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Generation of Electricity from Exhausted Air

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Abstract -
The energy requirements of a sustainable energy system. Renewable energy and its amazing cost-cutting capacity, as well as rising oil prices and environmental costs connected to a conventional power supply system make it another source of energy for future use. In addition, the use of renewable energy sources in conjunction with highly coveted energy saving programs will become increasingly important in a few decades from now because they are more efficient and economically viable.

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I. INTRODUCTION

Energy is essential to everything in the world and especially to the development of the nation. It should be preserved in the most efficient way. Demand for safe, secure and affordable energy in both developed and developing countries continues to grow and is likely to double or more by 2040 by 30% more than in 2010 worldwide. As a result, the environmental impacts of conventional power supplies, which depend on fossil fuels and nuclear materials for power generation, are alarming. In addition, these renewable energy sources are limited and will one day be depleted. Therefore, in-depth research and advances in new energy technologies are essential to keep pace with growth

Objectives

The objectives of this research are as listed below:

I.Energy estimation of exhaust air energy recovery turbine generator.

II.Experimental analysis of the diffuser as a poweraugmentation device for the exhaust air energy recovery turbine generator.

III.Determination of exhaust air energy recovery turbine generator configuration by experimental analysis on wind turbine and exhaust air system Determination

II. LITERATURE REVIEW

2.1 Air Turbines:

Air turbine converts the wind's kinetic energy into electricity power through a mechanical means. Air technology is adaptable and versatile and can be one of the most cost-competitive renewable energy technologies when produced on a large scale (wind farm). Smaller systems work very well when combined with a solar array, as cloudy days are often windy and a hot sunny day may not contain a steady breeze.

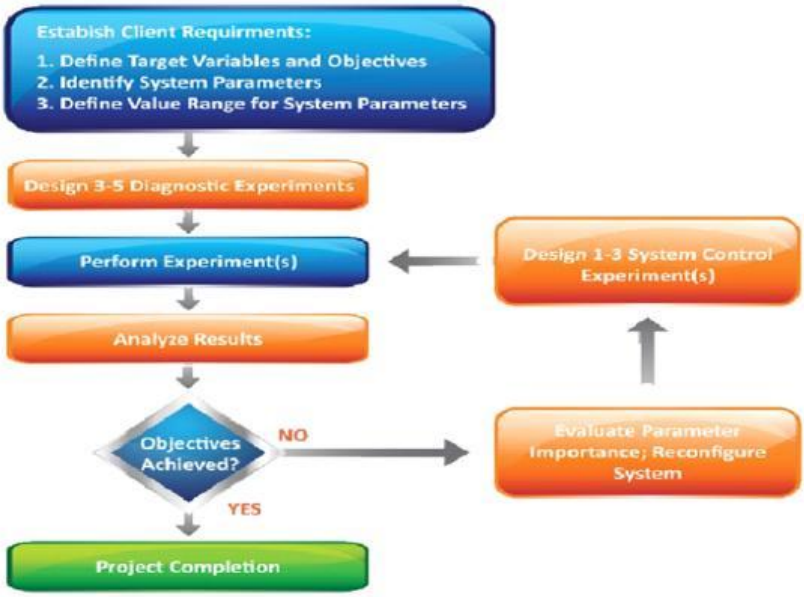
How Does an Air Turbine Work?

Air turbines operate on a simple principle. The energy in the Air turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity. Air turbines are mounted on a tower to capture the most energy. At 100 feet (30 meters) or more above ground, they can take advantage of faster and less turbulent air. Air turbines can be used to produce electricity for a single home or building, or they can be connected to an electricity grid (shown here) for more widespread electricity distribution.

VAWT:

