ABSTRACT
In this application we can generate the energy using renewable energy sources one is by using solar energy, another one is wind mill and one more the optional source is conventional power. These energy sources we are connecting to the grid via battery and inverter, Parallely the battery output is connected to micro controller unit and these microcontroller is connected to LCD for displaying which source is available and also for displaying the battery voltage. Whenever the load is connected some units will be consumed, these units will be calculated and displayed on the LCD by using controller and the total transmitter section information is transmitted to receiver section and displayed on the Pc through a wireless communication by using Zigbee technology.

INTRODUCTION
As home energy use is increasing and renewable energy systems are deployed, home energy management system (HEMS) needs to consider both energy consumption and generation simultaneously to minimize the energy cost. Here a smart HEMS architecture that considers both energy consumption and generation simultaneously. ZigBee based energy measurement modules are used to monitor the energy consumption of home appliances and lights. The current energy crisis requires significant reduction in energy consumption in all areas. Energy saving and renewable energy sources (RES) are considered as methods of solving the problem. In home area, the increasing number of home appliances and consumer electronics causes residential energy use to grow rapidly. Home energy management system (HEMS) is needed to reduce energy use and save money. A HEMS that monitors, compares, & controls home appliances has been proposed. In addition, RES such as a photovoltaic energy and wind energy are deployed to conserve residential energy use & to reduce energy cost. Energy management systems including renewable energy have been studied to advance smart home.

NEED OF THE PROJECT
As the numbers of large-sized electric home appliances are increasing, the home energy consumption is also increasing proportionally. To reduce the home energy cost, it is necessary to consider both energy consumption and generation. In this application intelligent home uses renewable energies. The problems of home energy management systems are solved by implementing energy saving method and renewable energy sources. Hence The concept of home energy management system has been an interesting topic for researchers and practitioners during the last few years. The majority for recent techniques concentrate on exploiting wireless communications on the way to make communicate with the other devices such as Mobile phones and Laptop’s. Controllers are interface with the Bluetooth for display the reading in mobile phones and Laptops. But the Bluetooth range is short then it cannot send the reading information’s for longer distance. Now-a-days there are lots of techniques used to send the data for longer duration. In this project, we propose smart home energy
Existing Systems

In a paper [1] the authors suggested smart HEMS system with the MPPT (Maximum Power Point Tracking) technique. By using this technique we can increase energy generation by using the same hardware setup. In this system the energy meters are not employed. Simple smart home energy management system using PIC controller is developed. Another paper [2] proposed the technique of the power supply distribution and management based on the demand basis. The overall system comprises an HEM unit that provides monitoring and control functionalities for a homeowner, and load controllers that gather electrical consumption data from selected appliances and perform local control based on command signals from the HEM system. In another paper [3] proposed the simple home energy management system using IR sensor and ZigBee. In this project they have used AVR microcontroller and they proposed only the energy management system by using IR sensor for operating the appliances from remote places. Another paper [4] explains the system with the low energy application by using Bluetooth. Controllers are interface with the Bluetooth for display the reading in mobile phones and Laptops. But the Bluetooth range is short then it cannot send the reading information’s for longer distance. Zigbee based Smart home energy management system are integrated with Wi-Fi network through gateway. Gateway can provide the user interface and openness to the particular system. Through using Zigbee designed for take the electrical readings such as energy consumption from home appliances. In the paper [5] system architecture for the smart grid is presented. Requirements of security and solutions for cyber-attack in the smart grid also discussed.

Proposed System

In the proposed system, we are implementing a simple home energy management system including renewable energy using ZigBee wireless technology. In this system we are using ARM 7 Microcontroller (LPC2148). For energy generation purpose we are using solar panels and wind mill. Also the energy meters used for measurement purpose. 16*2 LCD display is also used. ZigBee transceiver is used for wireless communication purpose. Zigbee is based on the IEEE802.15.4 protocol. The range of ZigBee is covered up to 100m. Range of Zigbee is ten times more than that of Bluetooth, hence used Zigbee.
Software Tools
1. KEIL software.
2. Embedded C.
3. Flashmagic, etc.

Applications
1. Can be used to reduce Energy cost.
2. Used to increase the power generation capacity of the nation.
3. Can be used in industrial applications.
4. Can be used on broad scale with little modifications.

CONCLUSION
The Smart home energy management system works well in real time. Solar energy and wind energy are tremendously available in nature, so there is enough production of power to supply the home appliances. The cost of the implementation is low and also the system reduces the cost of the power. To save the energy for upcoming future generations, home appliances are kept off during peak hour to maintain energy management.

Future Scope:
In Proposed Smart Home Energy Management System, we can modify the hardware for use of system on broad scale. As we can increase the Energy storage capacity (Battery size) as well as size of the solar panel and wind mill. Also we can include other renewable energy generation techniques such as Nuclear (Atomic) Energy, Geo-Thermal Energy, Tidal Energy, Hydraulic Energy, etc. By including these energy techniques we can use this system for the industrial purpose & also can be used to increase the power generation capacity.

REFERENCES

