The Relationship between the Number of Blades, Their Angles and Generation of Electricity

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Introduction

Wind power generation is used around the world.

Which set-up of blades is best for generating electricity?

Hypothesis

The effectiveness of the power generation is the best on condition that the number of blades and its angles are the same as the practical aerogenerators.

Device (1)

Material

Tetra packs, Bamboo sticks, styrene foam, motor electric fan

Method

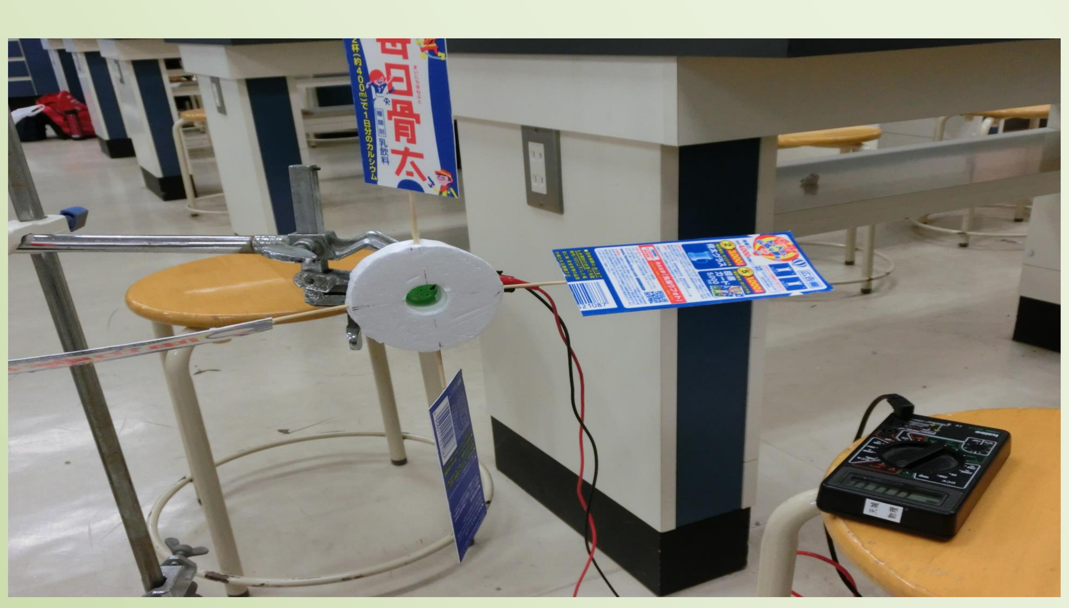
①Make the blades and spindle(figure 1)

②Angles are between blades and spindle (figure 2)

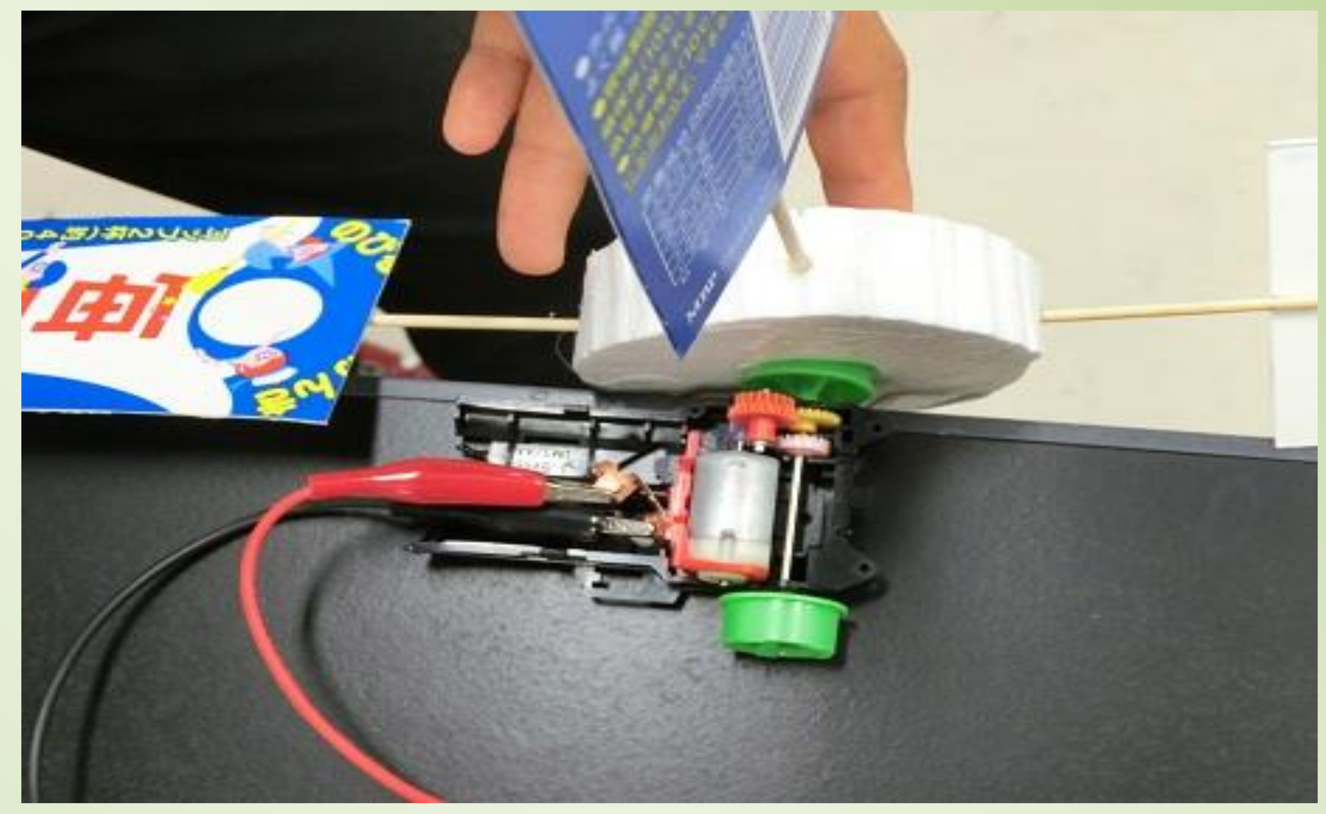
③Produce wind 50 centimeters apart from the generator(figure3)

