Getting Electricity From Waterfalls

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Search for new methods of eco-friendly and grid independent methods of electricity production in remote areas remains important nowadays. Flow of water can be readily exploited for this purpose, however classical methods, such as construction of a dam and running spinning turbines often has detrimental effects on the environment. Firstly, I had an idea to implement piezo generators fixed to a solid surface to be placed under the waterfall. This setup was moderately effective producing VOLTS/AMPS from the impact force of water. Then I noticed sinusoidal movement of water plants in the flowing stream and came up with idea that in might be possible to exploit this observation with implementation of a flexible piezo generators affixed in between flexing sheets, so that movement of the water will induce electricity production with minimal impact on the environment. I have constructed both models and tested them in various conditions. Results indicated that affixed piezo elements can only operate under waterfall with significant water flow, while flexible piezo generator was as effective under the waterfall, as well as in the stream with a generally subtle flow velocity. Further improvements of the flexible generator achieved by adding offset flow interceptors that significantly increased reptile wave-like motions. Suggested model was suitable for generation of suitable power to charge a mobile phone with the implementation of a basic charging scheme. It can be used to provide independent LED lighting and charge devices in remote areas or during emergency blackouts. My theory has been confirmed by research and practical experiments, so I can say that there is a new way to obtain environmentally friendly energy from water in remote areas or where flowing water is available.

Awards Won:

The Scientific and Technological Research Council of Türkiye TUBITAK: 1st Prize Award