Review on Design and Development of New Generation of Anthropogenic Windmill

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ABSTRACT

The insight in the importance of non-conventional energy for our future energy supply has been growing rigorously with growing concern about the price and availability of fossil fuel. Wind energy is most cleanest and endless source of energy out of all the option of non-conventional sources of energy available today. However, harnessing wind energy has not been as effective because of the inherent unpredictability of wind. Consequently, effective generation of electricity from wind energy has been hampered and it has become difficult to generate consistent power at any place, any time, in any quantity desired. This is the biggest disadvantages of wind energy. This research paper represents Anthropogenic Windmill that not hampered by the limitation of unpredictability of wind and provides human intervention to rein wind and thus provide a pollution free practically feasible source of energy. Anthropogenic windmill maintains the constant flow of the wind by creating the pressure difference with the help of electric blower. The amount of energy recovered is feasibly larger than the amount of energy spent on converting static pressure energy into kinetic energy.

Keywords: *Aerodynamic Speed booster, velocity measurement devices, etc.*

1. INTRODUCTION

Energy Needs of Growing Economy: Energy is one of the inputs for economical development of country. Energy and development are two sides of coin. Development without energy is unthinkable. Economic growth is

Desirable for developing countries, and energy is essential for economic growth. Current sources of energy: The primary source of energy is fossil fuel, however finiteness of fossil fuel reserves and large scale environmental degradation caused by their widespread use, particularly global warming, urban air pollution and acid rain, strongly suggests that harnessing non-conventional, renewable and environmental friendly energy resources(Wind Power, Hydropower, Solar Energy, Biomass Energy, Geothermal Energy etc.) is vital for steering global energy supplies towards sustainable path. Amongst all the options of non- conventional energy wind energy is the most cleanest and endless source of energy and hence cannot be ignored in future. But due to unpredictability of wind unfortunately we cannot produce wind power at any place, any time in any quantity desired, 365 days of a year, 24 hours of a day like a typical industrial product; this is the biggest regret of every technocrat working in this field.

2. METHODS AND EXPERIMENT

Anthropogenic Windmill - This is a cent-percent scientific answer to all the major limitations of wind energy. The following figure shows the experimental setup of Anthropogenic Windmill. This overcomes the imitation of wind energy of specific location and specific time. This has incredible scalability. This will play an important role in fulfilling the promise of rural self- reliance & progress. Which will fulfill the expectations of customer's energy needs their budget and energy quality at micro level. This will bring a new dawn in sectors of power generation, distribution and application.

2.1 Components and working of Anthropogenic Windmill:

Blower: At the front end of assembly, the blower is used to initiate the air supply at sufficient speed for the windmill. The blower intakes air and force it out with high velocity. But this air speed is not sufficient to operate the windmill.

Air jet: Air jet is connected to outlet of the blower to enhance air speed due to its conical shape, the air jet not only helps in increasing the air pressure and consequently the air speed, it also gives a controllable jet of air. The air from blower passes through the air jet and then introduced in the air duct.

Air duct: This swift flow of air pushes the air column which already exists inside the air duct thus creating low pressure area. To reduce this deficit of air according to Bernoulli's principle high pressure air from the atmosphere rushes into the air duct with great speed. Now due to a summation effect, the amount of total air flowing through the air duct rises significantly.

Air speed booster: Due to its aerodynamic shape, the air speed booster reduces the volume of air duct which result in increase in air velocity. The air which is boosted in speed by air speed booster is thrown out on to the blades of the rotary vane unit with a controlled velocity.

Rotary vane unit: It picks up motion and electrical power is generated by converting the mechanical energy of the rotary vane unit into electrical energy with help of the electrical generator. The energy generated by anthropogenic windmill in accordance with the present invention is sufficiently and viable higher than the energy spend on boosting wind speed to predefined pressure and velocity for desired windmill operation .A part of the energy output is again fed to run the windmill self sufficiently without depending further upon the external source power.

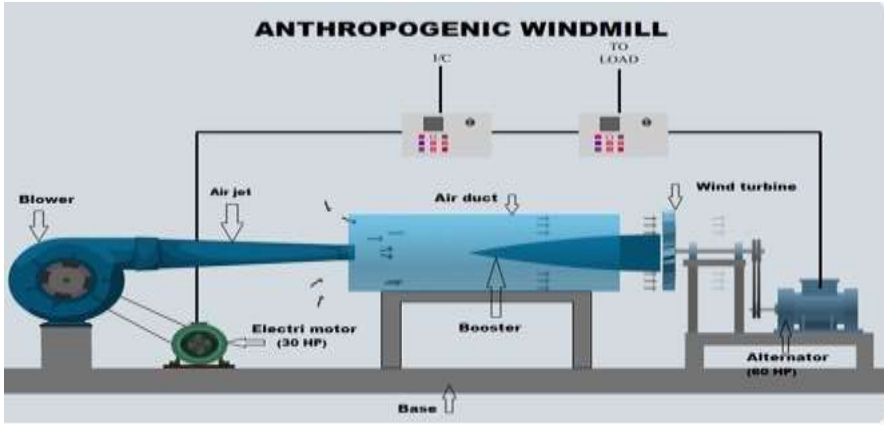

Fig.1 Anthropogenic windmill

3. RESULT AND DISCUSSION

The invention will now be described with reference to the embodiment shown in the accompanying drawing. The embodiment does not limit the scope & ambit of the invention. The description relates purely to the exemplary embodiment of the invention & its suggested applications .Conventional windmills are limited by time & location for harnessing wind energy effectively. The present invention envisages an anthropogenic windmill that harnesses wind energy without the constraint of time or place & has incredible scalability. The Kinetic energy of the wind is converted into mechanical energy with the help of a windmill unit & this mechanical energy is converted into electrical energy by a generator. More the speed of air, more is the kinetic energy available to convert into power. The amount of energy generated by the windmill is derived from the formula:

Wind Power=0.5*swept area*air density*(velocity) ^3.

Wherein,

Wind Power is in Watt.

Swept area is the area swept by rotor blades in sq m.

Air density is about kg/cu.m.

Velocity is wind speed in m/sec.

A direct relation between wind speed & wind power is evident from the above formula. If the velocity is doubled wind power would rise 8 times. Hence, control of wind speed is a critical aspect for successfully harnessing wind energy.

4. CONCLUSION AND FUTURE SCOPE

The energy generated by the anthropogenic windmill in accordance with the present invention is sufficiently and viably higher than the energy spent on boosting wind speed to a pre- determiner pressure and velocity for a desired windmill operation. By the changing the parameters of the elements that comprise the wind speed controlling mechanism of the windmill in accordance with the present invention, the amount of energy output can be easily manipulated as per the requirement. A part of energy output is again fed to run the windmill self- sufficiently without depending further upon external source of power.

Anthropogenic windmill would create a wide range of new business opportunities and will expand world energy supply. Also it will help to solve global problem of environmental pollution and it will prove to be the most feasible energy in future.

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