



Hybrid Power Bank

*M. V. V. Appala Naidu*¹, *T. Pavani*², *L. Saideep*³, *M. Avinash*⁴, *B. Pallavi*⁵

¹Assistant professor Department of EEE & Aditya Institute of Technology and Management, K. Kotturu, Tekkali

^{2,3,4,5} UG Scholar Department of EEE & Aditya Institute of Technology and Management, K. Kotturu, Tekkali

ABSTRACT –

The objective of this research is to design a hybrid Portable Power Bank for mobile phone using sunlight as its ultimate power, which be used effectively during disaster events. It has in-built solar panel can which converts the solar energy to electrical energy.

Key Words: Solar energy, Portable, Disaster recovery, Battery, Renewable energy, Eco-friendly power bank.

1. INTRODUCTION:

The concept of solar power banks has been gaining popularity in recent years due to their ecofriendly and portable nature. Hybrid power banks are a viable alternative to traditional power banks, reducing the reliance on non-renewable energy sources. The use of Hybrid power banks provides an eco-friendly solution for charging mobiles devices, making it a more sustainable choice for consumers.

2. Body Paper:

Introducing our revolutionary 8000mAh hybrid power bank, the ultimate solution for on-the-go charging needs. This innovation device combines the convenience of traditional battery backup with the eco-friendly power of solar charging. With a sleek and durable design, this power bank is perfect for outdoor adventures, travel, and everyday use.

Equipped with high-efficiency solar panels, this hybrid power bank harnesses the power of the sun to recharge its internal battery, ensuring continuous power supply even in remote locations. Its 8000mAh capacity provides, from smartphones and tablets to cameras and GPS devices.

3. OBJECTIVES:

- The main objective of this study on solar power banks is to provide comprehensive insights into the effectiveness, market potential, and environment impact of solar power bank.
- To explore the practical usage of solar power banks, including their effectiveness in real-world scenario and the impact of environmental factors such as temperature and humidity on their performance.

3.BLOCK DIAGRAM:

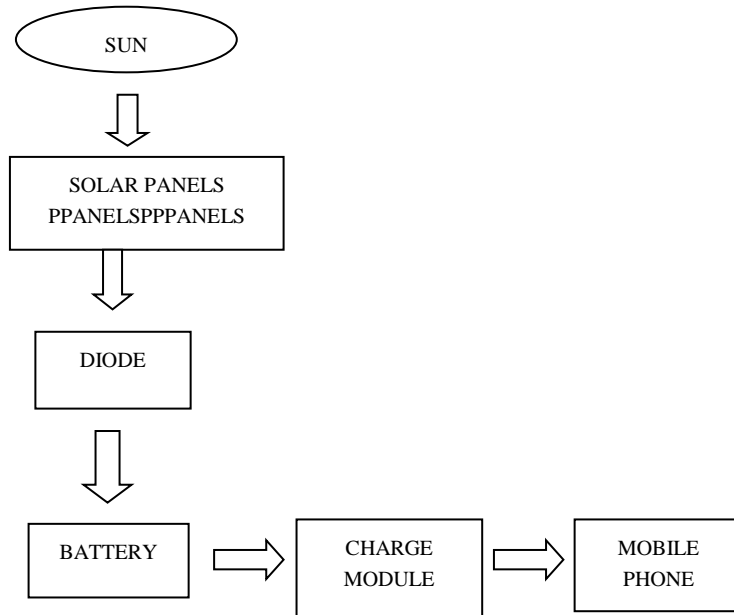


FIG 1:

4.DESIGNING:

Design is not too complex as we have use solar panels are connected in series. This way our panels are generating a electrical energy by using sunlight This hybrid power bank consists a lithium ion batteries with 8000mAh and solar panels contains a 6v,120mAh connects in series it gives a 6v,720mAh. Now dual USB charge module attached a parallel on battery pack. Charge module gives 5v to 7 v output DC current. The hybrid power bank gross weight is 280 grams then easily carry on pocket. Output current use for mobiles,

tablets, laptops and small electrical gadget. And also the flow of electricity generated by an array of solar panels into a battery pack. The stored energy will then be used to power a hybrid power bank, which will manage a proper technical support.



TABLE:

| TIME | Max.volt(V) | TIME | Max.volt(V) |
|------|-------------|------|-------------|
| 6am | 1.7 | 1pm | 5.5 |
| 7am | 2 | 2pm | 4.9 |
| 8am | 2.5 | 3pm | 3.6 |
| 9am | 3 | 4pm | 2.9 |

| | | | |
|------|-----|-----|-----|
| 10am | 3.5 | 5pm | 2.5 |
| 11am | 4.4 | 6pm | 2.2 |
| 12pm | 5.2 | | |

Fig 2: Voltage across solar panels

CALCULATIONS:

Battery charging capacity=2000mAh

Power consumption=3.7W

No of Batteries=8

Solar panel rating=6v,180mAh

No of solar panels=4(in series)

To charge a solar panels ratings = 6v,720mAh

Assuming ideal conditions:

First, convert to all values to the same units:

720mAh=0.72Ah(amp-hours)

8000mAh=8Ah(amp-hours)

Then consider the charging rate of the solar panel:

$6v \times 0.72Ah = 4.32$ watt-hours

Now, calculate the time required to charge the battery:

$8Ah \text{ (Battery capacity)} / 0.72Ah \text{ (solar panel out put)} = 11.11$ hours

5. CONCLUSIONS

Hybrid power banks offer a versatile, reliable, and sustainable solution for powering electronic devices in various situations and environments. By integrating multiple charging methods such as traditional wall charging, USB charging, solar charging, and sometimes kinetic charging, hybrid power banks provides users with flexibility and convenience in accessing power where ever they go.



ACKNOWLEDGEMENT:

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of people who made it possible, whose constant guidance and encouragement crowned the efforts with success. It is a pleasant aspect that we have now the opportunity to express my gratitude for all them.

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