

# Electrical Energy Generate By Using Turbo Ventilator

Mr. Yeshu G. Deshmukh<sup>1</sup> Miss. Gayatri R. Deshmukh<sup>2</sup>, Miss. Ashvini B. Nagdevte<sup>3</sup>

UG-Student<sup>1</sup>, Assistant professor<sup>3</sup>

Department of electrical engineering, Des'scoet Dhamangaon (Rly), Dist. Amravati Maharashtra, India

\*\*\*

**Abstract** - Almost all countries in the world have the problem of electrical energy, including India. Wind energy and solar energy is one types of renewable energy and it does not cause pollution. Therefore, presently, there is the technological development of applying wind energy and solar energy for the electricity generation. Basically now days main focus of world toward solar energy for electrical power generation but this is costly method as well as generation capacity of solar cell is very small therefore today's need to move on other source or method of electrical power generation. Wind mill capacity of electrical energy generation is more as camper to solar plant but wind mill is not use for small amount of electrical power generation because of some problem. Turbo ventilator is one of the best solutions for electrical energy generation by using wind. This paper presents the electric power generation by using turbo Ventilator

**Key Words:**

Conventional energy sources, non-conventional energy sources, solar energy, turbo ventilator, wind energy

**1. INTRODUCTION**

Energy plays a very important role in day to day life for overall development of country. there are different forms of energy out of that the dependence of electrical energy is such that without it life get some what cumbersome. The use of electrical energy is in different fields such as for domestic purpose, where it is used for heating, cooking, Refrigeration, light etc. also it is used in industries commercial complex, irrigation purpose, etc. there are different type of energy source available in word but out of that main source are classified into two type that is following.

1. Conventional energy sources
2. Non-conventional energy sources

Exiting power plant operates on fossil fuel such as oil, coal, gas etc. This storage fuel is limited and its storage is getting depleted everyday to meet today's electrical energy requirement. These sources of energy are known as conventional source. The energy sources such as solar, wind tidal etc. which will be available all the time are known as non-conventional energy sources.

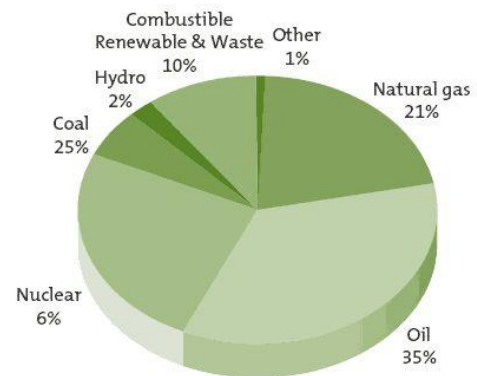


Fig.1:- contribution of different energy source

Today major contribution in generation of electrical energy is fossil fuel such as coal, oil, gas will be consumed in our life. Coal stocks are also not last longer than a few decades. More over pollution hazards, arising out of fossil fuel burning has become quite significant in recent year. Also nuclear power has number of problem, due to its radio activeness. Therefore one should consider the other energy source as a replacement to the conventional energy source. Non-conventional energy source are following.

1. Solar energy
2. Wind energy
3. Biomass energy
4. Geothermal energy
5. Tidal energy

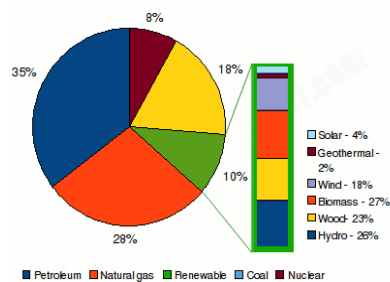


Fig. 2:- contribution of different non-convection source

### 1.1 Solar Energy

Sun is the source of heat and light .the sun produce heat by various nuclear fusion reactions. As the thermal energy radiated by sun inexhaustible this energy is called as renewable source of energy. The diameter of sun is about  $1.39 \times 10^6$  KM. the diameter of the earth is about 12000KM and the mean distance between the sun and the earth is  $1.49 \times 10^8$  KM. the sun subtends an angle of 32 minute at earth surface therefore earth receives the radiations with parallel rays.

Method of converting solar energy to electrical energy

1. Solar –Thermal P.S.
2. Solar –wind P. S.
3. Solar cell

The energy emitted by the sun in space is  $3.7 \times 10^{26}$  watts. Out of which  $5 \times 10^{-10}$ th part of solar energy is received by the earth. Which is equivalent to  $107 \times 10^{17}$  watts . the energy emitted by sun within 3 minutes is equivalent to the world energy consumption during a year. Thus the important of the solar energy is justified and it would full fill the major requirement of demand of energy in next few year. Most of the solar radiation reaches earth as electromagnetic wave about 0.25 3 micro wave length. About half of these radiations is visible as light and the rest is infrared which accounts for heat. The intensity of the solar radiations is reduce by clouds, dust etc. The intensity of solar energy in India is approximately  $1.12 \text{ KJ/m}^2$  and the monthly average solar energy in India is  $50 \text{ KJ/cm}^2/\text{month}$  (as per the metrological department of India).

