

## Non Conventional Bicycle

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**Abstract** - Basic needs of the human being are food, clothes and shelter but now a day's electrical energy also becomes one of the essential need in human life. Therefore demand of electricity is increases very rapidly but generation of electricity is limited because of conventional sources. Due to the less generation of electricity peoples have to face load shedding problems. Also finding new energy sources is very big challenge. Thus by taking all this point, we are decided to generate the electricity by using renewable energy sources such as solar, wind and dynamo in our project to satisfied electrical demand of peoples for their comfort. Non-Conventional energy sources are freely available in nature. In our Project we hybrid the solar, dynamo and wind energy. This generated energy we stored in battery and according to our applications we used.

**Keywords** - Bicycle, dynamo, solar panel, wind blades, inverter and rechargeable battery.

### 1. INTRODUCTION

In 21<sup>st</sup> century conventional energy sources used for generation of electricity, but they are limited in nature and produce more pollution in the environment. By taking this point we decide the generate electricity by using non-conventional energy sources freely available in nature and pollution less like Solar, Wind and Pedal power which is wasted by human. Today's global warming issue is more generated in our country and India is fifth country responsible for global warming, carbon emission with the help of solar, wind and pedal power we generate the electricity. We know 60% of energy is created by wind, 13% energy is developed by solar and 4% by biomass in all renewable energy sources in Maharashtra.

In our project we placed wind blades in front of bicycle and kept solar panel back side of the cycle, as well as the human energy is wasted while cycling is converted into electricity with the help of dynamo and this combination is gives to the battery through the relay circuit. The output of project is in the form of D.C that is 6V, 0.5Amp is gives to the battery. And hence generated power is store in the battery and this energy is used for further applications like LED

lightning, buzzer, Mobile charger and for small domestic appliances.

### 1.1 Dynamo

This is the part of our project which converts the mechanical energy produced by the pedaling into the electricity. The top of the dynamo touches the tire's rim, which is rotate when bicycle is rotate. Bi-cycle Dynamos are alternators arranged with everlasting magnets, which create air conditioning current. Two sorts of dynamos accessible are the center point dynamo and the container dynamo. Center point dynamo is incorporated with the center point of bike wheel. Here era of power is done using the revolution of the bike wheel. A jug dynamo is additionally little electric generator like center point dynamo. It is by and large put to the back wheel of the bike. A jug dynamo serves like a modest alternator.

### 1.2 Solar

Sun is the main source of energy and this is freely available in nature. Sun oriented power and sunlight based boards are getting a heaps of consideration as a component of answer for our vitality emergency. Sunlight based vitality, additionally called as photovoltaic vitality. Sun based boards is made of a few photovoltaic cells this cells change over daylight vitality into electrical vitality by photovoltaic impact this cell don't required fuel and have standard life time of 20 to 30 years.

### 1.3 Wind

About 60% of energy is generated by the wind in Maharashtra. Wind energy is energy from moving air, caused by temperature differences in the atmosphere irradiance from the sun heats up the air, forcing the air to rise. Conversely, where temperature falls, a low pressure zone develop. Wind balance out the differences. Hence wind energy in solar energy converted in the kinetic energy of

moving air. Wind energy capture the air flow by converting it into a rotational movement, which subsequently drives a conventional generator for electricity.

## 2. SYSTEM ARCHITECTURE

In this venture three sources are utilized, for example, sun powered, wind and dynamo and these sources produce power from different parts in different frame and associated with battery through transfer. We required necessary 6v for charging the battery that is the reason we utilize transfer amongst sources and battery. When we get 6v to battery then and afterward just battery charged. In running state of sunlight based board we can straightforwardly utilize vitality without store in battery. This capacity is likewise same for wind and dynamo. In this course of action.

## 3. WORKING

### 3.1 Solar System Mechanism

In our project solar panel is placed to the back side of the bicycle. And positive terminal is connected to the normally closed contact of relay and other terminal is connected to the ground. The maximum voltage rating of solar panel is 10V. But for battery operation require 6V.

When output of solar panel is 6V or above 6V then battery will get charged.

### 3.2 Wind System Mechanism

The blades are placed in front of bicycle which is wound on D.C. generator and generator is connected to the battery through relay circuit. The mechanical energy produced by wind blades is converted into electrical energy.

### 3.3 Dynamo System Mechanism

The electricity generated by dynamo is based on principle of magnetism like D.C generator which converts mechanical energy into electrical energy. The maximum output generated by dynamo is 10V to 12V. For battery charging we require the 6V only.

The battery is charged with the help of this three renewable energy sources. This stored energy we can use for small domestic purpose, lightning buzzer also used for A.C applications by using inverter.

## 4. RESULT

**Table-1: Result of Non-conventional Bicycle**

Time	Solar	Wind	Dynamo
Morning	7.34V(Less)	8.39V(More)	11.12V(Most)
Afternoon	10.18V(Most)	6.72V(Less)	10V(More)
Evening	6.91V(Less)	8.95V(More)	12.01V(More)

## 5. CONCLUSION

The conclusion of non-conventional bicycle is not produced pollution in environment as well as it does not required fuel for energy generation. It reduces the demand for power generation. The vision and mission of MNRE (Ministry of New and Renewable Energy)

## REFERENCES

- [1] Mrs. Manisha S. Lande and Mrs. Rupali S. Tupkar research on "Optimum Utilization of a Bicycle" in International Journal of Latest Trends in Engineering and Technology (IJLTET) Vol. 1 issue 3 September 2012.
- [2] Mr. Rajesh Kannan Megalingam, Pranav Sreedharan Veliyara, Raghavendra Murali Prabhu, Rocky Katoch research on "Pedal Power Generation" in International Journal of Applied Engineering Research, ISSN 0973-4562 Vol.7 No.11 (2012)
- [3] Mr. M. P. Mohurle, D.S. Deshmukh, P. D. Patil research on "Human Power Using Bicycle Mechanism as an Alternative Energy Source" in International Conference on Global Trends in Engineering, Technology and Management (ICGTETM-2016)