



Preliminary Development of Solar Panel Dust Removal Robot and System

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In this paper, I developed dust removal robot system. Most of solar cells are located in desert. Desert is good environment because it rains less, but this also means there is much dust in desert. Dust on the solar panels reduces their efficiency. There are previous applications and researches for dust remove, but they have their own advantages and disadvantages.

Design point of new dust removal robot is simplicity. The simplicity can provide cheap cost, easy maintenance and operators who are even less educated. Simple mechanism and open source micro controller unit was applied to achieve the simplicity. Mechanism of the dust removal robot consists of springs and guidance rails. The springs provide contact pressure of wheels and squeegee to clean the solar panel. The guidance rails are attached by suction pad. This makes the dust removal robot system can be applied to solar panels that have already been using. Micro control unit is Arduino Uno, open source system. This is cheap, reliable and easy to maintenance and turned out on a mass production basis.

The dust removal robot has been tested, and I found several points to improve. The points will be applied to next version of the dust removal robot.



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