**IOT AND PLC BASED SMART HOME SYSTEM WITH PV INVERTER AND BLOCKCHAIN BASED ENERGY TRADING.**

**ABSTRACT:**

Typical IOT based smart home systems requires Wi-Fi coverage for the whole area. This is usually done using expensive routers. Also studies are going on to confirm suspected harmful effects of wifi on human health. We eliminate the need for this broad WIFI coverage for smart homes by communicating control signals over the powerline itself. The system consist of a solar inverter, a main PLC control box and a control box at every switchboard. The control unit is provided with internet access either via lan cable or via WIFI modem. All the switchboards and appliances will be connected to the control unit via existing powerline itself. We implement an online UPS system with lead acid battery for the PV system and the energy usage pattern of all the connected homes can be recorded and analyzed.

The main control box is connected to the internet which enables the whole system to be communicated remotely via a website or mobile app. This also enables us to do the analytics on the usage pattern of households and energy usage prediction. We also design an online solar ups which is able to do energy trading with the help of a blockchain based system. Solar energy is gaining popularity these days, but the marketplace for distributed generation of energy is weak. The energy transfer data can be tampered with. We curb this idea by implementing a blockchain based system. It’s based on a distributed ledger. We also use the idea of smart contracts to carry out energy billing.

The inverter market is dominated by a few individuals and majority of the companies buy rights from these proven designers and this increases the cost of them. We aim to make it open source so that engineering community can work on it and thus benefit from the knowledge generated by doing this project.

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