A NOVEL MECHANISM OF ELECTRICAL ENERGY RECOVERY SYSTEM FROM EXHAUST FAN

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Abstract: **The energy demand of the world has become growing in the past years. With increase in energy demand, the conventional sources of energy (fossil fuels, nuclear) are high load with huge pressure and hence, the use of it, leads to shortage of fossil fuels. This has a lot an extensive research into the area of non- conventional energy sources like hydro, wind, thermal energy, etc. Out of these, the wind energy is being discussed in this paper. Wind energy has a lot of potential and advantages but its utilization is restricted due to its irregularity, geographical conditions and its availability.**

Keywords**: Wind Power, Exhaust Fan, Storage.**

1.INTRODUCTION

Day by day it's become serious issue due to various factors, such as increasing demand, lower production capacity and transmission losses, etc. As a developing country, Many Industries are running on in our surroundings & also so many are being installed every day. We can see so many exhaust fans are being used to keep the working environment at a moderate temperature of an industry .By using exhaust fan as a source of electricity generator we can produce electricity in commercial building, malls, hospitals, industries etc. by that we can utilized that power in our utilization process. And we may sell that generated electrical power to other customer.

2. LITERATURE SURVEY

The simplified method for reliability evaluation of power system with wind power. A common wind speed model used to multiple wind form. This model applicable to multiple geographical location. It is therefore, very important to obtain suitable wind speed simulation model and appropriate techniques to develop power generation model for WTG in reliability evaluation [1].

A more detail model of the wind energy conversion system is planned for future studies to directly account for fluctuation in wind speed [2].

Wind turbine generators (WTG) used as various provide during a distribution system have totally different impacts on the system relibleness performance than standerd various provides thanks to the variable wind speed . This paper investigates the system reliability benefits of adding WTG as alternative supply in a rural distribution system [3].

The structure of the ac-dc conversion, which can be either a pulse width-modulation voltage-source rectifier or a simple diode bridge. A comparative study of the corresponding control strategies and architectures is proposed in this paper regarding the trade-offs between structure complexity and energy efficiency. The analysis is based on simulations and experiments [4].