Measure electric current and voltage

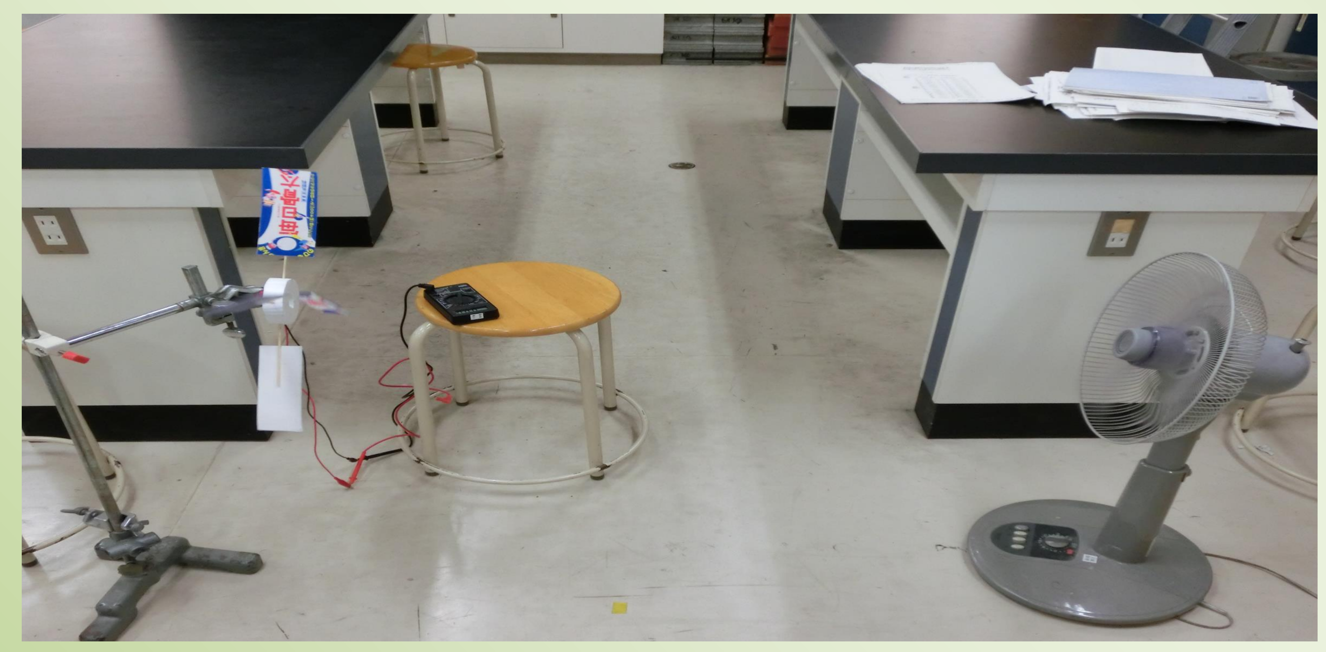
Calculate electric power



(Figure 1)



(Figure 2)



(Figure 3)

	30°	45°	60°
3	2145[μW]	1260[μW]	990[μW]
4	1740[μW]	1125[μW]	720[μW]
5	1242[μW]	840[μW]	510[μW]

	15°	20°	25°	35°	40°
3	2050[μW]	2230[μW]	2212[μW]	2120[μW]	2105[μW]
4	1740μ[W]	1800[μW]	1768μ[W]	1710[μW]	1678[μW]
5	1158[μW]	1285[μW]	1254[μW]	1189[μW]	1156[μW]

Conclusion

When the angles of the blades are all 20° , the efficiency for the generation of electric power is best.

Number of blades → 3

Angle → 20°