Testing Different Angled Wind Turbine Blades To Find the Optimal Blade Angle

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The purpose of this project was to determine how to maximize the energy produced by a wind turbine. Wind turbines are an effective way to generate power without burning fossil fuels. Burning fossil fuels releases carbon dioxide into the atmosphere. Carbon dioxide is a greenhouse gas. Adding carbon dioxide to the atmosphere accelerates the greenhouse effect, resulting in climate change. Sixty percent of power in the United States is generated from burning fossil fuels, while only 10% comes from wind turbines (Popovich, 2024). Producing more power from wind turbines would decrease the amount of energy production from fossil fuels, helping to reduce climate change. Many factors can affect the amount of power generated from wind turbines. These factors include wind speed, outside temperature, and the turbine's blade angles. The angle of the blade affects the amount of wind contacting the blade. If the angle is not optimum, the force from the wind is insufficient to make the blades spin. I hypothesized that the blade with the smallest angle would produce the most power due to a larger surface area of the blades being hit directly by the wind. My hypothesis was tested by using different-angled blades on a model wind turbine and measuring the power generated in watts with a multimeter. The results showed that the most angled blade generated the most watts overall.

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