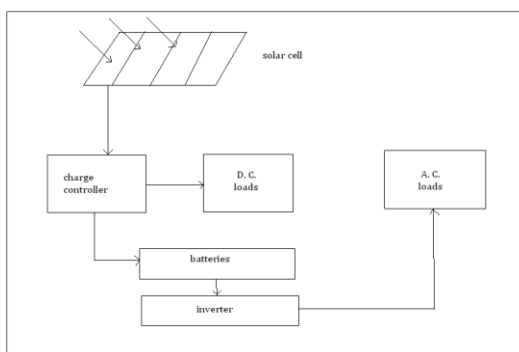


Fig. 3:- solar system

### 1.2 Wind Energy

Among the several non-convention energy source as a replace of fossil fuel, wind energy source is most attractive solution due to it safety and cleanliness. Wind is called a renewable energy source because the will blow as long as the sun shine (3). There are two type of wind machine used today: horizontal-axis wind machine and vertical-axis wind machine (4). Main criteria in selecting wind speed are necessary to make wind farm economical and turbine power is proportional to  $V^3$  Therefore site selected, should have adequate and uniform average wind velocity through year (7 m/s to 28m/s).also site should be free form cyclones, floods, lighting strokes. Site selected should be vacant land free forests townships, etc.

### 2 Turbo Ventilators

Wind energy as a clean energy source that has an enormous potential, but in its use is still very small [6]. Small amount of electrical power generation turbo ventilator more efficient as camper to solar panel There are two different modes of ventilation techniques [2]

1. Passive Ventilation Technique
2. Active Ventilation Technique

Turbo ventilators are Active ventilators .This ventilator works on natural wind energy. A turbo ventilator consists of number of vertical blades in a spherical array mounted on a frame. At the center, a shaft is supported by upper and lower bearings. A rainproof dome is provided on top of the frame of turbo ventilator. When wind blows on the blades the resulting lift and drag forces cause the turbine to rotate Due to this rotation, produces a negative Pressure at the center of the turbine ventilator which extracts hot air[1].



Fig.4:- Turbo ventilator

## 2.2 Working

Working principle of turbo ventilator base on temperature different , When the temperature different occurs in room than ventilator start to rotate without any external energy source by taking advantages of this possible to generate electrical energy. Turbo Ventilator coupling a gear mechanism to the shaft of turbo ventilator which drives a dynamo. By coupling more such dynamos to the gear system and by feeding the outputs of all these dynamos systematically to a line we can feed all the energy produced to a battery and battery start charge. Rechargeable battery is used. Charging time will be relatively long; if the current or keeping cost as well as efficiency in mind any battery voltage is high then the charging time will be short. Around the range of 12V, 0.6A will fit the requirement [7]

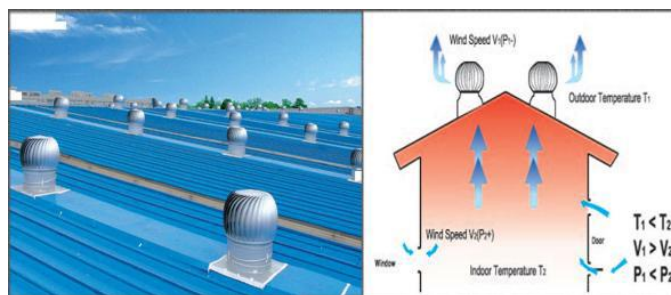


Fig .5:- working of power generation by using turbo ventilator

## 2.3 Result analysis

Sr. no	Speed (rpm)	Voltage (v)
1	350	15
2	300	12
3	200	9

## 3 CONCLUSIONS

The power generation turbo ventilator manages to generate electricity from the free wind energy. This system also remains the main function which is to provide better air ventilation in house, industry, office etc. if we use turbo ventilator instant of solar cell so it is possible to improve power generation capacity of our country as well as reduce cost of installation of solar plant.

## REFERENCES

- [1] Naghman Khan et al., "A review on wind driven ventilation techniques Energy and buildings" 2008; 40:1586-60
- [2] Badrul H.Chowdhury, srinivas Chellapilla, "Double-fed induction generator control for variable speed wind power generation" Paperpublished on October 31, 2005:
- [3] Mody V.J,dan Fernando M.S.U.K. "On the Performance of the Savonius Wind Turbine".Journal of SolarEnergy Engineering, Vol.111/71,February 2009.
- [4] Meadows, "V. H. Rotary ventilator" US Patent 1, 857, and 762. (1929).
- [5] "World wind energy boom in 2005" Released 7 March 2006 by WWEA:World Wind Energy Association.
- [6] Nazih Moubayed,Rachid Outbib "compasrison between soalr and wind energy in lebanon" conference paper on 2007.
- [7] Saran Kumar K S, Jithin K Mathews, Sivasankar S , Aiswarya KP , Shahimol Basheer, "international journal of innovative research in electrical, electronics, instrumentation and control engineering"vol. 4, issue 4, april 2016

## BIOGRAPHIES



Yesu G. deshmukh  
Diploma in electrical engineering from Govt. poly technique brmahapuri dist. Chanrapur  
Appearing Degree in electrical Enginiaring From Sant Gadgebaba University Amravati Maharashtra



Gayatri R. Deshmukh Appearing Degree in electrical Enginiaring From Sant Gadgebaba University Amravati Maharashtra

Ashvini G. Nagdevate Assi. Prof. In Electrical Department Desscoet Dhamangaon Rely. M.Tech. & B.E. from Sant Gadgebaba University Amravati Maharashtra