

A Swing Generator

Using Water Power Produced by the Wind

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'A swing generator using water power produced by the wind power' was built taking a hint from swing generators in Spain. The costs of building and operating this system are much lower than those of conventional wind and swing power generators. Moreover, it can be installed anywhere as long as the pole is flexible like bamboo. Electricity can be generated by swinging the pole by hand even when there is no wind.

Background

It is said that the power generation by natural energy has practical usefulness in the age to come. Therefore, I focused on especially wind power generation.

Merits	Demerits
<ul style="list-style-type: none"> * High efficiency of electric power generation * No any hazardous materials * It can generate electricity even during the night * No fear of resource depletion 	<ul style="list-style-type: none"> * Huge size * Huge cost to maintain * Chances of bird strikes and environmental disruption from noise and low-frequency wave * Need to comply building law * Limitation of installation sites

Table 1. Wind power generation's features

Thus we made "Swing generator using water power produced by the wind", taking a hint from bladeless generators in Spain.

Purpose

To realize the new form of electricity-generating system which has only merit of wind power generation.

Systems

【Image of installation】



Fig.1 Bladeless generators

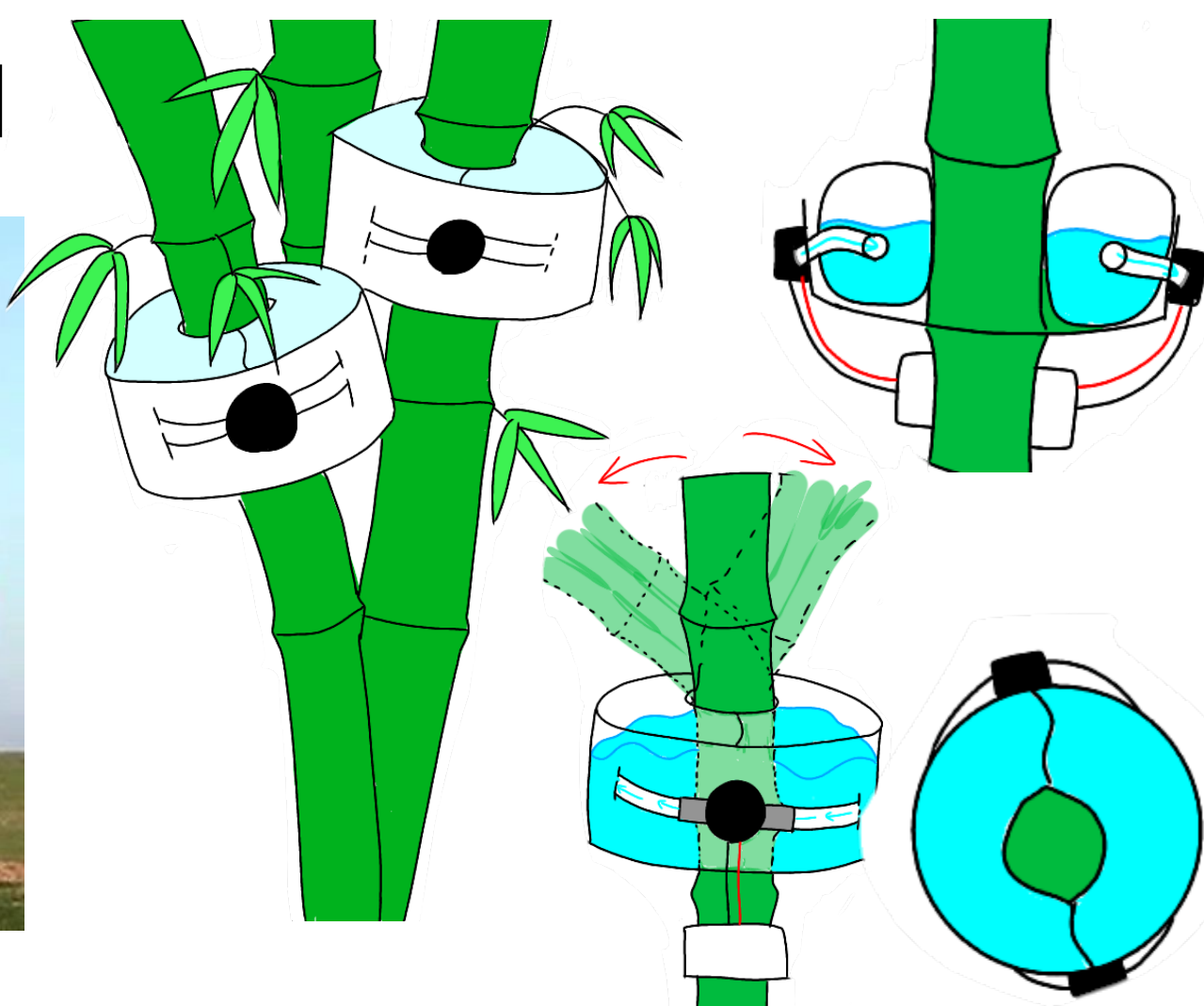


Fig.2 Images of application to bamboos

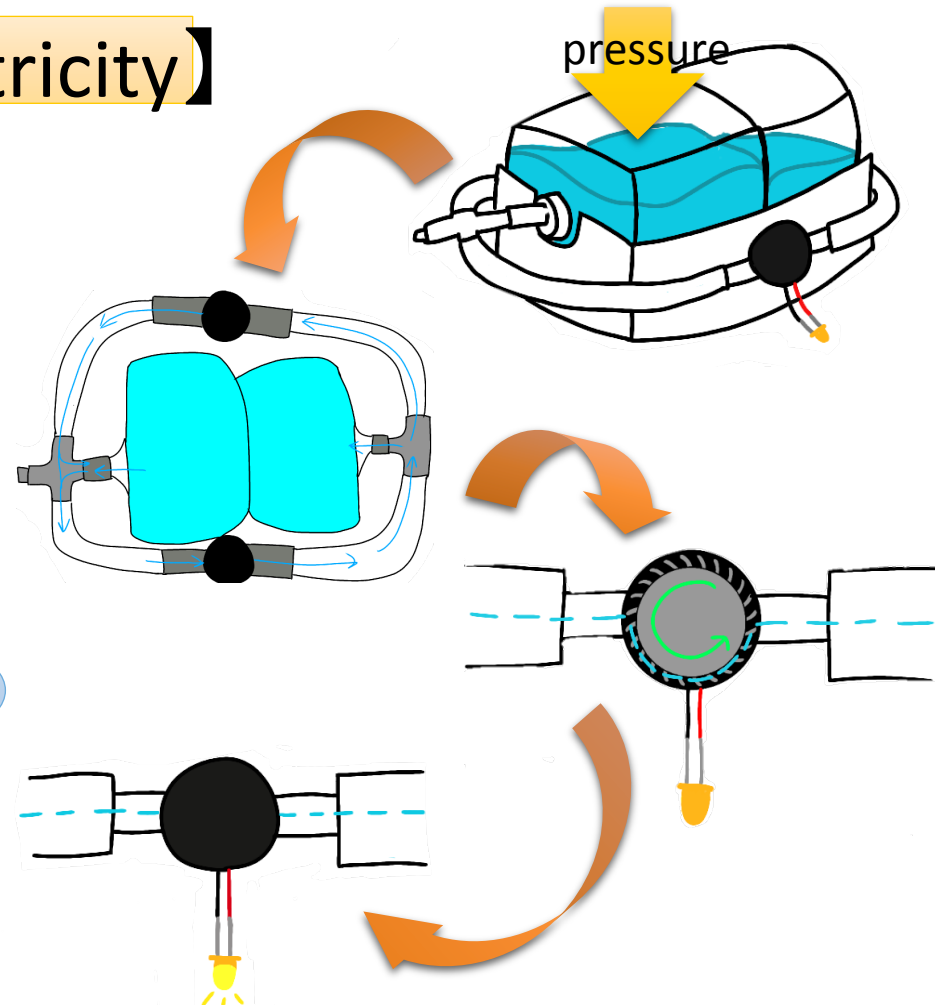
【The way to generate electricity】

Apply pressure on the tank

Water flowing

Twisting the micro hydrogenerator's turbine

Electricity



【Regarding system】



Fig.3 Basic information

It costs about 27dollars to build.



Fig.4 Systems' overview

Experiments

1. Water was into the plastic tank. 2. The plastic tank was applied by hand. 3. The circuit was hooked up to a digital multi-meter(HOZAN DT-110). 4. Measure the current, the pressure and the voltage of generated electricity with/without the LED light.

