Abstract:

Conventionally, horizontal axis wind turbine (HAWT) is used in the wind farm applications to generate electricity. But HAWT is very expensive to install, noisy and inefficient in the conversion of wind to energy. Additionally, it requires large amount to space, high wind speed and also it is dependent upon the direction of wind speed. If direction of the wind is changed then it requires Yaw mechanism which is very expensive. On the other hand, the MAGLEV vertical axis wind turbine (VAWT) addresses these problems and provides a more efficient, versatile and elegant method of producing power from wind. MAGLEV is short for "magnetically levitated", meaning the design incorporates magnets to "float" or suspend system components. Therefore, in this paper, an advanced level vertical wind turbine using MAGLEV mechanism is designed and implemented. In this technology, a VAWT, neodymium magnets, black magnets which are attached with wooden disk. Power is generated with an axial flux generator, which incorporates the use of permanent magnets and a set of coils. This designed MAGLEV wind turbine is independent of wind direction. Also, it can operate under low wind speed condition.