HYBRID SYSTEM FOR SMART BUILDING USING SOLAR PV PANELS WITH REAL AND REACTIVE POWER INJECTION

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ABSTRACT: The incorporation of renewable energies and power storage at distribution facility are the main features in the micro grid. The hybrid system that mingle solar, wind and main source with smart home is designed on demand response and the time of consumption pricing applied to programs discount to consumer decrease energy usage during high demand period. This method reduce cost utility of the consumer and have high performance. The advantage of the micro grid is to reduce the electricity bill.

INTRODUCTION:

The implementation of micro grid into home means it's a smart meter logical appliance. The energy management network include the power management system and electricity management services. This smart micro grid energy distribution system provides digital home based energy control services consultancy. This intelligent smart home network offers some benefits and fulfilling the market side demand. It can be suitable all buildings with renewable energy sources. The electronic communication between utility and common house hold components in two way by use of advanced integrated energy storage component a sparing power system. The main source also utilize the energy demand in the power system.

HYBRIDIZED INTELLIGENT HOME RENEWABLE ENERGY MANAGEMENT SYSTEM:

According to this smart grid network. AMI (Advanced Metering Infrastructure) have two way power communication of power services in smart houses .It's offers the demand side capital for smart houses. The power consumption from all the various home appliances gather the information from the home area network (HAN) communication and sensing technology. This smart micro grid is act as a leader to decide on minimal lower amount of energy to produced by a central energy management unit.

BLOCK DIAGRAM:

MICRO GRID
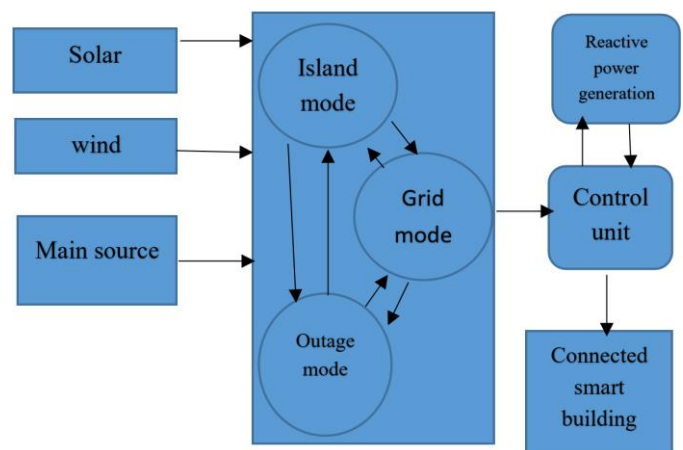
MICROGRID:

ISLAND MODE:

A micro grid is said to be in islanded mode when it is disconnected from the main grid and it operate independently with micro sources and load. In the proposed work autonomous micro grid is formed by considering two units only.

GRID CONNECTED MODE:

In grid connected mode, the micro grid works as current controller and injects power to the main grid depending on power generation and local load with suitable market policies, providing constant voltage at a stable frequency with proper synchronization among each DG in a micro grid is challenge.

OUTAGE GRID MODE:

During a grid outage, a micro grid will enter island mode through either a manual or automatic process in order to support the facility operation for most abnormal conditions . The generation must automatically disconnect and cease to energize the grid. The main source is to satisfy the high peak load in the power system. At this time outage grid mode get activated.

REACTIVE POWER

GENERATION :

Reactive power is either generated absorbed by electric generator to maintain a constant voltage level, commonly referred to as providing voltage support .Generators providing voltage support often suffer heating losses that result in a reduced ability to generate "Real Power". The reactive power generator is connected with the control unit to maintain the supply of the smart building.

RELATED WORK AND ITS

SIGNIFICANCE:

The process such as storage supply, electric power generation and dispatched technologies can be utilized in smart grid this smart grid improves consumption of electricity. The latest metering infrastructure can be used for demand particular area if the domestic devices are provided along with the detectors.

It discussed a theoretical patterns a multistage and multistory game are the problem of the disturbed domestic energy management system with the multi micro grid with capacity and several customers.

This micro grid is act as a leader to decide an minimal or lower amount of energy to produced by a central energy management system.

