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ANALYSIS OF ELECTRIC VEHICLE CHARGING STATION ON SOLAR AND WIND ENERGY

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ABSTRACT- Energy is critical to the economic growth and social development of any country. Indigenous energy resources need to be developed to the optimum level to minimize dependence on imported fuels, subject to resolving economic, environmental and social constraints. This led to a boost in research and development as well as investment in renewable energy industry in search of ways to meet energy demand and to reduce dependency as an investment in the renewable energy sector in an effort to meet energy demand and wean the world off fossil fuels.Due to their abundance, accessibility, and simplicity in generating electricity, wind and solar energy are growing in popularity. This research focuses on a wind and solar energy integrated hybrid renewable energy system.There is potential for commercial power generation in many areas of the nation. Maps were used to pinpoint places with strong wind and solar potential.

Index Terms- Firefighting robot; compact size robot; ultrasonic sensor; flame sensor; remote control

I. INTRODUCTION

AS well known the main resources of energy in India are oil and gas which results in high emission of carbon dioxide and other gases. As the modern world consistently emphasizes on using renewable energy to generate electricity, which is harmless to the environment. Hybrid power plant is a new developed technology that is used to convert solar energy with any system that generates energy[1][2].Parabolic trough solar power plants are the most proven system of concentrating solar power (CSP) techniques [3][4][5]. There are nine parabolic trough solar electricity generating system (SEGS) in California, USA illustrates the capability of this technology to be a reliable, renewable energy resource. This system has been operating commercially as large-scale thermal solar power plants with a total output of 345 MW [4]. CSP plants are promising technologies to be the alternative clean energy option to fulfil the rising energy needs while also having a smaller negative environmental impact. According to predictions, CSP will play a large role in the world's economies, which are expected to rise both in industrialised and developing nations. The electricity generated by CSP in the Mediterranean and North African (MENA) region can be supplied to the EU and utilised to upgrade regional energy production infrastructure. By combining CSP to generate electricity in the MENA region and a high voltage direct current (HVDC) network to

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export it to the EU, it proposes to connect the electricity grids of the Mediterranean and North African regions of Europe.

II. METHODOLOGY

Designing a wind solar hybrid system is a novel idea in the setting of India, hence literature in this area was rese arched.the potential of India's wind and solar Find an area with a high potential for solar and wind Analyse the a vailable wind and solar data in the specified location.NASA satellite data on weather, solar energy, Determine a place with both wind and sun potential.Using the software tool, design and analyse a wind solar hybrid system for the chosen site.

A. Mechanical Design Structure

Parabolic through.
Central receiver (solar tower).
Parabolic dish.
Linear Fresnel reflector.

