

# **A novel prediction of radiation interference impact in single wind turbine on microwave link**

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## **ABSTRACT**

This A wind turbine produces renewable energy that supplies with power, especially in countries and states such as Qatar, which is one of the largest producers of natural gas globally. However, there are numerous challenges in utilizing renewable energy sources in generating power, particularly the degradation effect on telecommunication services due to radiation interference caused by the electromagnetic field induced by the dynamic movement of such devices or systems. Similarly, undesirable signals could interfere with communication systems, reducing both quality and performance, while wildlife such as birds, collide with the turbine rotor cutting edges. This paper undertakes an extensive examination into using a single wind turbine and its impact as a sustainable power source in providing renewable energy in reducing the level of pollution in Qatar while simultaneously considering the need to safeguard the surrounding wildlife, such as birds. The study proposes to use an advanced sensor ACS712 Hall Effect to convert the electromagnetic field to electrical flow, gauge the wind speed and direction and repulse birdlife. The proposal considers the environmental characteristics of the Al-Karaana village as the projected installation site to maximize the possibility of presenting a well-investigated solution in addressing the challenges and obstacles that could occur due to the application of wind energy supported by telecommunications infrastructure such as microwave systems. The scientific approach of this study assessed the possible solutions to mitigate the difficulties related to the use of wind turbines in the wireless communications field, wildlife, and natural environment.

## **KEYWORDS**

Wind turbine; Radiation interference; Hall effect; Renewable energy indoor

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