

## An Investigation to Estimate the Maximum Yielding Capability of Power for Mini Venturi Wind Turbine

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### ABSTRACT

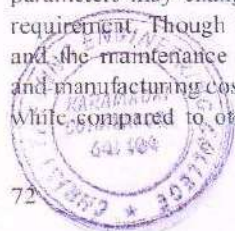
The present research work deals with the design and fabrication of windmill using venturi effect. The venturi effect is achieved such a way that the propeller rotation is increased about four times for the wind velocity in the surroundings. For any direction of wind flow, the propeller is rotated. The wind velocity required for power production in our research area is very less when compared with the existing systems. There are no effects on the birds and also there is reduction in noise level when compared with existing conventional wind mills. The wind enters the nozzle where its velocity is increased slightly. Hence the proposed idea is to overcome the difficulties in existing wind mills. From this experimental analysis it was understood that the maximum yield of power was increased by 12% nearly (800 to 1000 W) compared to conventional windmills, which can be used essentially for domestic applications. The design in terms of cost and life was to be increased by 6% as compared to VAWT and HAWT. By the utilization of venturi wind turbines; the possibilities of facing real time problems such as resonance and sound intensity was decreased by 10% as compared to conventional wind turbines.

**Keywords:** Venturi effect wind mill, Nozzle design windmill, economic windmill, efficient windmill

### INTRODUCTION

When the wind blows from the atmosphere and it enters into the main nozzle. The function of main nozzle is to collect the air from any direction with very high pressure and reduces the pressure where as desired velocity is achieved. Although the direction of wind changes, the main nozzle collects it and sends it to the collector tank. After passing through the main nozzle, the velocity of air is slightly increased and it flows to the throat part through convergent nozzle. The cross section of the nozzle varies and the pressure and velocity parameters may be changed according to the wind requirement. Though this design is very simple and the maintenance cost were effectively low and manufacturing costs were comparatively low when compared to other significant wind mills,

The study also found that having each VAWT spin in the opposite direction of its neighbour blade allowed to rotate and spin very faster motion, because the opposing spins reduced the drag on force on each turbine, which will increase the efficiency more and more and the main advantage of this system is no frictional losses, since there is no rotational parts involved in this system and hence the absence of gear box tends to neglect the more complicated term noise and vibration. (Kumar et al. 2016) experimented analysis on gear-box in windmill tends to more and adverse effect on environment which will produce huge resonant frequency up to 105 dB. This phenomena can be purely avoided in venturi wind turbines and maintenance costs are negligible and also proved maximum efficiency can be achieved using venturi effect and minimal losses are possible by



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