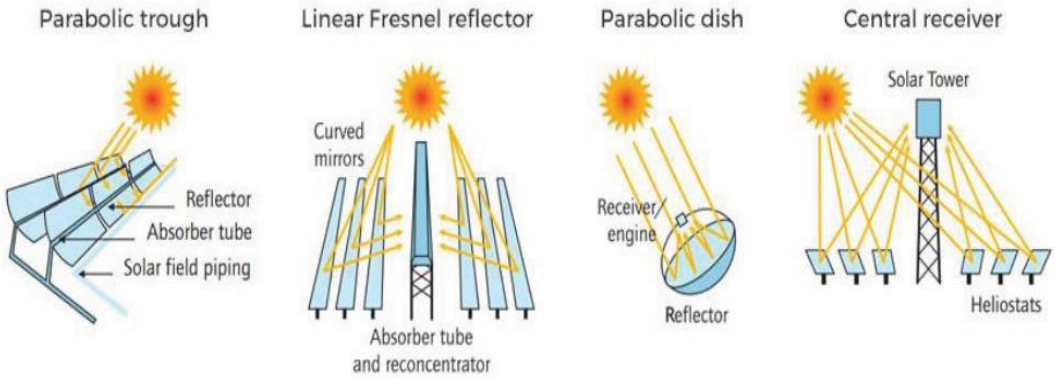

Fig.1- Different types of solar thermal power technology

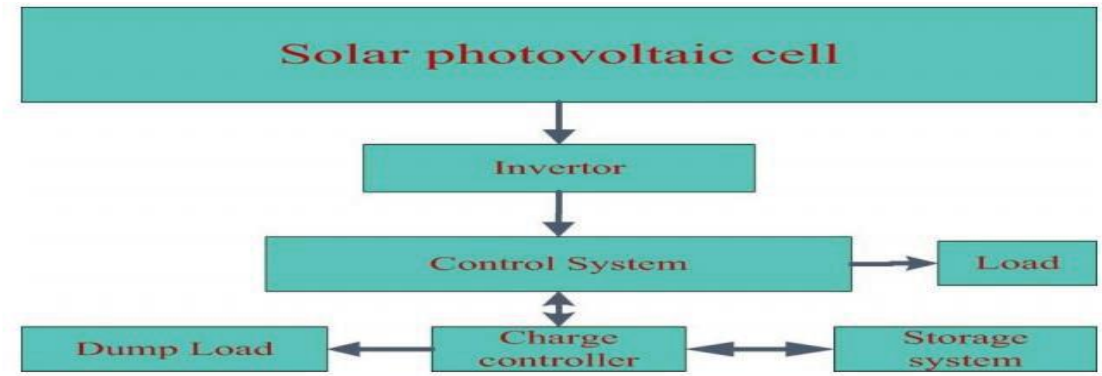

Fig 2 -.PV solar system

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Fig.3- wind power generation

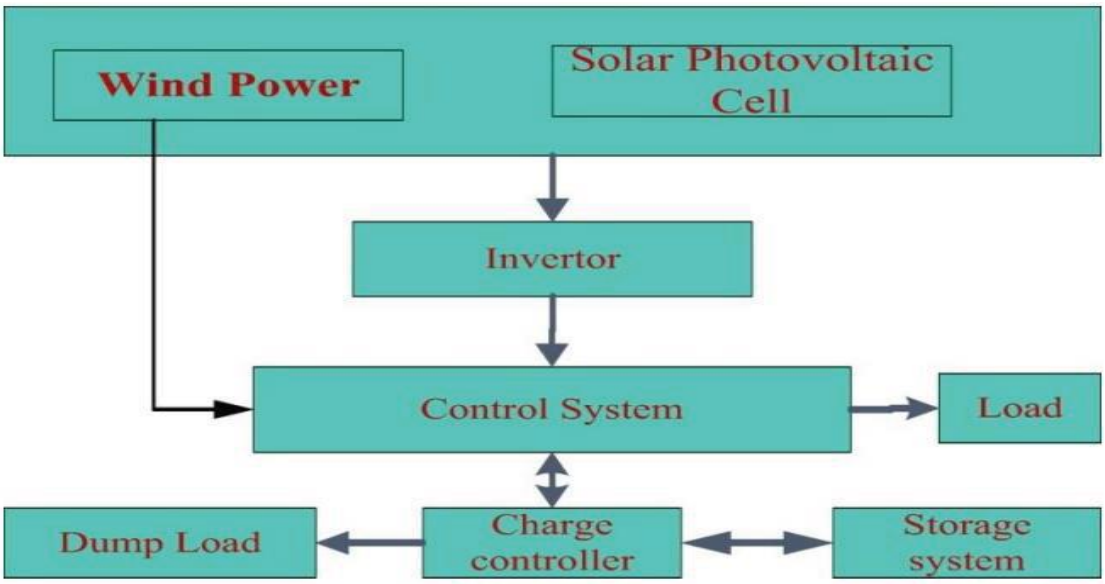

Fig.4- Hybrid system component

B. Hardware Implementation

The electronic part is one of the vital parts in the development of QRob. It includes the several types of sensors, microcontroller, DC motor with wheel, Transmitter and Remote control and Water pump. Fig. 3 shows the block diagram of the QRob operation which consists of flame sensor and ultrasonic sensor as input of the system. Arduino Uno is used as a microcontroller that connected with other components. Motor Driver (L298N) is used to activate the moving of the gear motor while Transmitter Remote Control will give output of the system. Flow of water and fire extinguisher were pump after being controlled by the operator. On the other hand, the operator can monitor the robot movements by using camera (Go Pro) which connects to a smartphone.

