
Solar Power Generation by Using Vk0001 Panel

(IJSNT) International Journal of
Communication Systems and Network
Technologies

ISSN Number: 2053-6283

Volume 10, Issue No. 3, 191–195

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<https://journals.mirlabs.in/index.php/ijcsnt>

DOI-10.18486/ijcsnt/10.3.139



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Abstract

Solar power is the conversion of sunlight into electricity, either directly using photovoltaic (PV), or indirectly using concentrated solar power (CSP). Concentrated solar power systems use lenses or mirrors and tracking systems to focus a large area of sunlight into a small beam. This storage energy we are using for home applications, this voltage retrieves and converts DC to AC voltage to activate CFL bulb. Received voltage from the SOLAR VOLTAIC is charges the battery and it converts the voltage in to 230 voltage by the way it amplifies the current to activate CFL bulb.

Before years natural power generation is expandable and costly project for home and industrial areas but these days it might be very common topic for installing natural power sources like solar panels and wind. My idea about power generation is that we can't create natural power sources but we can retrieve power which already exists like sun and air. Power generation from sun with solar panel only existed. What happen if an invention generates power from sun without solar panel? This project publish reveals the power generation form without solar panel I named this panel name as "VK0001 panel".

Keywords

Concentrated Solar Power, Photovoltaic, Solar Panel, VK0001 Panel

Received: 29 August 2021; **Revised:** 12 December 2021; **Accepted:** 24 December 2021;

Published: 31 December 2021;

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Introduction

A solar panel is a photovoltaic cell where light energy is converting into electrical energy. Photovoltaic cells are made of silicon (Si) chip above which resides a very layer of noble metal through which around 1% photon particles enter the natural and activates electron flow^[1]. Each individual vk0001-panel cell produces 0.65v which is 44% more voltage and produced 42.2mA current which is 210 times more than the previous one. Logical explanation of the huge current increase the all area is 2mmX2mm=4mm^[2].

The vk0001 panel is made up of major-silicon material manufactured by single diffusion process^[3].

- vk0001 cell poles are uniformly doped silicon slice the resulting homogeneously doped based region is free from accelerating field in bottom poles it generates the high current generation.
- These cells are type of Archaeobacteria: Mean single-celled microorganisms, these microbes are prokaryotes meaning that this have no cell nucleus or any other membrane-bound organelles in their cells.
- Temperature operation can handle 2000C and - 650Ccell is protects with aluminum heat sinker and mica insulator electrically 180 lattes the cell case from the heat silk.

AB2-3(X,si) 4ow (o,f,OH)2

Chemically, micas can be given the general formula

$$X_2Y_{4-6}Z_8O_{20}(OH, F)_4 \quad (1)$$

In which

X is K, Na, or Ca or less commonly Ba, Rb, or Cs;

Y is Al, Mg, or Fe or less commonly Mn, Cr, Ti, Li, etc.

Z is chiefly Si or Al, but also may include Fe³⁺ or Ti.

Main power production area made up of semiconductor cell

Block Diagram

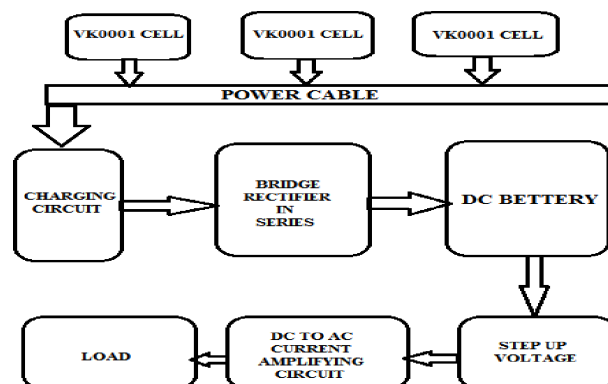


Figure 1. Block diagram

Components

The various components used in designing the project are

i) Regulated power supply ii) Step up transformer iii) Bridge rectifier iv) IC7805 voltage regulator v) LCD display vi) DC motor vii) L293D motor driver viii) LED ix) Battery x) AT89S52 Microcontroller

Working

From the mains, a 230V AC supply is fed to the stepdown transformer which steps down the voltage from 230V AC to 12V AC. Further 12V AC is given to the bridge rectifiers which rectifies the voltage and convert 12V AC to 12V DC^[4]. An electrolytic capacitor mainly 1000micro farad is added to reduce unwanted frequencies. Since, the components which we have used works on 5V DC so, to get that 5V DC, IC7805 which is a 5V voltage regulator is used which regulates the output voltage to 5V DC^[5]. A regulated 5V dc may contain some ripples so in order to get pure DC 10 microfarad capacitor is used. This regulated power is distributed to AT89S52 microcontroller, L293D Motor driver IC, push buttons and other components. In AT89S52 micro-controller chip, the program is dumped with the help of KEIL software. According to the instructions given by AT89S52 microcontroller the push buttons, L293D driver IC and the other components operates. L239D motor driver is connected to two motors rated 100rpm and 500rpm. From the microcontroller we cannot connect a motor directly because microcontroller cannot give sufficient current to drive the DC motors. Thus we insert motor driver ie. L293D IC between microcontroller and motors. L293D motor driver IC takes the input signals from the microcontroller and it will generate the corresponding output for motor. Basically L293D is a current enhancing IC, there are 6 push buttons namely to increase speed, to decrease speed, clockwise start, clockwise stop, anticlockwise start, anticlockwise stop. With the help of these push buttons we can increase or decrease speed in steps in both directions and these operations will be displayed on LCD screen.

When we increase or decrease the speed in either clockwise or ant clockwise direction in steps with the help of push buttons, the L293D motor driver IC will make the 100rpm motor to operate which in turn rotate the flywheel in clockwise or anti clockwise direction. The shaft is attached with the flywheel by chain and schoket mechanism. When brakes are applied with the help of dynamo which act as a brake, suddenly the power supply is cutdown and the rotating flywheel stops but not completely because of the kinetic energy being present. So here this kinetic energy is converted into electrical energy with 500rpm motor and this electrical energy is stored in the battery and subsequently that will be used by the load. So in this prototype the load we have used is LEDs ie. red and white LEDs. Red LED will glow for clockwise and white LED for anticlockwise direction which indicates that braking energy is recaptured.

Advantages

1. Less maintenance cost.
2. As PMDC motor do not required field windings, they do not have field circuit copper losses. This increases their efficiency.

Disadvantages

1. The initial cost is high.



Figure 2. Prototype model

2. There will be losses due to friction

Results

1. With the help of optical tachometer we have measured the speed of the flywheel by increasing speed in steps both in clockwise and anti-clockwise direction.
2. We have measured amount of voltage generated when suddenly the brake is applied in both clockwise and anti-clockwise direction.
3. In clockwise direction voltage generated is 3V and in anti-clockwise direction 2V.

STEPS	VOLTAGE(V) (CONSTANT)	SPEED(RPM) IN CLOCKWISE	SPEED(RPM) IN ANTICLOCKWISE
1	12	5	2
2	12	20	5
3	12	40	24
4	12	70	43
5	12	80	56

Figure 3. Table 1: Results

Summary

When we are driving the vehicle, due to some interruptions when we hit the brake we are wasting the energy. In our project we are utilizing that braking energy by “Regenerative braking system”. In experimental results we have measured speed and voltage being generated during braking. This is practical and highly feasible in economic point of view.

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