

Energy Management in Homes Using Internet of Things

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Electrical energy usage pattern is having a major effect in the generation of electrical energy. Since the Tariff system used in Sri Lanka allows to pay only for the energy used. The generation utility is facing losses financially, because of the lack of knowledge of costs involved in power generation, the lack of communication between the generation utility and consumers causes the un-economic energy usage pattern. In this research we used the internet of things to enhance the usage pattern of electrical power in residential areas. Since the Time of Use tariff method has been suggested for domestic consumers who are charged according to the cost of energy at that instant, Price of electricity decided by the utility according to the cost for producing it has to be sent to the consumers instantaneously to reduce electrical energy usage in the time where cost is high. To achieve this, a prototype was developed which consists of sensors to measure voltage, current, power factor, power usage, energy usage, temperature, humidity and can receive the pricing information of electricity from the utility. User interface was developed to display the energy price and the power consumption of the home instantly in order to educate the consumer about the electrical energy price variation with the energy consumption of his home. Smart devices such as smart phones, personal computers and laptops connected to the home Wi-Fi network with internet can be used to display the sensed data instantly providing information about the power usage and price of electricity for the home:

Keywords: Time of Use (TOU), Internet of Things (IOT), Wi-Fi