A DESIGN OF SOLAR PANEL WITH MAXIMUM OUTPUT USING DIGITAL WATCH AND ARDUINO BOARD

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DESCRIPTION

The patent disclosure covers maximum power generation through solar panel.

The generation of power from the reduction of fossil fuels is the biggest challenge for the next half century. The idea of converting solar energy into electrical energy using photovoltaic panels holds its place in the front row compared to other renewable sources. But the continuous change in the relative angle of the sun with reference to the earth reduces the watts delivered by solar panel. In this context solar tracking system is the best alternative to increase the efficiency of the photovoltaic panel. Solar trackers move the payload towards the sun throughout the day. In this we have taken a very basic idea that how the panel can convert maximum solar energy into electric energy, this idea is taken from the direct connection of the Sun and time, which is "watch". The digital reading of the watch with be compared with the inclination of the sun which will be coded in the Arduino board and based on the coding the panel will face the sun.
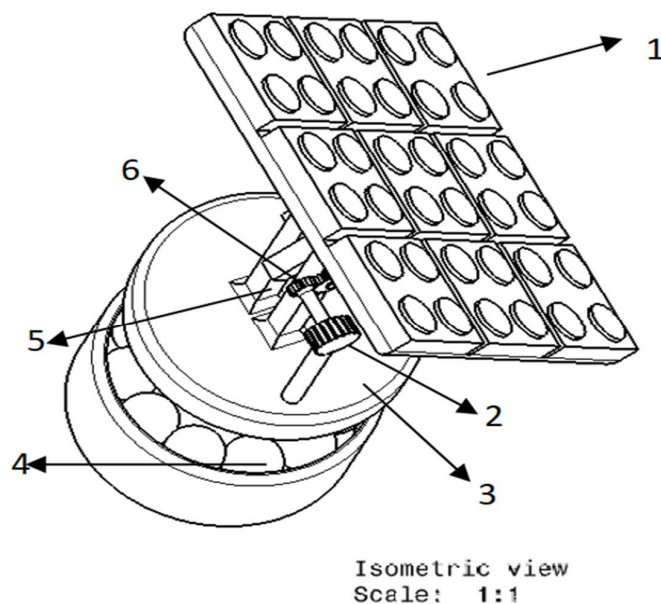
Design and Development:

Isometric view
Scale: 1:1

FIG 1

SI.NO.	NAME OF PARTS	PURPOSE
1	Solar panel	To take the sun light
2	Motor	To rotate the gear arrangement
3	Rotating base	To rotate the solar panel
4	Ball bearing	To rotate the whole system
5	Panel support	To support the solar panel
6	Gear arrangement	To rotate the panel

Working principal:

a) It is a time dependent solar panel.

b) Photo resistor detects the solar rays, then according to this the Watch gives an input to the Arduino.

c) According to the input the Arduino gives the command to the motor.

d) Then this motor is connected to the gear through a shaft that is further connected with a small spur gear. This helps to rotate the panel from east axis to west axis.

e) The base of the panel is a rotating base which in turn is connected with the ball bearing like structure, which will rotate the whole system seasonally.

f) Now the circuit diagram is as follows:

  1. The circuit diagram is made and simulated using Pspice.

  2. In the given diagram the first half till LED is the watch with a 555 microcontroller.

  3. The LED is then connected to the Arduino. The LED will give some digital number, that number will be an input for the Arduino.

  4. The signal from the Arduino goes to the motor and the motor helps to rotate the solar panel.
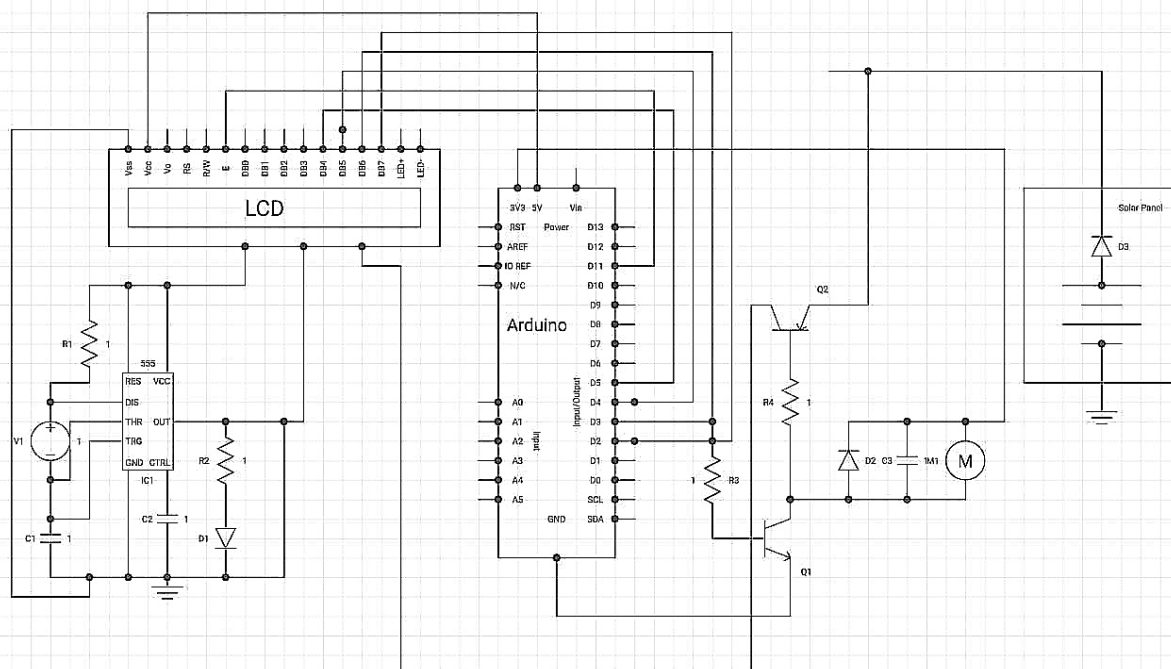

FIG 2

Uniqueness or Novelty

1) The time dependent(use of digital watch) solar panel is itself a part of uniqueness.

