Solar Energy Number 1: The Best Solution to Zimbabwe's Electricity Problems

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Due to the shortage of electricity in Zimbabwe, many people are now using solar panels as an alternative. The shortage is still there since fixed solar panels generate less energy because they are not always perpendicular to the sun but only perpendicular one point in time during the day. So as a young Zimbawean scholar I decided to design and build a dual-axis solar tracker which follows the sun throughout the day. The project is inspired by how a sun flower follows the sun during the day without the use of computers. Unlike solar trackers in use today it does not require GPS information to pinpoint where the sun is in the sky thus being affordable for Zimbabweans. The rotation is controlled by two TDA 2822IC which receive information from four light dependent resistors (LDRs) located in a quadrant above the solar panel which then triggers two servo motors to move the solar panel in the y-axis and x-axis direction. After finishing the project, the dual-axis solar tracker's power output was compared with that of the fixed solar panel on a clear sunny day and on a partly cloudy day to measure how well the two modules perform. The dual-axis solar tracker had 23% more output energy compared to the fixed solar panel on a clear sunny day whilst on a partly cloudy day the dual-axis solar tracker had 14% more output energy. In a nutshell I developed a low cost dual-axis solar tracker and from the experiment I was able to prove it's effective.

Awards Won: