

Smart Vertical Axis Highway Wind Turbine

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Abstract: *Energy is an important aspect of our everyday life. The resources we use are limited whereas the population consuming the same is increasing day by day. Nowadays the requirement for electricity is much higher than its generation; hence the main objective of our work is to produce electricity at low cost with no effect on the environment. The objective of the work is to design a wind turbine to recapture wind energy from vehicles on the highway. A considerable amount of wind energy is produced due to the pressure difference created by the moving vehicles on the highways. This wind energy can be utilized for the generation of electrical energy with the help of vertical axis wind turbines. This work aims to extract this energy in the most efficient manner. A vertical axis wind turbine can be installed on the median of the roads so that the wind from both sides of the median will act tangentially in opposite directions on both sides of the turbine thereby increasing the effective wind speed acting on the turbine. This wind flow will depend on the velocity of the vehicle, size of the vehicle, and intensity of the traffic. Based on the studies made an optimal wind turbine design has to be made. The wind power harnessed through this method can be used for street lighting, traffic signal lighting, toll gates, etc.*

Keywords: VAWT, HAWT, H-rotor, semi-guy-wired tower, Noise emission, Sound power level, Highway Power, Windmill, Renewable Energy.

