energy when fan running. By this we can reduce the use of UPS for fans and lights. This stored energy can stand upto 10 hours it can also the used for tubelights. A common people can't able to afford a lot off money for UPS.this project probably help them to save their money. Home appliances are the basic needs of the common man if the appliances can work on their own stored energy, no external devices is needed Direct current electricity production continued in the form of small-scale, stand-alone systems until the 1930's when the first large scale AC turbine was constructed in the USA. If we can renew and Reuse the energy from waste, it would help in saves the resources. By using the concept of wind turbines, we know the Wind-generated electricity can be used for battery charging and for connection along the power grid. Similarly, this technique is used in every moving systems like those that wheels rotate of car, motorbike, etc. These energy used for headlights, starter purpose & we can a drive car by this electric power

Keywords: Power saving , Electricity & UPS

1.INTRODUCTION

A ceiling fan is a device suspended from the ceiling of a room, with hub-mounted rotating blades that circulate the air, thereby producing a cooling or destratification effect. Most ceiling fans have an electrical switch that allows one to reverse the direction of rotation of the blades. In the summer, the direction of rotation of the blades is set to blow air downward, so that the breeze created evaporates sweat on a person's skin and the person experiences a cooling effect. In the winter, the direction of rotation of the blades is reversed, so that cooler air (which normally sinks to the floor) is drawn upward, and warmer air that is near the ceiling is made to circulate downward. In this manner, a ceiling fan can be useful during both hot and cold seasons. As we have seen before, the ceiling fan does not work when there is no electricity. According to my invention, our fan is working 10 hours when the power is shutdown. Fans can also potentially avoid the use of air conditioning during "swing" seasons. Although studies commonly suggest to increase in the thermostat set point, data from 386 surveyed Central Florida households suggests that although fans are used an average of 13.4 hours per day, no statistically valid difference can be observed in thermostat settings between households using fans and those without them.

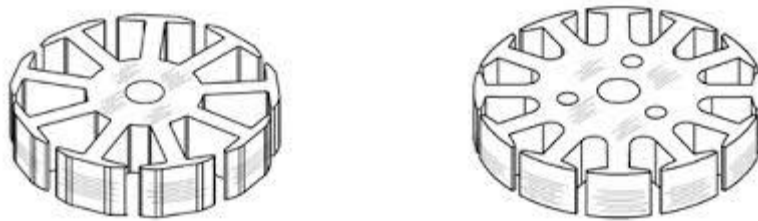
2.Components and Discription

2.1 Shaft

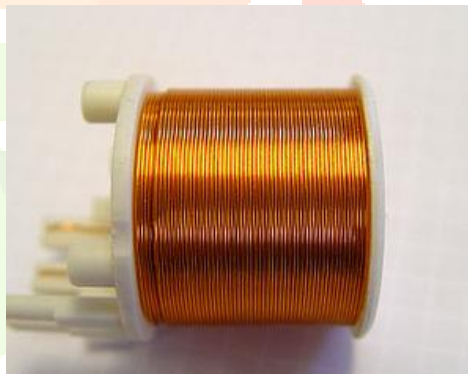


A shaft is a rotating machine element, usually circular in cross section, which is used to transmit power from one part to another, or from a machine which produces power to a machine which absorbs power.

2.2 Steel plate



3.3 Copper coil



Intrauterine device (IUD) with copper also known as intrauterine coil, is a type of intrauterine device which contains copper. It is used for birth control and emergency contraception within five days of unprotected sex. It is one of the most effective forms of birth control with a one-year failure rate around 0.7%

3.4 Neodymium magnet



A neodymium magnet (also known as NdFeB, NIB or Neo magnet) is the most widely used type of rare-earth magnet. It is a permanent magnet made from an alloy of neodymium, iron, and boron to form the $\text{Nd}_2\text{Fe}_{14}\text{B}$ tetragonal crystalline structure.