2) When the clock reads 12a.m(say) the panel comes in straight position i.e. 180degree horizontally through the command given by the Arduino and similarly it works for different times in a day. This helps the panel to absorb a huge amount of sun rays in a day.

3) The rotation of panel works with the help of motor attached with the shaft which is further connected with gear system which is connected with the solar panel.
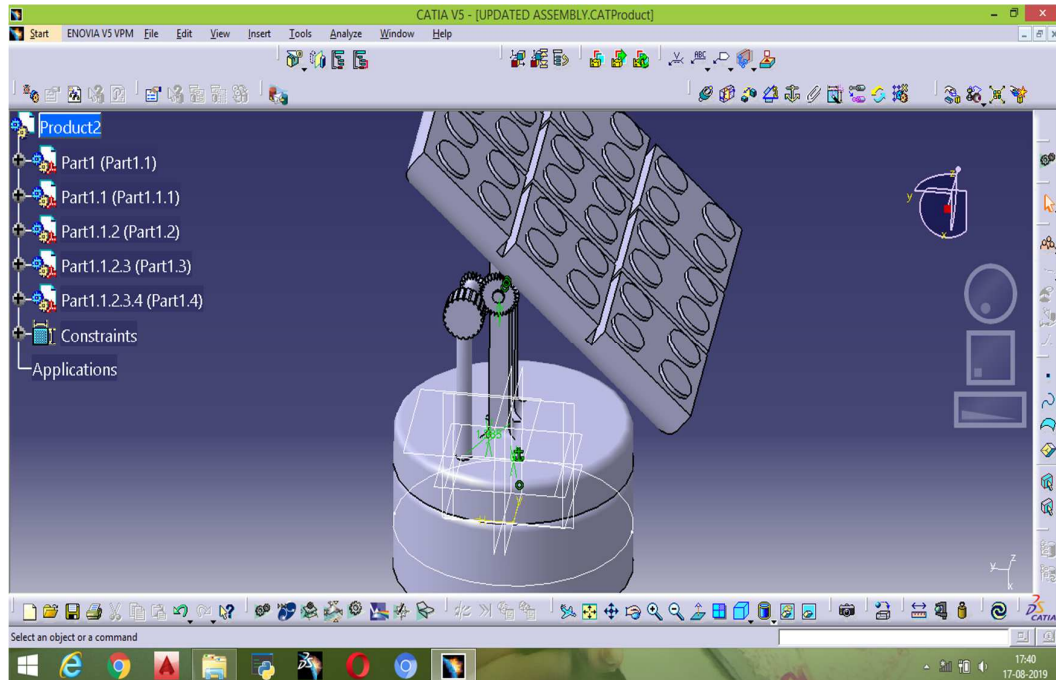
4) Also, the whole system is connected with the ball bearing which rotates the panel with respect to the axis of earth. This is also controlled by the Arduino.

5) Two works at a time by the Arduino is also a novelty.

6) Normal solar panel are fixed at a same angle so they absorb the solar rays for a particular time period but in this solar panel solar rays can be absorbed at any angle. This angle is mainly controlled by the Arduino.

7) This concept is taken from the sunflower because the sunflower moves where the sunlight falls, and even from the reverse concept of jantarmanter , Delhi which calculates time based on the sun's position.

CONCLUSION

It is clearly understood that the idea of changing the direction of solar panels according to
the sun rises and sun set, the efficiency of the generation of electricity can be easily increased.

CLAIMS

We claim,

1. The system, method, arrangement of system and Design of solar tracking machine.

2. The digital watch mechanism is the part which makes the machine unique as described in above description.

3. The second uniqueness is that, to this the gear system is attached with the motor as shown in FIG 1 which helps the solar panel to rotate as per the input from the digital watch. The motor rotates and through that motor shaft is connected and from that gear system is attached which helps the whole panel to rotate.

4. The circuit diagram is also shown in FIG 2 which is simulated from a software called as Pspice. In that circuit diagram the digital watch is connected to Arduino and that is connected to motor and the motor with the help of shaft and gear arrangement will rotate the panel.

5. Another uniqueness is that, to rotate the whole solar panel system ball bearing system is required. This system will help to rotate the whole system.

6. Arduino is used in the system to control the working of all the parts of the system connected to Arduino. Arduino is useful to the instructions and give the instructions to other machines to work on its own.

7. The usage of digital watch shown in figure-2 makes the machine more unique because it gives the accurate angle at which the panel will rotate as per time the angle is changed. To gain the maximum output.

ABSTRACT OF THE INVENTION

The patent disclosure covers system, method, arrangement and Design of solar tracking machine. The Solar Energy is produced by the Sunlight is a non-vanishing renewable source of energy which is free and eco-Friendly. Every hour enough sunlight energy reaches the earth to meet the world's energy demand for the whole year. In today's Generation we need Electricity every hour. This Solar Energy is generated by as per applications like industrial, commercial, and residential. It can draw easily energy from direct sunlight. It looks very efficient & free environment pollution for surrounding. In this, we have reviewed about the