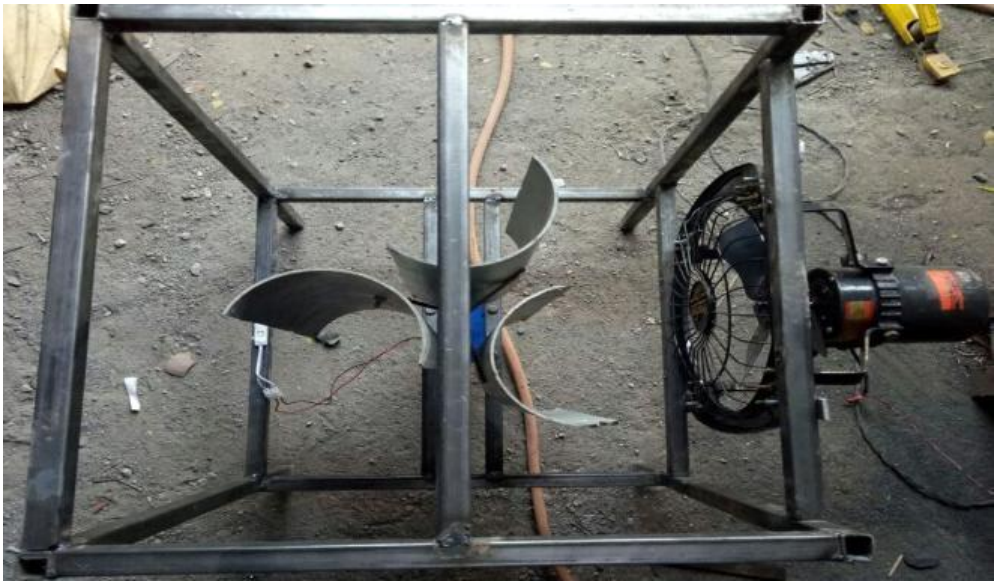
Fig 2.1 Air Turbine

2.2 WORK STUDY PROCEDURE



2.3 Cutting:

The operation is used for cutting material with the help of different cutting tools. Shear force is acting to cut the material.



The general arrangement of illustrated in Figure 3.1.
fig 3.3 wind generation circuit diagram

2.4 Pipe Cutting:

Making projects out of PVC pipe requires the pipe to be cut. One of the beneficial things about PVC is that is can be easily cut, with a wide variety of tools, some very simple. One does not need a complex miter saw to cut PVC. An assortment of different tools can be used, some actually designed and made to cut PVC or plastic pipe.

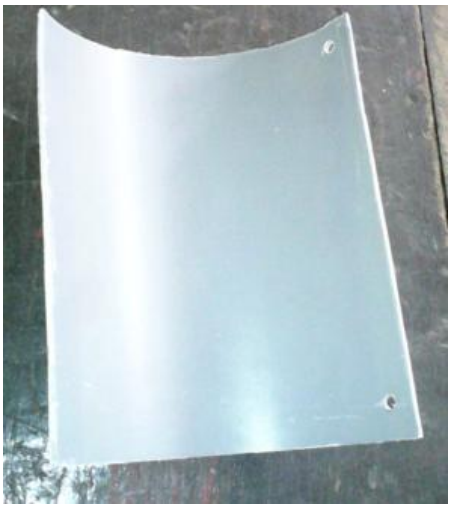
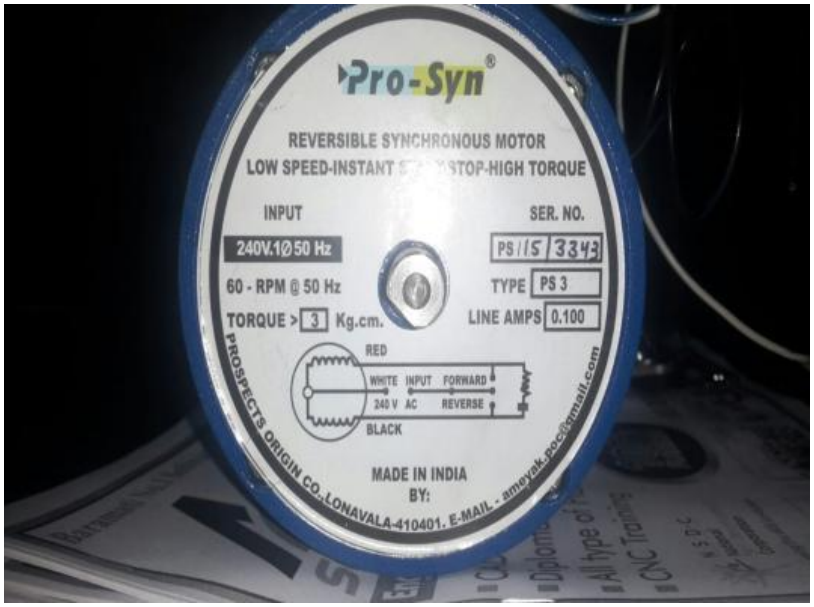


Fig.2.4. Pipe Cutting Operation

2.5 Exhaust fan

2.6 Turbine

2.7 Synchronous reversible motor



2.8 Side view

III. CONCLUSION

This project introduces the idea of using clean energy from non-natural air resources. Although the output power is insufficient in quantity due to a particular factor but the development of step by step can make a dynamic change in energy resources. Our future work may focus on how speed can be increased as we realize that energy production is highly dependent on wind speed. As the wind speed increases the output power increases. And the turbine location influences the power output, the choice of the correct rotor location and performance of the pipeline system size can be improved.

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