3.5 Bearings

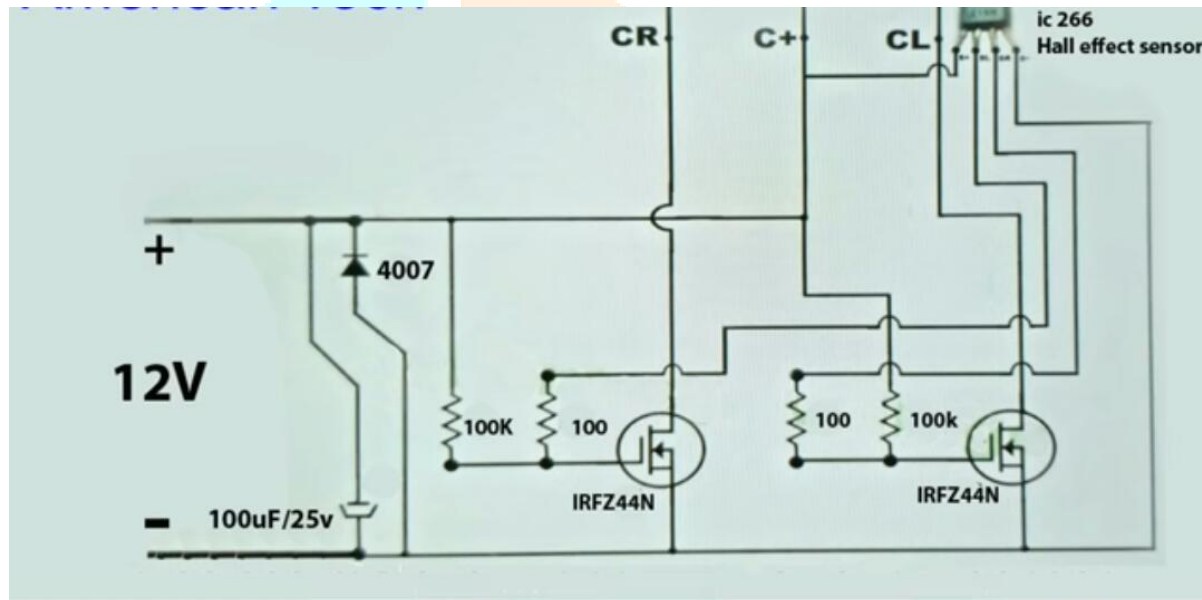


The most crucial components of every fan are its bearing and shaft, at which the fan blade is attached. The bearing is a stationary cylinder inside which the shaft rotates. Bearings in ceiling fans are pre-lubricated when they're installed.

3.6 Wings

The wings generate most of the lift to hold the plane in the air. To generate lift, the airplane must be pushed through the air. The air resists the motion in the form of aerodynamic drag. Modern airliners use winglets on the tips of the wings to reduce drag.

4.Circuit Diagram



The basic working principle for the brushed DC motor and for brushless DC motor are same i.e. internal shaft position feedback. ... In BLDC permanent magnets are attached in the rotor and move the electromagnets to the stator. The high power transistors are used to activate electromagnets for the shaft turns. Brushless DC Motors or BLDC Motors have become a significant contributor of the modern drive technology. Their rapid gain in popularity has seen an increasing range of applications in the fields of Consumer Appliances, Automotive Industry, Industrial Automation, Chemical and Medical, Aerospace and Instrumentation. Even though they have been used for drives and power generation for a long time, the sub kilowatt range, which has been dominated by Brushed DC Motors, has always been a grey area. But the modern power electronics and microprocessor technology has allowed the small Brushless DC Motors to thrive, both in terms price and performance.

4.1 LITHIUM ION BATTERY



Li-ion is a low-maintenance battery, an advantage many other chemistries cannot claim. The battery has no memory and does not need exercising to keep in shape. Self-discharge is less than half compared to nickel-based systems. This makes **Li-ion** well suited for fuel gauge applications

4.2 Capacitor:



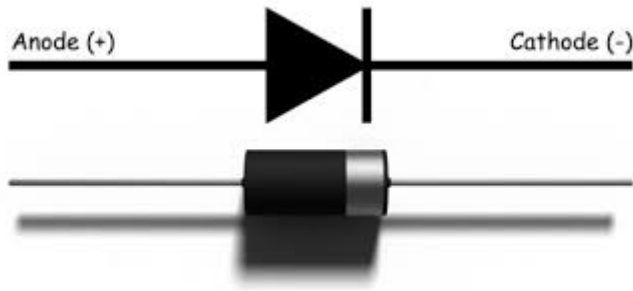
All electrolytic capacitors(e-caps) are polarized capacitors whose anode electrode (+) are made of a special metal on which an insulating oxide layer originates by anodization (forming), which acts as the dielectric of the electrolytic capacitor. Features of 100uf/25v electrolytic capacitor: type: electrolytic.