Results & Discussion

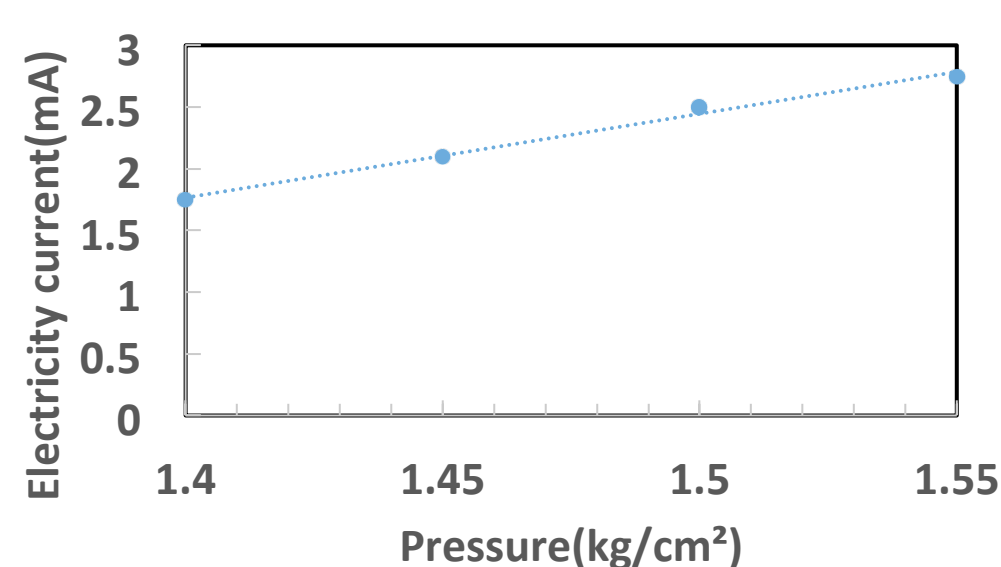


Fig.5 Relationship between Current and Pressure with LED

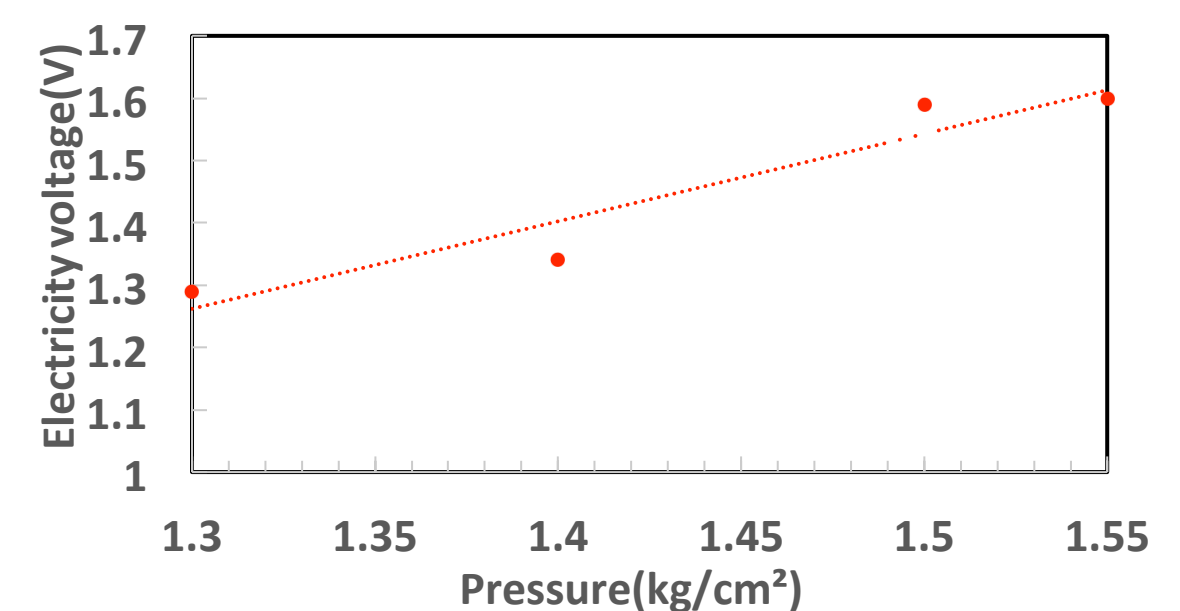


Fig.5 Relationship between Voltage and Pressure with LED

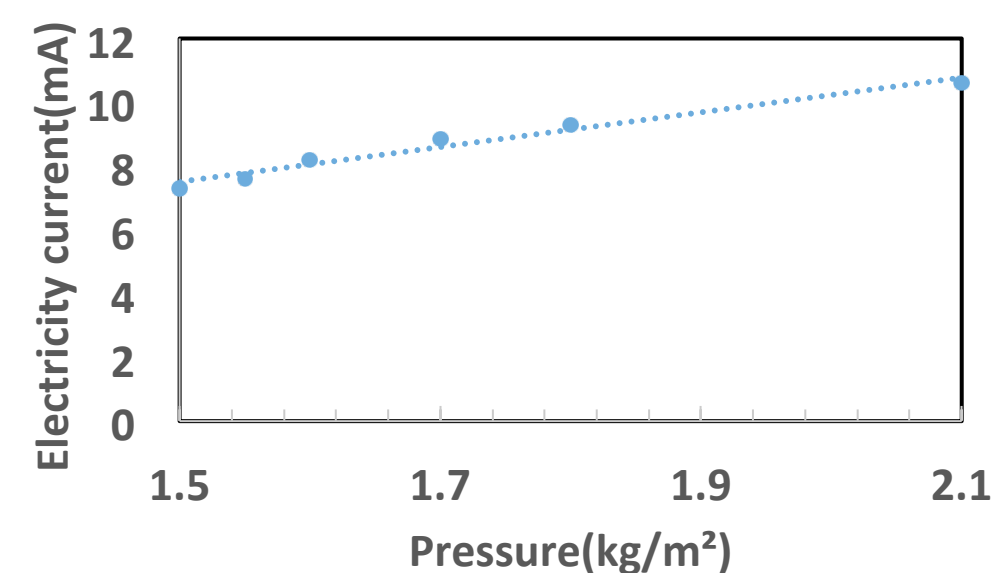


Fig.6 Relationship between Current and Pressure

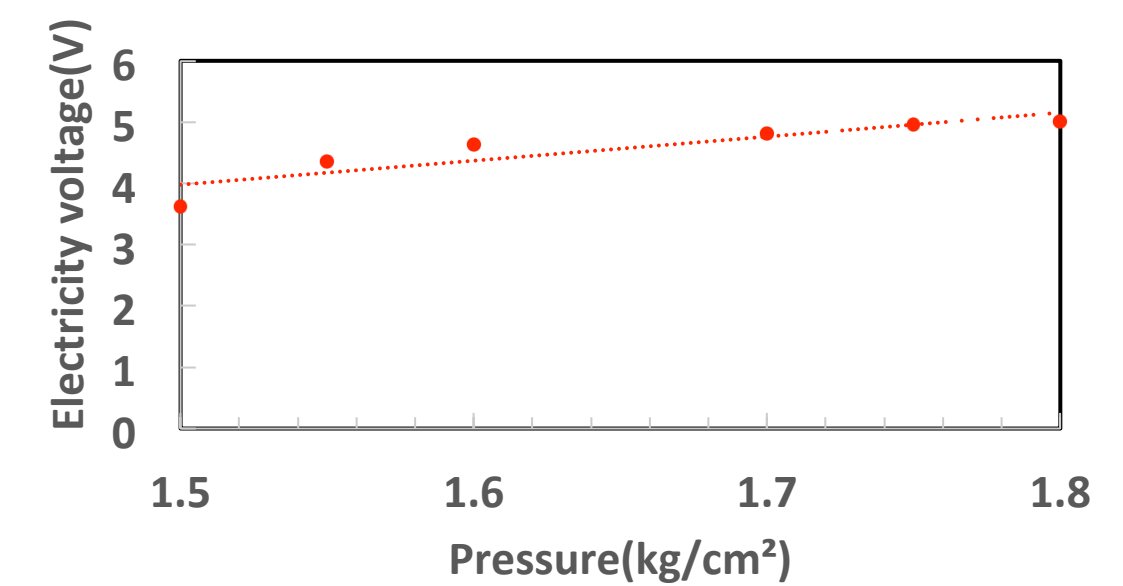


Fig.7 Relationship between Voltage and Pressure

By using this system, electricity was generated.

These results shows that pressure bears a proportionate relationship to electricity current and voltage. Voltage is measured more easily than current. Quantity of flow was not enough to generate electricity. There are two main reasons. First, hose diameter was so large that water flow velocity was reduced. Second, the method of applying pressure on the plastic tank was not effective.

Conclusion

The idea of generating electricity by using motion of swing came true, costing only a little. Both of current and voltage of generated electricity were enough to brighten the LED light.

Further Study

For application to bamboo, system should be downsized, trimmed made lighter and removable. Besides, to establish and practice a new way to flow water in the plastic tank without applying pressure on that by hand will lead to the goal. For such occasions, it seems to be necessary to make the whole system more efficient. And now this system is patent pending in the Japan.

References

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2. VORTEX Bladeless (18, March, 2018) <https://vortexbladeless.com>
3. MUST SCIENCE SOCIAL BLOG(22, June, 2018) Image of bladeless generator <https://nustscienceblog.wordpress.com/2015/05/31/biztech-vortex-bladeless/>