1) *MICRO-CONTROLLER UNIT*: The heart of the whole project is the Micro-controller unit. For this project the Arduino Uno Micro-controller was used. It is a low power general purpose micro-controller with good processing speed, small physical dimension, that is durable and cheap.

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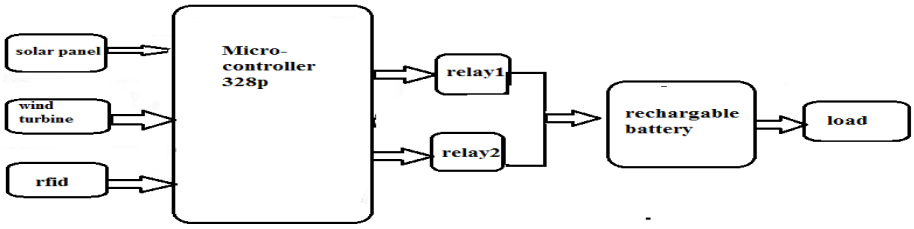

Fig.4- Micro-controller unit

In above diagram as we see that the all the components is communicate with the 328p microcontroller it is the heart of our system and hence the all the devices input and output is attached with the controller .the rfid tag is a device which has specific range of frequency .the overall system is secured by the rfid system . if the rfid tag is swapped then the we get output but it is depend upon which energy is present at that time cause the solar energy is available only if the solar sun energy present the .if the solar energy is present then relat 1 is get actaualted and the battery is started the charging with solar energy but if the solar energy is absent and the wing energy is present then relay 2 is get started and battery start charging . therfid tag is for to swap and accessing the power of the system for the output.

2) LCD DISPLAY: LCD modules are vey commonly used in most embedded projects, the reason being its cheap price, availability and programmer friendly. Most of us would have come across these displays in our day to day life, either at PCO's or calculators. The appearance and the pinouts have already been visualized above now let us get a bit technical.

3) Wind and generator DC Motor: A DC motor is any of a class of electrical machines that converts direct current electrical power into mechanical power. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic; to periodically change the direction of current flow in part of the motor. Most types produce rotary motion; a linear motor directly produces force and motion in a straight line.

4) THE POWER SUPPLY UNIT: Now days, almost all electronic equipment includes a circuit that converts ac supply into dc supply. The part of equipment that converts ac into dc is called DC power supply. In general at the input of the power supply there is a power transformer. It is followed by a rectifier (a diode circuit) 1a smoothing filter and then by a voltage regulator circuit.

From the block diagram, the basic power supply is constituted by four elements,

III. RESULT

Wind or solar power cannot be the sole source of electricity in a stable base-load grid, but they can reduce the use of conventional energy sources. The environmental benefits of the wind-solar hybrid system in this study were assessed in terms of avoided emissions. Given that a conventional thermal power plant emits a certain amount of pollutant per kWh of generated electricity, the wind-solar hybrid system can be considered to cause an avoidance

of emissions, since it generates the electricity with nearly zero pollutant emissions. Although there are manytypes Sulphur dioxide, nitrogen oxides, and carbon dioxide emissions were taken into account while calculating electricity generation emissions.The main greenhouse gas released during the production of conventional electricity is CO 2, making it possible to say that the established power sector has the biggest negative environmental impact.Conventional diesel fuel emits 0.6 kilogramme of CO2 for every kWh used.
Sulphur dioxide and nitrogen oxides would be reduced by 1.5,0.74 tons/yr, 331 tons/yr, and 0.427 GWh of energy would be saved.

IV. CONCLUSIONS

The present worldwide trends concern energy security and sustainable development across the globe. The role of renewable energy has therefore become ever more significant. The developed world is already on the track for walking out from the fossil fuel era and involving mainly the areas of renewable energy technologies and energy efficiency. Through this study an insight into the energy situation and renewable energy potential of Indiawas given.India has been shown to have economically viable wind and solar energy producing potential.
A gridsolar hybrid power generating system was modelled for a chosen location in the almarj area of India (MARJU), which is situated on the coastal belt close to Benghazi, using the HOMER simulation programme.Installation of 10 100kW wind turbines and a 150kW solar PV array was determined through simulation to be the economically most feasible design to supply the average load connected to the grid, with a payback period of 2.6 years.

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