HARDWARE REQUIREMENTS:

BATTERY:

Battery plays a vital role in the project. Energy can be generated from solar panel and wind and main source.so battery is used to store the generated electricity in the micro grid. Battery is a series arrangement of fuel cells that generate electricity by a process of electrochemical reaction. The output is depends on the usage of the electricity consumed by the load. Rechargeable battery is used in this project for the continuous usage of the electricity by load, it can recharge automatically.

CONTROL UNIT:

The control unit controls the power modulator which operates at small voltage and power levels. It can act as a power modulator in desired circuit driver, it generates the command for protection of motor.

It protect the motor and safety for the power modulator. The output of the control unit is given to the smart buildings.

PV Production of the Micro grid.
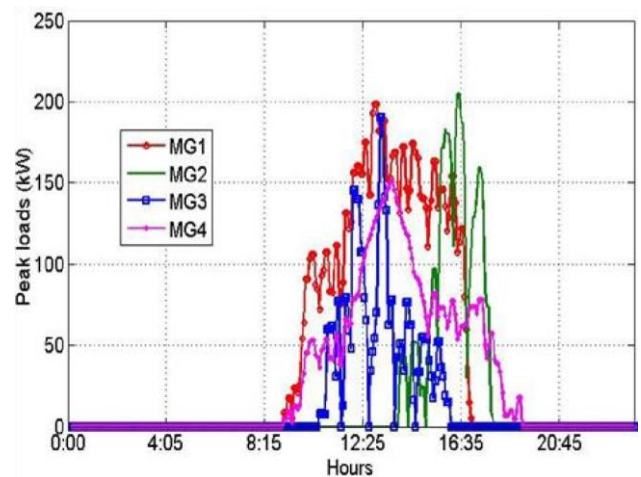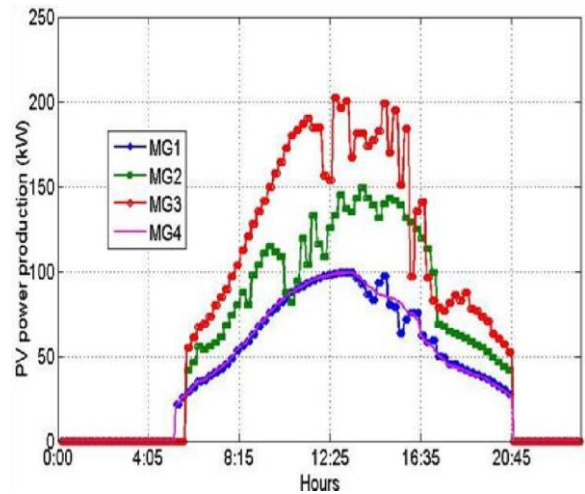
Peak power load of the buildings.
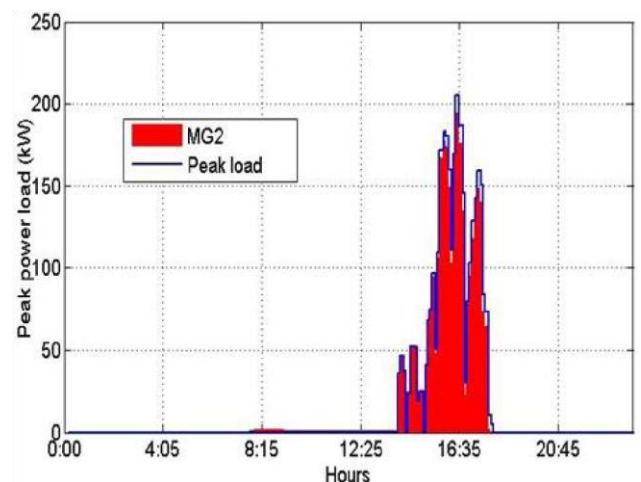
Peak load reduction in micro grid.

CONCLUSION:

This paper is to share the peak and off peak load in the buildings by using the various sources like solar, wind and main source. The aim is to reduce or shave peak loads in a

cooperative network of micro grids powered smart buildings. This method used to share the load very effectively with real and reactive power injection in the power system of the smart buildings.

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