

## **Design and development of a new vertical axis movable vane cavity wind turbine**

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### **Abstract**

Wind Energy is one of the cleanest and reliable sources of renewable energy. Nowadays, wind energy generates about one percent of total energy used worldwide. The potential of wind energy is huge and the study shows if 20 percent of the possible wind resources are utilized, it would supply 7 times the total global electricity demand in year 2000 [1], [2]. Most of the wind resources are harnessed by using propeller type wind turbine, which power output efficiency is quite low about 20 percent only due to shape, design, and other factors. Economically, it is quite expensive [3]. The world has now come to an area with more inventors creating newer wind turbine with higher efficiency and capability than the current ones. The objective of this project is to design, fabricate and analysis of a new vertical axis movable vane cavity wind turbine with high efficiency by optimizing reaction force from wind kinetic. It forms a cavity on one side of the turbine while letting the other side of turbine open to let go the wind, hence high drag can occur. This ensures higher efficiency and low starting wind velocity.

Keywords:

Cavity; Energy; Vane type; Wind turbine