

Smart STEM Challenge

SMART Home Power Security

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Category: Technology & Robotics

Age Group: Junior (Grade 7-9) Senior (Grade 10-12)

ABSTRACT:

: More than 45000 housefires a year are the result of overloaded electrical circuits. It is when too much current passes through electrical wires. It makes the wires heat and can melt with the risk of starting a fire. It of course kills a lot of people and damages a lot of thing along in the process. Imagine solving this problem almost 100% by just having extra wires and chipboards in the circuits at home. The project that I'm proposing is Smart Home Power Security. What makes me think that this project is interesting enough to be submitted into this competition is how the smallest thing can cause us a very deadly effect. Actually, the smallest thing that I was saying isn't so small as it sounds. It's hard to predict with the technology that people simply use in their household. Some of the solution for this problem are very reliable like circuit breaker, but circuit break is for cutting off the power only. What if it has already started a fire before the breaker does its job? not a lot of house are equipped with smoke detector. However, this project is to be ready for it. Instead of solving the problem, we prevent it.

The major part of this project is the programming part. And it wouldn't be possible without some materials like GSM module (used for sending and receiving messages) and Current Sensor or Hall Effect and a microcontroller which you could buy in a reasonable price. I made the whole thing into a system and divided it into 2 parts, the automatic mode and manual mode. For the automatic part I made conditions in it. The condition changes as the level of current in the circuit increasing or decreasing like turning the power on and off automatically. And for the manual mode is for the house equipment that requires big electrical power. It will stay on even when the power using is greater than the power limit.

It is programmed to message the status of current from the circuit to our mobile phone. Like when the power is on or being used. Or when it gets unusually too high it would give us warning and turn off the part of the circuit that is ABOUT TO overload. It would even send a text message (we can make it to give a phone call if we want to) to the fire station with your address for you. You can turn on and turn off the power whenever you want or when you're out and forgot to turn off the power at home you can just send a message to it to turn off. And you can change it into different modes.

So basically, we can do everything by just sending a text message to it. It's more convenient, faster and safer. With this equipped in your house, it is guaranteed to be safe from housefires and any other damaging related. It's built to be prepared for any situation that will come upon us and I hope this would serve like a beginning part of other accomplishments we don't know we would need in the future.

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