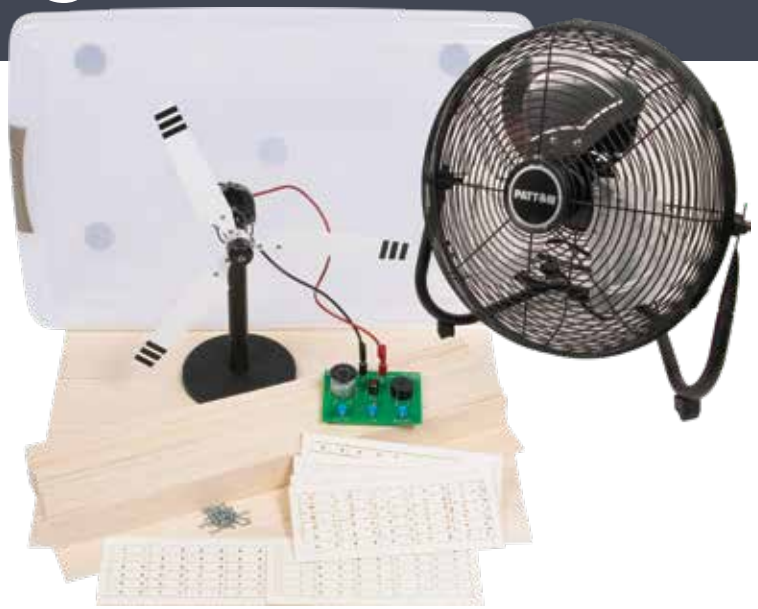
Blade Engineering

Grades 9+ | Students Served: 24 (teams of 4)

HIGH SCHOOL



Essential Questions

How can wind energy be transformed into more useful forms of energy?

Why should efficiency influence blade design and construction?

What are some things you can do to help the sustainability movement moving forward?

Career Connections:

- Environmental Engineer
- Industrial Engineer
- Meteorologist
- Machinist

⚠ Cancer and reproductive harm – www.P65Warnings.ca.gov

STEM Connections

Science

- Alternative energies
- Energy transformations
- Electricity production

Technology

- Energy conservation
- Social perspectives
- Environmental perspectives

Engineering

- Problem solving
- Modeling
- Technological design

Math

- Proportions
- Data analysis
- Formulas

Sample Activity

Blade Engineering

Challenge

Students design and construct a turbine with four, five, or six blades to determine optimum energy output.

- Students brainstorm design ideas for a turbine with four, five, or six blades that will attach to the completed Wind Gen. Have them record these design ideas on paper or graph paper.
- Students select what they believe to be the best design. Then, they draw and construct the newly designed turbine blades to scale. From balsa wood, they design and construct the turbine frame that will attach to the motor of the Wind Gen. Students then attach the turbine blades to the frame.
- Have students test the newly designed turbine and record the data from the experiment on a data table.

Discussion

What results did you get from the turbine design you chose? What would happen if you decreased or increased the number of blades? What design will produce the most energy?