4.3 MOSFET



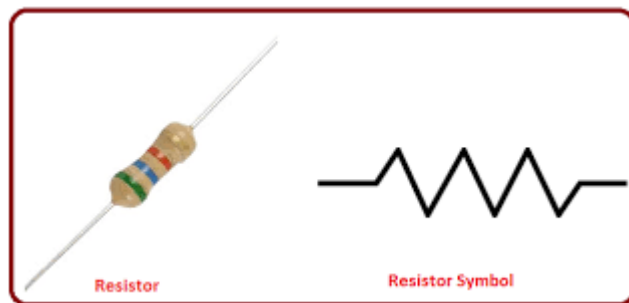
The IRFZ44N is a N-channel MOSFET with a high drain current of 49A and low R_{ds} value of 17.5 m Ω . It also has a low threshold voltage of 4V at which the MOSFET will start conducting. Hence it is commonly used with microcontrollers to drive with 5V.

4.4 Diode



A diode is a semiconductor device that essentially acts as a one-way switch for current. It allows current to flow easily in one direction, but severely restricts current from flowing in the opposite direction.

4.5 Resistor



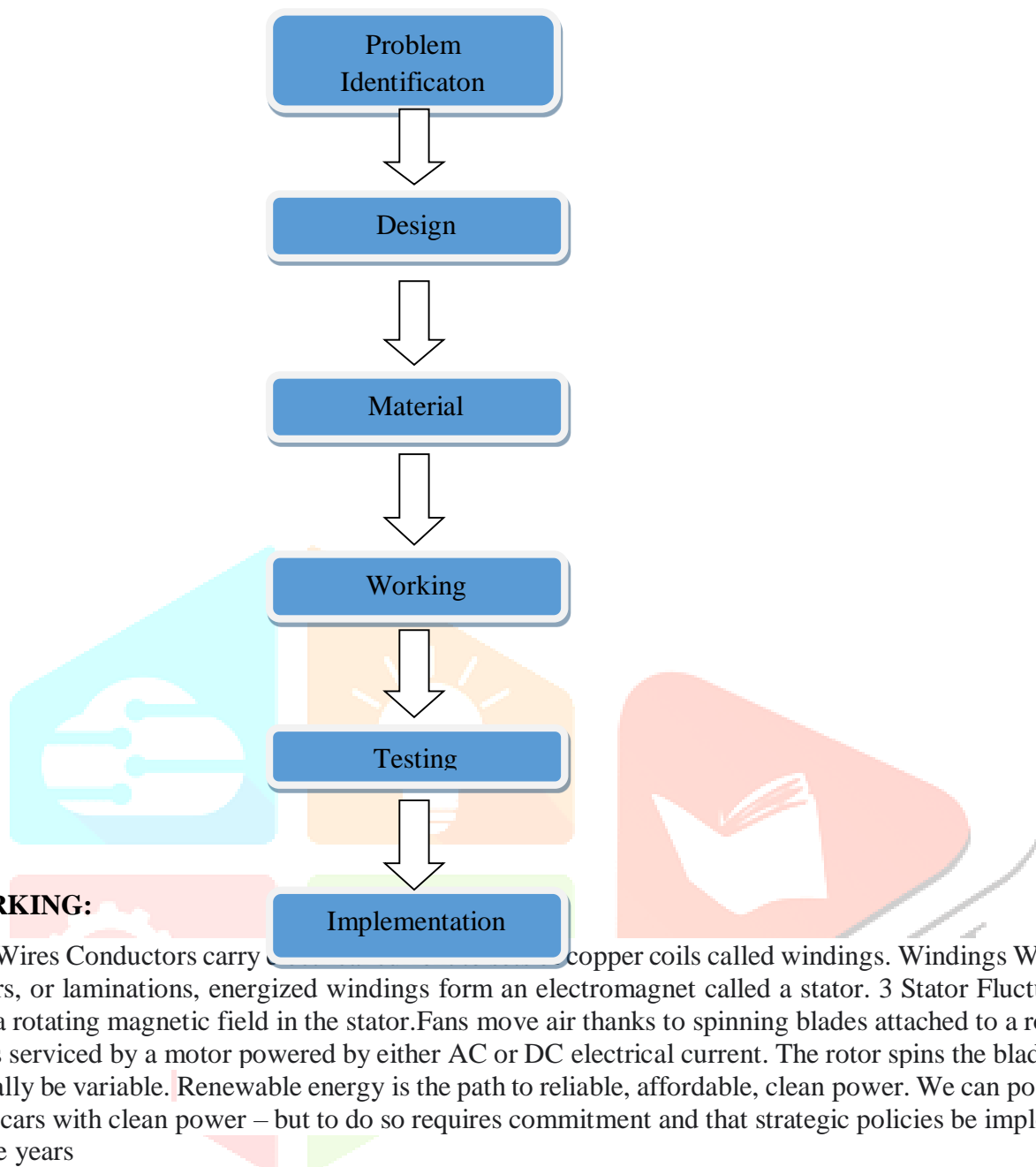
A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses

