

Purpose of the power plant wind resistance experiment

What is the purpose of a Wind Turbine Lab?

The purpose of this lab is to satisfy experimental needs for analyzing the relations of blade shapes, the number of blades, power supply, and pitch angle with respect to the power output. The results of the experiment help identify the most efficient design and approximate the energy output of the wind turbine in the real world.

What is the wind turbine lab experiment?

The Wind Turbine Lab experiment was conducted under an ideal condition with constant wind supply. During the experiment, the power supply was increased from 6V to 12V by an operator, the increases or decreases of wind speed were controlled by a human.

How to conduct a Wind Turbine Lab?

To conduct the Wind Turbine Lab successfully, 4 tasks of the experiment should be completed. These tasks are Setup, Designing wind turbine blades, Testing the power produced while varying the number of blades, and clean-up. Before starting the experiment, the experimental equipment should be present and assembled, as shown in Figure 1.

How does a wind turbine work?

Unlike other types of power plants, wind turbine emits no air pollutants or greenhouse gases. Besides power output, the other dissipating products are confined in heats, sounds, and work done by friction. The wind turbines harmlessly generate electricity from wind passing by. Wind energy requires little or no energy imports.

How much power does a replica wind turbine generate?

With the replica, the 2-blade, 3-blade, and 6-blade wind turbine were tested the energy output under the same conditions. The resultant data were recorded in Table 2. When the wind turbine operated with 6 blades, it generated 0.04 watt of power output, and it is higher than all the other blade number.

What is wind energy technology?

and Planetary Sciences Massachusetts Institute of Technology, 77 Massachusetts Ave, Cambridge, MA 02139, USA. E @alum.mit.edu Abstract: Wind energy technology is based on the ability to capture the energy contained in air motion. Wind power quantifies the rate of this kinetic energy extraction. Wind power is also the rate of kinetic energy flow ca

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