3.BLOCK DIAGRAM

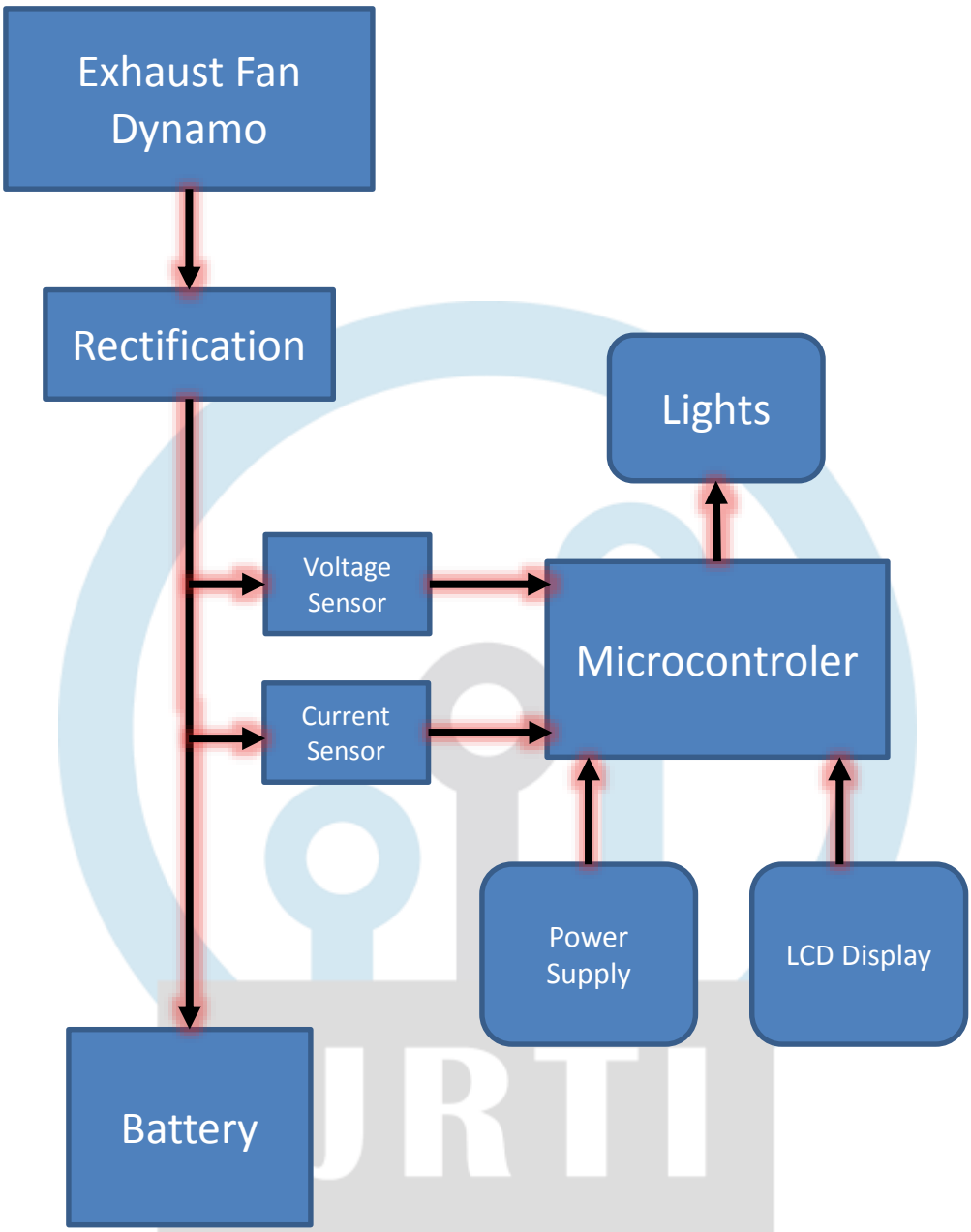

Fig.1 Block Diagram Of System

Block Diagram Description
Block diagram consist of:
1) Exhaust Fan
2) Generator
3) Sensors
4) Microcontroller
5) Battery

3.1 Exhaust Fan

Fans and blowers offers air for ventilation and industrial process necessity. Fans generate a pressure to move air (or gases) against a resistance caused by ducts, dampers, or other components in a fan system. The fan rotor receives energy from a rotating shaft and transmits it to the air.

Exhaust Fan are heat removal devices used to transfer waste heat to the atmosphere, large office, buildings and Industries premises typically install one or more exhaust fans for building ventilation system.

