A Novel Way To Clean Solar Panels Using a Self-Powered Arduino Controlling a Servo

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Solar panels are outside in any weather that may face them. The goal of my project is to keep solar panels clean in most conditions and to improve the energy output of the system. A summary of my system is the solar panel attached to the lid of a box feeding the cable into a battery charger. This charges a battery that then attaches to a power supply. This power supply is wired to a breadboard that connects to an Arduino and servo. The Arduino sends a signal to the servo to move the arm. This arm runs across the surface of the solar panel twice and removes any dust or debris and this happens at whatever time is set on the coding. This system is extremely effective as it uses the solar panels' own power to clean it. When using an energy reader the system gives very fruitful results. When the system sat in a controlled space it had an output of 8.0-8.1v. The dirty solar panel has an output of 7.8-7.9v. The freshly cleaned solar planes had an energy output of 8.3-8.4v. The energy output has significantly increased from cleaning. The system will only be used, in most cases, in the morning and night and that uses about 1.5-2v depending on the amount of times its run. This energy gained is then added by .5 continuously throughout the day. The benefits outweigh the little bit of power lost in order to gain much more efficiency. If the system is scaled up, then the power increase will be so drastic that we will have to use this system. We do have systems that can clean solar panels but this is much more cost-effective and takes up less space. This system could also be used to teach people about the importance of solar panels or encourage them to put solar panels on their houses. Overall, this system is cost-effective, efficient, safe, and low power.

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