

SOLAR BASED AIR COMPRESSOR

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Abstract: *Solar energy is an abundant source of green energy. It plays a crucial role due to increasing price of fossil fuels and acute shortage of them which leads to global warming. In comparison with non-renewable energy sources like coal, solar power energy is more efficient in being converted to electrical energy. The onus of this project is to use solar energy to charge a battery with the help of solar panel which is composed of photovoltaic cells. These cells are composed of silicon oxide which has the property to convert solar energy to electrical energy on reaction with photons. A rechargeable battery will be used to power an air compressor pump which can be used to inflate car, bike tires. The AT mega328 microcontroller will be programmed to continuously monitor the pressure level in tire and inflate it as soon as the pressure in the tube drops below a preset value, once the tire reaches the desired value the microcontroller will switch off the air compressor pump.*

Keywords: *Solar, Green energy, Air compressor, Fossil fuel*

1. INTRODUCTION

The green energy also called the regeneration energy, has gained much attention nowadays. Green energy can be recycled, much like solar energy, water power, wind power, biomass energy terrestrial heat, temperature difference of sea, sea waves, morning and evening tides among these, solar energy is the most powerful resource that can be used to generate power. So far the efficiency of generating power from solar energy is relatively low. Thus, increasing the efficiency of generating power of solar energy is very important. Solar energy is the most powerful resource that can be used to generate power. So far the efficiency of generating power from solar energy is low because solar cells have been hooked with fixed elevating angles. They do not track the sun and therefore, the efficiency of power generation is low. Since the fixed-type solar panel cannot obtain the optimal solar energy, the transformation

efficiency of solar energy is limited. With rising energy costs and more awareness of the need to be environmentally friendly, companies and individuals are beginning to utilize the solar power air compressor. Solar Power Air Compressors are used By Oil and Gas Companies. "Air compressor" is one of those terms you hear all of the time, but couldn't tell one if it compressed you in the face simply, the compressor compress air. They work like power generators or battery cells in that they force energy to where it needs to go in order to make a device work. They are often used in more remote and inaccessible areas where you just can't plug your drill into a wall socket. A solar power air compressor is not just a tank and portable generator looking device, but also needs solar power panels and wiring from the panels to your solar power air compressor.

2. MOTIVATION

In this day and age, vehicles are the spine of the transportation framework. Yet, as it's the case with any run-of-the-mill mechanical progression, there are likewise issues like street mishaps. A portion of the commonplace purposes behind this issue is a distortion of the drivers about the protected distance between two vehicles or a vehicle and a deterrent. Therefore, we are making this Arduino application that will show protected distance and give security to vehicles.

3. PROBLEM STATEMENT

In India due to coal shortage and electricity problem that solution is solar energy. This solar energy convert electrical energy and stored battery to run output.

4. SCHEMATIC DIGRAM

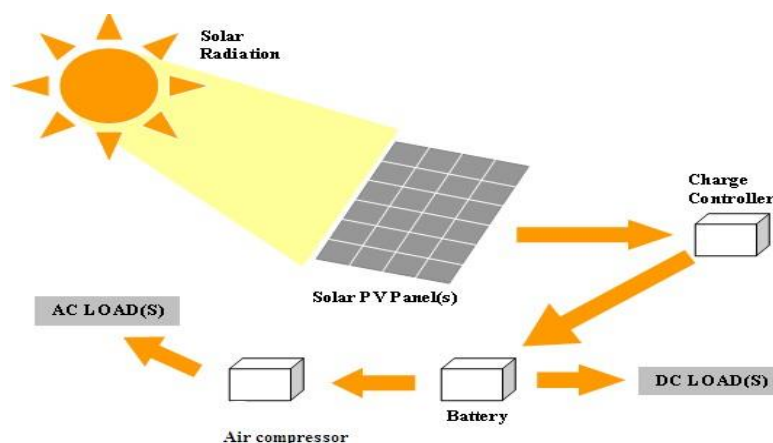


Fig. 1: Schematic Diagram

5. ACTUAL SETUP DIAGRAM



Fig.2: Actual Setup Diagram

6. PROPOSED SYSTEM

Methodology

At Methodology can properly refer to the theoretical analysis of the method appropriate to a field of study or to the body of methods and principle particular to a branch of knowledge.in this chapter, it was involve the process flow of every step in archive the objective of this project. There are many methods use in this project such as internet references, interviewing lecturers and technicians and the most important is group discussion.

7. ADVANTAGES, LIMITATIONS & APPLICATIONS

Advantage

1. This is renewable and nonconventional source of energy.
2. Portable in nature.
3. Its save electricity.
4. Very helpful for rural areas.
5. Easy move one place to another

Limitations

1. Initial cost is high.

Applications

1. It is mainly used to filling air in tyre tube
2. It is also used to clean workshop machine
3. It is used to spray painting

8. FUTURE SCOPE

Solar power nowadays is playing a major role in meeting the energy requirements of our country. It is being developed at a very fast rate and its applications in many areas are being explored the solar air compressor is solution to the areas where there is no electricity. This project main objective was to develop a solar based air compressor successfully done. The applications of this solar air compressor are very wide and it can be used in various places 34for filling air in vehicle as well as workshop and service station, spray painting. This system are mainly used in rural area and highways.

9. CONCLUSION

The purpose for the research work had been successfully performed and it had been observed the actual operation of an Air compressor can be operated using solar panel voltage which is used to drive the air compressor effectively without any external supply that will eliminates the usage of using non-conventional source of energy. This research work enables interface linking the air compressor with the help of microcontroller through relay section and also by programmatically Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. The project has been successfully completed and it has been observed that powering an air compressor pump with solar power helps in saving energy and makes the system environment friendly by eliminating the usage of conventional sources of energy. We hope that this project serves as an inspiration to others to use renewable sources of energy to power devices.

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