Fig. 3.1 Exhaust Fan

3.2 DC Generator

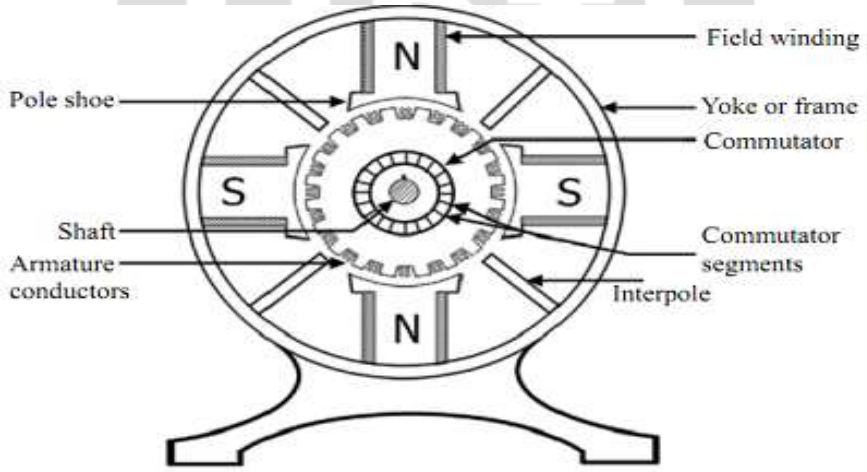

Fig 3.2 DC Generator

3.3 Working Principle of DC Generator

According to Faraday's law of electromagnetic induction, when a conductor moves in a magnetic field (thereby cutting the magnetic flux lines), a dynamically induced EMF is produced in the conductor. The magnitude of generated EMF can be given by EMF equation of DC generator. If a closed path is provided to the moving conductor then generated EMF causes a current to flow in the circuit.

3.4 Transformer

Transformer is a static device which convert power from one AC circuit to another AC device, without change in frequency. Magnitude can be varied by varying turns of primary and secondary windings as per requirement.

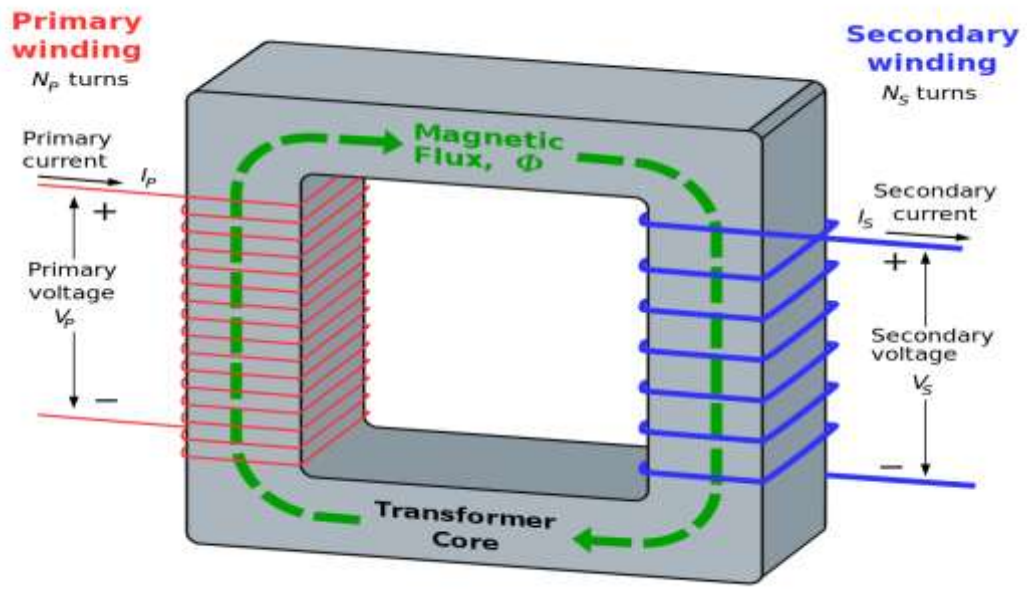

Fig. 3.3 Transformer Internal circuit

3.5 Battery

An electric battery could be a device consisting of two or lot of chemistry cells that convert keep enery into voltage . Each cell contains a positive terminal, or cathode, and a negative terminal or anode coductor permits ions to between the conductor and terminals, that permits current to effuse of the battery to perform operations.

Fig 3.4 Battery

4.FUTURE WORK:

The main goal of the future work is in line with the early development of this system presented in this article which is to ensure the normal operation of the original exhaust system with the integration of this exhaust air energy recovery system. The fan characteristic and system resistance will be measured for the best matching configuration between the designed system and the exhaust air system.

5.ACKNOWLEDGEMENT:

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6.CONCLUSION :

However, this method permits enables the low wind speed countries particularly at area unit to harness wind energy from exhaust

air resources which are consistent and predictable. The electricity generated from this method is for industrials usage or fed into the electricity grid. It is retrofit-able to existing cooling towers and has terribly high market potential thanks to iuxuriant of unnatural exhaust air resources globally.

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