4.6 Sensor



The output signal from a Hall effect sensor is the function of magnetic field density around the device. When the magnetic flux density around the sensor exceeds a certain pre-set threshold, the sensor detects it and generates an output voltage called the Hall Voltage, V_H .

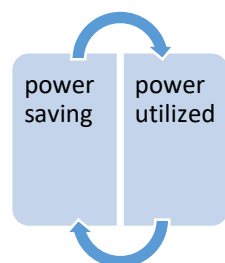
5.METHODOLOGY



6. WORKING:

Wires Conductors carry copper coils called windings. Windings Wrapped around steel bars, or laminations, energized windings form an electromagnet called a stator. 3 Stator Fluctuating polarity creates a rotating magnetic field in the stator. Fans move air thanks to spinning blades attached to a rotor on a shaft, which is serviced by a motor powered by either AC or DC electrical current. The rotor spins the blades, and speeds can usually be variable. Renewable energy is the path to reliable, affordable, clean power. We can power our homes and our cars with clean power – but to do so requires commitment and that strategic policies be implemented in the next five years

6.1 WORKING OF RENEWABLE SOURCES:



Renewable energy, often referred to as clean energy, comes from natural sources or processes that are constantly replenished. For example, sunlight or wind keep shining and blowing, even if their availability depends on time and weather. While renewable energy is often thought of as a new technology, harnessing nature's power has long been used for heating, transportation, lighting, and more. Wind has powered boats to sail the seas and windmills to grind grain. The sun has provided warmth during the day and helped kindle fires to last into the evening. But over the past 500 years or so, humans increasingly turned to cheaper, dirtier energy sources such as coal and fracked gas. Now that we have increasingly innovative and less-expensive ways to capture and retain wind and solar energy, renewables are becoming a more important power source, accounting for more than one-eighth of U.S. generation. The expansion in renewables is also happening at scales large and small, from rooftop solar

panels on homes that can sell power back to the grid to giant offshore wind farms. Even some entire rural communities rely on renewable energy for heating and lighting. As renewable use continues to grow, a key goal will be to modernize America's electricity grid, making it smarter, more secure, and better integrated across regions.

7. CONCLUSION

In electric fan in case of power shutdown time it will run by means of stored energy when fan running. By this we can reduce the use of fans and lights. The stored energy can stand up to 10 hours it can also be used for tube lights. The common people cannot afford a lot of money for UPS. This project probably help them save the money. Home appliances are the basic needs of a common man if the appliances can work on their own stored energy no external devices are needed.

8. REFERENCE

1. The electrically powered ceiling fan was invented in 1882 by Philip Diehl. He had engineered the electric motor used in the first electrically powered Singer sewing machines, and in 1882 he adapted that motor for use in a ceiling-mounted fan. Each fan had its own self-contained motor unit, with no need for belt drive.
2. The fan was invented in 1882 by Schuyler Skaats Wheeler. A few years later, Philip Diehl mounted a fan blade on a sewing machine motor and attached it to the ceiling, inventing the ceiling fan, which he applied for patent in August which was granted on November 12th, 1889.^[5] Later, he added a light fixture to the ceiling fan. Later in 1904, Diehl and Co. added a split-ball joint, allowing it to be redirected; three years later, this developed into the first oscillating fan.
3. Where did modern solar power get started? The roots of modern solar power can be traced back to 1839. It was at this time that a 19 year old French physicist, A.E. Becquerel, whose focus up to that point had been related to phosphorescence and luminescence, discovered the photovoltaic effect.
4. Development of a rechargeable electric fan by BENS FESTUS, AMODU F.R., BASSEY E.N.
5. Wiley Ian (2012); Adverse effect of heat on AC motor protection. Schweitzer Engineering Laboratories, INC, Camelot