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Efficient Power Distribution and Consumption in Smart Grid
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In the electrical network of a country, Distribution is the final stage in delivering power involving distributors as well as consumers. Both distribution and consumption of electric power in the Smart grid system can be smarter, safer and cleaner than a conventional power grid. Smart grid is a next generation power grid that replaces the inefficient conventional power network with modern technology, two-way energy & information flow, new power harvesting methods, smart meters in smart homes and smart sensing nodes all over the grid.

In this research it is going to be analyzed about the advantages that the sectors related to Distribution and Consumption of energy can gain with some additional technologies interrogated to the smart grid. In conventional system the distribution and consumption of power was not efficient enough due to improper communication, no number of smart sensing nodes and less number of automated power consumption methods. These defects can be rectified with the installation of smart meters, smart sensing nodes two way information flow, automated power consumption in smart homes and real time monitoring of the energy distribution & consumption network. This research can be implemented in practical with a cooperative wireless network with HAN, WAN, Zig-Bee & GSM modules, a central database with several smart sensing nodes and required hardware applications.

In other words, there can be a smart monitoring and distribution of power with reliable, safe and perfect electric flow, illegal tapping detection, automated fault alerts, quick power restoration, real time energy monitoring and smart consumption of energy at the end user side which will result in an efficient, profitable power distribution and consumption in distribution grids and smart homes of smart grid. Addition to this, the research can be extended to cover areas including self-healing, smart energy transmission and smart energy generation based on the functioning of a smart grid.

Keywords: automate light/fan circuit, GSM, prepaid electricity billing system, smart grid, smart sensing node