SOLAR POWERED POWER BANK

GROUP : ALHAZEN

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Introduction

Objective

In our tech-driven world, staying connected means having power on the go. This project introduces a solar-powered power bank that uses the sun's energy to keep your devices charged, offering a portable and eco-friendly solution.

Methodology

Description

Our methodology will include

- design
- materials
- procedure

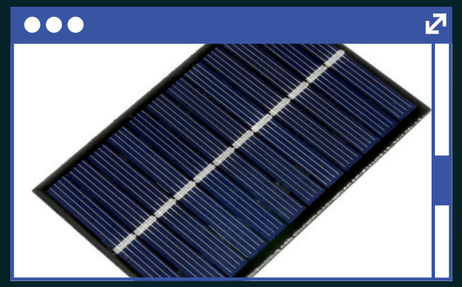
MATERIAL

Diode

a semiconductor device that essentially acts as a one-way switch for current. It allows current to flow easily in one direction, but severely restricts current from flowing in the opposite direction.

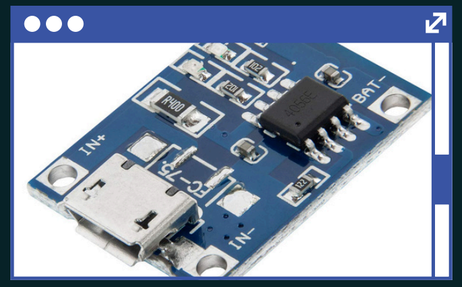
2000mAh Li-i9n battery

The generated electricity is stored in a rechargeable battery system, typically a lithium-ion or lead-acid battery. This stored energy can then be used to power the connected devices when needed, providing a reliable and portable power source.



5V Solar Panels

The core of a solar-powered system is the solar panel, which converts sunlight into electrical energy through the photovoltaic effect. These panels are composed of solar cells, typically made of silicon, that generate a small amount of direct current (DC) electricity when exposed to light.



TP4056 Charging Module

TP4056 Charging Module charge controller is responsible for regulating the flow of electricity from the solar panels to the battery, ensuring that the battery is charged efficiently and safely. It monitors the battery's charge level and adjusts the input current accordingly to prevent overcharging or undercharging.

Design

Cupboard

USB Adapter

Plastic Bottle

Wallpaper

Procedure

- Firstly, connects diode to the solar panel
- Attach batteries as well as solar panel to a TP4056 charger chip
- Do a test to see whether the solar panel is working by checking LED light on the chip. If it lights up blue, it means electricity flows to the charger chip
- After done the first test, connects a four port USB adapter to the chip
- For confirmation, test once again to determine the USB adapter's functionality by plugging in a USB connecter to the USB socket
- If the test succeed, attach circuits to the body (plastic bottles, some cupboards)
- Decorate with wallpaper stickers
- Our Solar Powered Power Bank is finally done

Analysis

Enviromental Impact

Sustainability

- Reduces reliance on non-renewable energy

Materials

- Choose eco-friendly, recycable components

Technical Feasibility

Solar Efficiency

- 15%-20% essential for reliable charging

Battery Capacity

- 2 Li-ions battery with 2000mAh combined

Challenges

Weather Sensitivity

- Charging time can be inconsistent in different weather

Durability

- This product isn't waterproof

MARKETABILITY

Portable Charging

The solar-powered charger can be marketed as a convenient and reliable solution for charging smartphones, tablets, and other mobile devices on the go.

Outdoor Adventuring

Outdoor enthusiasts and campers can be targeted as a key market, showcasing the charger's ability to keep devices powered during outdoor activities.

Emergency Preparedness

The solar-powered charger can be positioned as an essential tool for emergency preparedness, providing a dependable power source during natural disasters or power outages.

Eco-friendly

Environmentally conscious consumers can be drawn to the solar-powered charger as a sustainable and renewable energy solution for their electronic devices.

Project Budget

Mall Diymore Official Store — Completed

DIYMORE Solar Panel 0.5V 5V 6V 0.6/...
6V 100mA 1W x1
15 Days Free Returns*

~~RM15.75~~ RM7.59

Total 1 item: **RM12.78**

Rate by 11 Sept to earn 5 Coins

Mall Cityork Official Store — Completed

Cityork 103450 3.7V 2000mAh 7.4Wh...
1Pcs x1
15 Days Free Returns*

~~RM38.00~~ RM18.00

Total 1 item: **RM23.19**

Rate by 09 Sept to earn 5 Coins

Return/Refund | Rate

Enewground Electronic Enterprise — Completed

PN junction rectifier diode (1N4001, 1...
1N4001 x1
15 Days Free Returns*

RM0.60

DC-DC buck converter (TP4056, USB...
15 Days Free Returns* x1

RM1.30

Epoxy solar panel (5v, 60mA, low pow...
15 Days Free Returns* x1

RM4.90

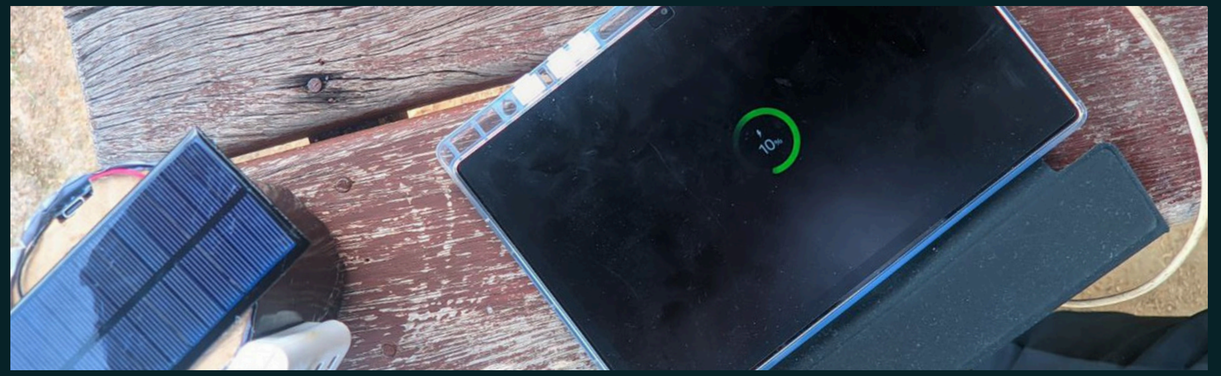
Total 3 items: **RM6.80**

Total : RM 42.77

Adaptation

Reference

- https://www.britannica.com/science/solar-energy
- https://solvoltaics.com/what-is-a-solar-power-bank/#google_vignette
- https://pluggedinacademy.com/solar/what-is-a-solar-power-bank/



Conclusion

The solar-powered charger project is all about making charging your devices easier and greener. Imagine having a reliable power source no matter where you are—whether you're camping in the wild or dealing with an emergency. By using the sun's energy and the latest technology, this project aims to offer a practical, eco-friendly solution for everyday needs. With a growing focus on renewable energy, it's a step towards a more sustainable and convenient future for everyone.

THANK YOU

Lets Make Our Planet More Eco-Friendly


4
3
2
USB2.0
4ports
1


4
3
2
USB2.0
4ports
1