

"A Result Paper On: SOLAR OPERATED DC MOTOR FOR MIXER GRINDER WITH AUTO CHARGING"

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ABSTRACT

The point of the present work is to outline and create solar power fueled auto charging grinding machine is utilized for granulating any state of objects like Circular, Rectangular, and Polygon. Grinding machine is accustomed to grinding the distinctive sorts of material. The grinding machine is turned by the single stage acceptance engine. Thus our task to be specific solar fueled auto charging grinding machine is a Special kind of Machine. As indicated by the sort of material to be grind, the granulating instrument can be changed. This task gives subtle elements of granulating different shapes and sizes of segments. This machine can be broadly connected in all sorts of ventures. By differing the pulley sizes we can get a top of the line speed of more than 10,000 rpm if necessary. The main change we have to make is to have a completely encased engine to keep out the coarseness. In the present work D.C powered grinding machine which control is drawn by the 12 volt D.C battery. This battery is charged by the solar power based board and the alternator which is coupled to the grinding machine shaft with the assistance of spur gear drive.

Keywords: Solar panel, Battery, Switch, DC Motor

1. INTRODUCTION

Solar fuelled auto charging grinding machine is a Special kind of Machine. As indicated by the sort of material to be grind, the granulating instrument can be changed. This task gives subtle elements of granulating different shapes and sizes of segments. This machine can be broadly connected in all sorts of ventures. By differing the pulley sizes, we can get a top-of-the-line speed of more than 10,000 rpm if necessary. The main change we have to make is to have a completely encased engine to keep out the coarseness. In the present work D.C powered grinding machine which control is drawn by the 12-volt D.C battery. This battery is charged by the solar power-based board and the alternator which is coupled to the grinding machine shaft with the assistance of spur gear drive.

To design and fabricate auto charging grinding machine. It is used to grind the machining surfaces to super Finish and accuracy. to design and fabricate auto charging grinding machine. It is used to grind the machining surfaces to super Finish and accuracy. The principal parts of this attachment are main body, motor. So, this project solar powered auto charging grinding machine is very much useful, since it is provided with good

quality of power sources and simple operating mechanism. Hence each and every drop of fuel saves our economy and meets the needs is the saturation point that is to be attained as soon as possible. In order to achieve this saturation, point we have to save and seek for some other source of power. This power, the alternate power must be much more convenient in availability and usage. The next important reason for the search of effective, unadulterated power are to save the surrounding environments including men, machine and material of both the existing and the next fourth generation from pollution, the cause for many harmful happenings and to reach the saturation point. The most talented power against the natural resource is supposed to be the electric and solar energies that best suit the automobiles. The unadulterated zero emission electrical and solar power, is the only easily attainable alternate source.[1] Hence we decided to incorporate the solar power in the field of automobile, the concept of many Multi-National Companies (MNC) and to get relieved from the incorrigible air pollution. Need for non-conventional energy sources. Energy is the primary and most universal measure of all kinds of work by human beings and nature. Everything what happens in the world is the expression of flow of energy for input to their bodies or to the machines and thinks about crude and electric power.

2. BLOCK DIAGRAM

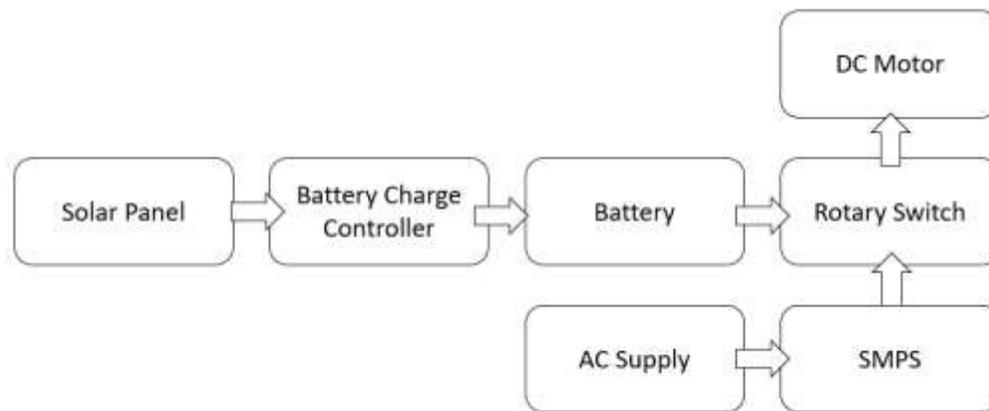


Fig: Basic Block Diagram

2.1 SOLAR PANEL

Solar energy has the greatest potential of the sources of renewable energy and if only a small amount of this form of energy could be used. Solar radiation is the diffusion radiation. The solar power where sun hits atmosphere is 10^{17} watts. Whereas the solar power on earth's surface is 10^{16} watts. The total worldwide power demand of all needs of civilization is 10^{13} watts. Therefore, the sun gives as 1000 times more power than we need. The sun radiates energy as electromagnetic waves of which 99 percent have wavelengths in the range of 0.2 to 4.0 meters. Solar energy reaching the top of the earth's atmosphere consists of about 8 percent ultraviolet radiation, 46 percent visible lights, and 46 % infrared Radiation. If we use only 5% of energy it will be 50 times what the world will require. The energy radiated by the sun on a bright sunny day is approximately 1 km/m^2 . Now days the drawbacks as pointed out that energy cannot be stored and it is a dilute form of energy, are not dated arguments. Utilization of solar energy is of great importance to India, since of lies in a temperature climate of the region of the world where sunlight is abundant for a major part of year. Solar energy is a time dependent and intermitted energy Resource.

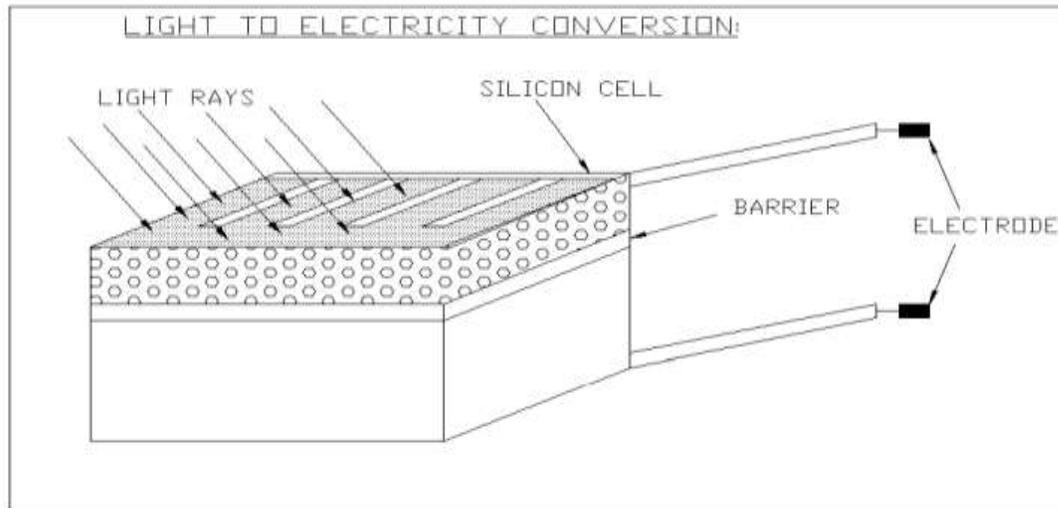


Fig. 2 Electricity conversion process

In general energy needs or demands for a very wide variety of applications are also time dependent, but in an entirely different manner from the solar energy supply. Here is thus a marked need for the storage of energy or another product of the solar process, is the solar energy is to meet the energy needs. This problem is especially severe for solar energy when it is used for heating in winter, because of its low availability during this period. So, we need optimally designed solar electric system will collect and convert the solar energy into electrical energy when the isolation is available during the day period and also optimally designed solar energy storage systems are needed for storing the converted electrical energy.

2.2. BATTERY CHARGE CONTROLLER

A solar charge controller manages the power going into the battery bank from the solar array. It ensures that the deep cycle batteries are not overcharged during the day, and that the power doesn't run backwards to the solar panels overnight and drain the batteries. Some charge controllers are available with additional capabilities, like lighting and load control, but managing the power is its primary job.

A solar charge controller is available in two different technologies, PWM and MPPT. How they perform in a system is very different from each other. An MPPT charge controller is more expensive than a PWM charge controller, and it is often worth it to pay the extra money.

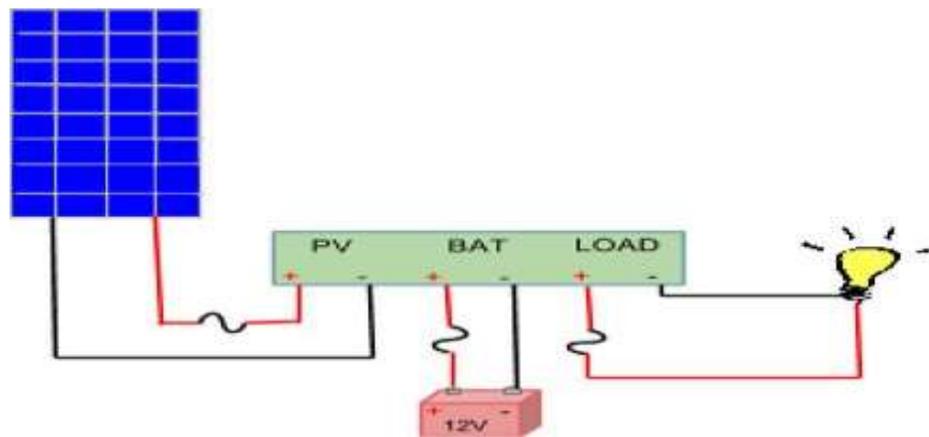


Fig. 3 Battery Charge controller

2.3. LEAD ACID BATTERY

The storage battery or secondary battery is such a battery where electrical energy can be stored as chemical energy and this chemical energy is then converted to electrical energy as and when required. The conversion of electrical energy into chemical energy by applying external electrical source is known as charging of battery. Whereas conversion of chemical energy into electrical energy for supplying the external load is known as discharging of secondary battery. During charging of battery, current is passed through it which causes some chemical changes inside the battery. These chemical changes absorb energy during their formation.

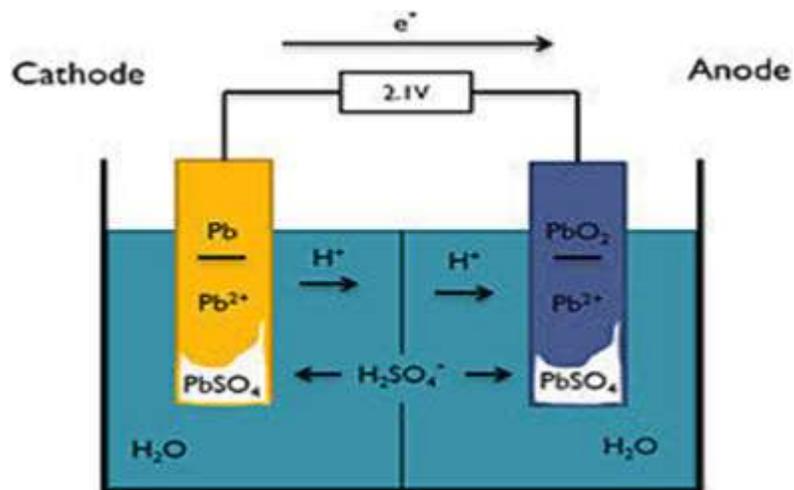


Fig. Schematic of Lead-Acid Battery

When the battery is connected to the external load, the chemical changes take place in reverse direction, during which the absorbed energy is released as electrical energy and supplied to the load. Now we will try to understand the principle **working of lead acid battery** and for that we will first discuss about **lead acid battery** which is very commonly used as storage battery or secondary battery. The main active materials required to construct a lead acid battery are

- 1) Lead peroxide (PbO_2).
- 2) Sponge lead (Pb)
- 3) Dilute sulfuric acid (H_2SO_4).

2.4. SWITCH

An electrical switch is any device used to interrupt the flow of electrons in a circuit. Switches are essentially binary devices: they are either completely on (“closed”) or completely off (“open”). There are many different types of switches, and we will explore some of these types in this chapter.

Learn different types of switches:

The simplest type of switch is one where two electrical conductors are brought in contact with each other by the motion of an actuating mechanism. Other switches are more complex, containing electronic circuits able to turn on or off depending on some physical stimulus (such as light or magnetic field) sensed. In any case, the final output of any switch will be (at least) a pair of wire-connection terminals that will either be connected together by the switch’s internal contact mechanism (“closed”), or not connected together (“open”). Any switch designed to be operated by a person is generally called a *hand switch*, and they are manufactured in several varieties:

2.5. DC MOTOR

A **DC motor** is any of a class of rotary electrical motors that converts direct current electrical energy into mechanical energy. 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 in part of the motor.

DC motors were the first form of motor widely used, as they could be powered from existing direct-current lighting power distribution systems. A DC motor’s speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight brushed motor used for portable power tools and appliances. Larger DC motors are currently used in propulsion of electric vehicles, elevator and hoists, and in drives for steel rolling mills

