# Energy management system block diagram

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Consumer electronics, office equipment and other plug loads consume 15 to 20 percent of total residential and commercial electricity while not in primary mode. Much of this energy is consumed when these devices operate in low-power modes but are not actually in use. One way to reduce this unnecessary electricity consumption is to use a smart energy management system.

The main goal of our project "Smart home energy monitoring and management system" is to develop a system such that it will be capable to keep a track of each and every appliance in the home and the user will be able to acquire all appliance energy consumption parameters. Along with this, the energy consumption parameters of each individual appliance will be sent to gateway where an intelligent algorithm will be running to manage all the appliances as per user requirements. The user can monitor the energy parameters of each individual load using an android smartphone which will also work as a data setter to set various user programmable parameters like high/low cut-off voltage, etc.

By automatically turning off loads when not in use, the system can provide energy savings in homes and offices. Applications for this system include workstations, open office cubicles, home offices, and home entertainment systems.

In light of the increasing cost of electricity and the Global Warming campaigns to reduce general electricity usage, there is a growing interest in analyzing power consumption in households. By analyzing the electricity usage of each individual appliance separately, more accurate conclusions can be drawn on their efficiency and need for replacement. Furthermore this can also determine whether an appliance is drawing unusually high amounts of power when turned off and whether it should rather be unplugged. In this way electricity consumption and cost can be reduced.

Most conventional prepaid power meters currently installed in households only display the total real time usage of its power and the amount of electricity available. There is no way to see what the day"s, week"s or month"s consumption was on these meters and often these power meters are placed in an inconvenient location which makes regular viewing somewhat difficult. These power meters also lack the ability to monitor appliances individually; thus hiding vital information about individual appliances.

o Wired/wireless communication between nodes and gateway

o Correct measurements of Voltage, Current and Power

o Reliable wired/wireless communication between gateway and remote meter nodes.

If time permits, the following additional features may be added so as to improve the project, keeping in mind that omission of these features will not affect operation:

o Building safe mechanical structure to package the gateway station

Definition of Smart Meter and Smart Meter Systems

Smart Meters are electronic measurement devices used by utilities to communicate information for billing customers and operating their electric systems. For over fifteen years electronic meters, have been used effectively by utilities in delivering accurate billing data for at least a portion of their customer base.

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