The Train Illuminator: A Self-powered Visibility Enhancement System for Safer Railroad Crossings

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The purpose of this experiment was to design and create a light system that would make railroad crossings safer. First, I researched to see if there was actually a problem with vehicles colliding with trains. Upon discovering this to be a very serious safety hazard, I came up with the idea of creating a wind powered LED light to attach to the side of the train cars. I then researched and designed the electronic circuit used to create the light system. In order to ensure that the LED's would stay illuminated even if the train was stopped or traveling below the speed required, I added a rechargeable battery to the circuit. I also added an LDR (Light Dependent Resistor) to the circuit so that it would only turn on at night. I finished building the circuit and began testing the devise. Test #1: I drove down the road at increasing speeds while holding the light system outside. Test #2: I repeated test #1, but this time I recorded the voltage generated at various speeds. Test #3: I then tested multiple individuals by having them watch a video of a train crossing at an unlit railroad crossing at night and had them rate how safe they thought the scenario was on a scale of 1-10. I then showed them the video of my working light system on the same train. I again asked them to rate how safe they thought that scenario was on a scale of 1-10. I conclude that my hypothesis was correct. A train illuminating system was successfully designed that increased the visibility of trains at railroad crossings based on multiple evaluations of the test subjects.

Awards Won: