



DESIGN OF A MICROCONTROLL BASED AUTOMATIC HYBRID CHARGING SYSTEM

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ABSTRACT:

This project work presents a Microcontroller -based hybrid battery charging system for Electrical Vehicles. It has been designed for the operation of an experimental charging unit, equipped with a DC battery storage system, which is sourced from both PV Cells and Wind turbines. The connections of the energy source to the common dc bus make use of power inverters with specific functionalities. The central theme of this project concentrates on the microcontroller, which provides monitoring and power scheduling in both direct-connected and back up operating conditions. This project describes the structure and functionalities of the Battery management system which is contingent on experimental investigation aimed at reducing the cost of localized cost of electricity, giving total independence to individuals to charge their own electric Vehicles and increasing the share of renewable energy sources in electrifying Batteries.

KEYWORDS:

MICRO CONTROLLER, HYBRID BATTERY CHARGING SYSTEM, ELECTRICAL VEHICLES, PV CELLS, WIND TURBINES.

INTRODUCTION

In 21st century the vehicles industry try to develop and make the charging vehicles with replace the fossil fuel vehicles. In other countries design a electric vehicles to run only in batteries and some other vehicles run hybrid system. The hybrid system consists of fossil fuel and battery.

EXSISTING SYSTEM

This system consisting hybrid charging system with the help of fossil fuel. This models are used to induction motor. The induction motor runs above rated speed it act as a generator. Use this concept to recharge the battery by friction to the heat is wasted in the form kinetic energy. On this time the motor act as a generator to use this kinetic energy to recharge the battery.

PROPOSED SYSTEM:

The proposed system consists hybrid charging system by using two renewable energy sources. These renewable energy sources are solar energy and wind energy. The car moves in highway the heat in high on this highway compare than other road way. The sun intensity is high on road ways the solar panel fitted top side of the car. It generate solar energy. At the same time also wind speed is slightly high. The wind turbine is fitted top of the car and side of the solar panel. With the help of microcontroller it compare the renewable energy producing the both two sources. Which source producing energy is high, use this

energy to recharge the battery while running and stop condition of the car.

MATERIALS:

1. PV CELL
2. DC-DC CONVERTER WITH MPPT
3. VOLTAGE SENSING CIRCUIT
4. RELAY
5. PIC MICRO CONTROLLER
6. DC MICRO GRID
7. WIND TURBINE
8. BATTERY
9. DC-AC INVERTER
10. MOTOR.

PV CELL: It is used in solar panel for convert light energy into electrical energy. It's stands for photovoltaic cell. This cells are fabricated in silicon. Solar pv cells are four types.

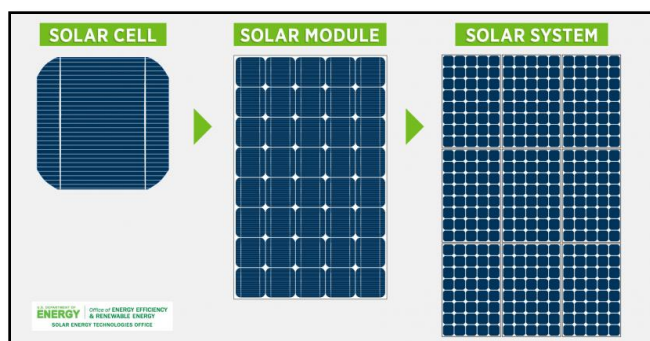


FIG-1-PV CELL

DC-DC CONVERTER WITH MPPT:

MPPT stands for maximum power point tracking. It is solar controller. It is used to charge the battery either an alternator.

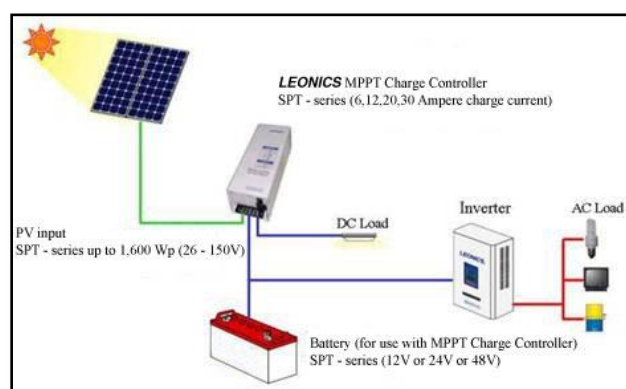


FIG-2-DC-DC MPPT

PIC MICROCONTROLLER:

PIC stands for peripheral interface controller. It is the brain of this charging system and it controls the works of all components in this charging system. In programmed by the programmer to compare which source produced high voltage level in hybrid renewable system. One source is produced high voltage after relay is on to starts charging on the battery via micro grid.



FIG-3-PIC CONTROLLER

RELAY:

It is a electronic circuit .It's act as a switch. When pic controller give command for ON now the relay is on to allow voltage to charge the battery. Otherwise relay is OFF condition.



FIG-4-RELAY

MICRO GRID:

It is a type of grid connection. It is used to distribute the energy from one or two energy sources.

DC-AC CONVERTER

It is used to convert dc power to ac power .It is placed between battery board and motor. To convert the power dc to ac after the motor starts run .



FIG-5-DC-AC CONVERTER

WIND TURBINE:

It is used to produce the electrical energy from air .It also generate the electric power and level measure by sensing circuit and this level to pic controller and it compare to solar energy level after relay is on to charge the battery.

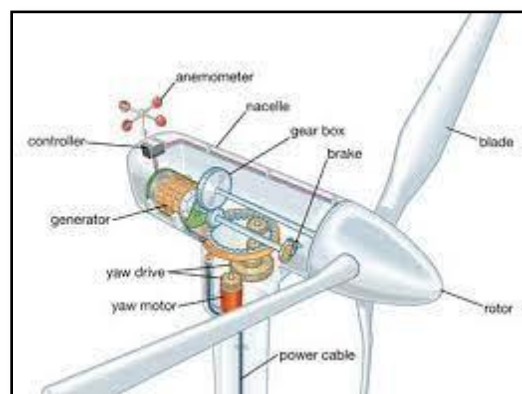


FIG-6-WIND TURBINE

VOLTAGE SENSING CIRCUIT:

It is used to sense the voltage level from producing hybrid renewable sources. It the level value to pic micro controller and compare the two sources. Two voltage sensing circuit is used in this system.

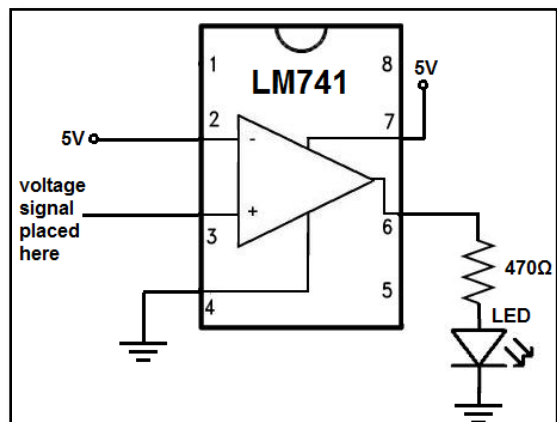


FIG-7-VOLTAGE SENSING CIRCUIT

BLOCK DIAGRAM:

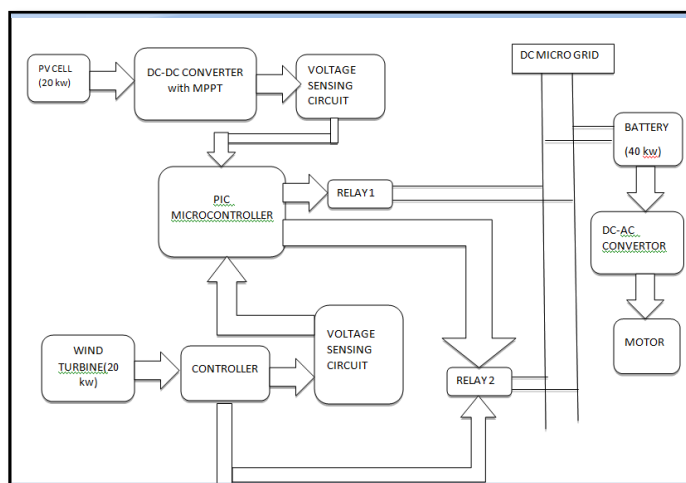


FIG-8-BLOCK DIAGRAM OF CHARGING SYSTEM.

RESULT:

This proposed model is new and practically implementable. In this hybrid charging model is used by two renewable sources. In this model doesn't dependent fossil fuel. In this model better compare than other hybrid charging model.

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