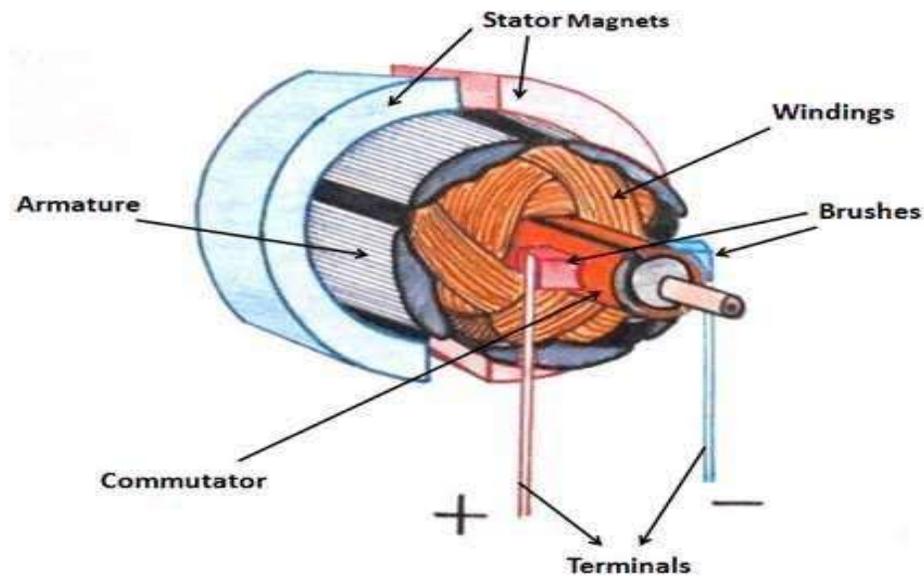


Fig. A DC Motor

3. WORKING PRINCIPLE

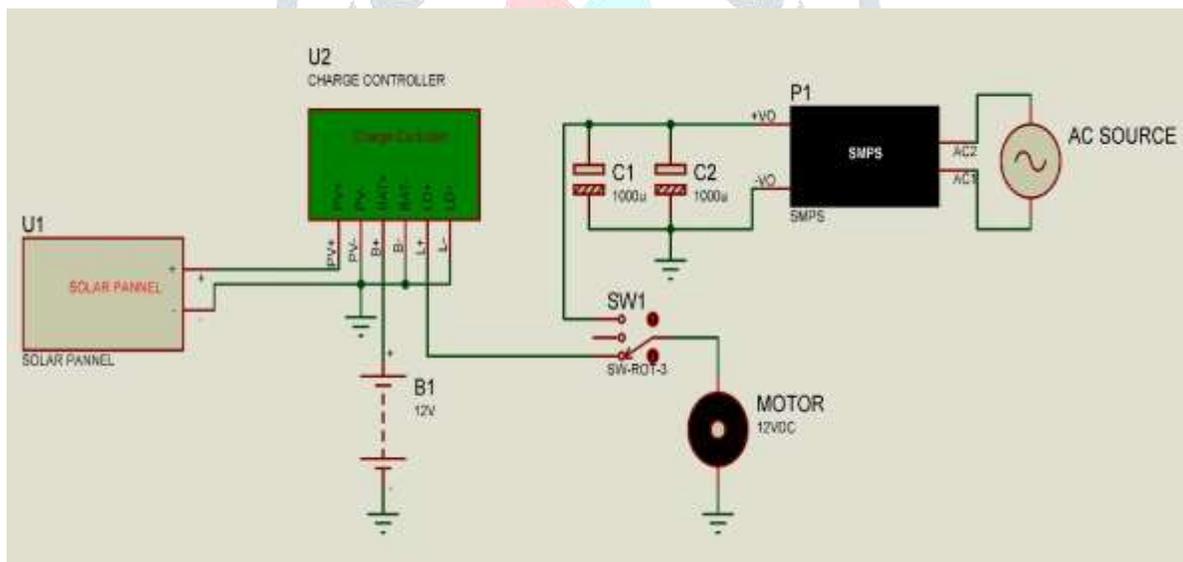


Fig: Circuit diagram of solar operated mixer grinder

In this project the solar panel generate or convert light energy into electricity and gives to the battery via battery charge controller. When sun light available the electricity generates depend on the solar light but if battery full charged and then solar panel provide electricity in this condition battery will be damaged. The battery charge controller is to use for charging of battery, protect from over charging of battery and protect from over discharging of battery. Our project we used Lead acid battery, this battery largely used in the world, this type of battery easily charged and provide large current source with lowest price. The store energy of

battery is using for DC motor in mixer grinder via switch, the switch is used for on/off feature and DC motor provide high torque and high RPM for mixer grinder

4. RESULT ANALYSIS

4.1 THE MODEL OF MIXER GRINDER



Fig: Solar operated mixer grinder



Fig: Machine of mixer grinder



Fig: Machine when its rotating

Now, we take a sample of some Rice to check our mixer grinder is working properly or not. So we take Rice in the mixer grinder bowl and grind it. Then we come to know that the machine of our mixer grinder. Is working properly.



Fig: Rice to check the Machine



Fig: Rice after grinding

The solar operated grinder Machine Working Properly as shown in fig.

5. CONCLUSION

This report details with design and “solar powered auto charging grinding machine for small scale industries”. Th project carried out by us made an impressing task in the shaping works of all types of work piece. It is very useful for the small scale industries in order to minimize the manufacturing cost by implementing the solar powered automatic grinding machines to make shape of small elements after the machining process. This project has been designed to perform the entire requirement task, which has also been provided. This type of fixture is mainly used in production field for grinding the all types of small elements firmly and securely to perform operations and is mainly used in manufacturing - oriented industries.

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