

Developing an effective route for education in wind renewable energy

This research develops an effective route for education in wind renewable energy. A resourceful educational method is developed by using a wind simulated system. Wind turbines convert the power in the wind into electricity. As electricity generated the wind turbine are linked to selected electrical network. The most common design of wind turbine is the horizontal axis wind turbine (HAWT). HAWT rotors are usually classified according to the rotor orientation, hub design, rotor control, number of blades and how they are aligned with the wind. The rotor contains of the hub and blades of wind turbine. They are the turbine's most important mechanisms from both a performance and overall cost standpoint. Wind turbine blades must be designed to transform the kinetic energy into torque. Wind speed is an important factor in wind system performance. Therefore, in order to obtain optimal performance the location and elevation of the turbines is crucial.

Due to the inability of having a real wind turbine in preferable locations, alternative methods are being established. This research project proposes the Lucas-Nuelle wind simulator as a viable solution to these constraints. The Lucas-Nuelle training system uses a modular design. It generates power by using a small wind energy generator that simulates the rotation of the shaft in the wind turbine as the wind speed increases. It then records the amount of power, voltage, and current at different speeds. The Lucas-Nuelle system is a valuable substitution of an actual wind turbine. As a result, the wind simulator system imitates how wind turbines work and perform over changes of wind speed, pitch and elevation.