

Project Proposal

by Jack Davies

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Prifysgol Cymru

Y Drindod Dewi Sant

University of Wales

Trinity Saint David

Project Proposal

Project Title: Poseidon: A Waterproof Solar-Powered Portable Power Bank

Student Name: Jack Davies

Student Number: 1504731

Supervisor: Dr Seena Joseph

Introduction

For my Project Proposal, I have decided to design and construct a rugged, portable power bank that is fully waterproof and even solar powered. There are several variations on the market that are waterproof in varying forms, but none can be operational whilst fully submerged. Only tolerate a specific meterage underwater for a specific set of time. I aim to design the Poseidon in three distinct versions: Standard, Pro and Max, to serve different markets, application and environments. Portable power banks are widely used for charging devices on the go and have become increasingly popular over the years and yet, many fail to operate in wet or industrial environments. Poseidon aims to fix that issue.

Standard – Camping, travel, consumer backup

Pro – Construction, small plant tools, site emergency backup

Max – Industrial, site-wide backup, extended camping

For this project, I will only be constructing the standard version, based on component and material limitations. I aim to design the schematics and technical drawings for the other versions digitally.

The goal here, is to design and construct a reliable, rugged and fully waterproof power bank. Each variation to be used under different environments, each safe and efficient within their intended purposes. Affordable, using environmentally friendly materials, recycled components and constructed through a means that doesn't mistreat and exploit workers.

A power bank that will be obtainable by the public, that isn't ridiculously overpriced and unreliable based upon the weather conditions and/or the environment the consumer happens to be in.

Project Aim / Objectives

To design and prototype a waterproof, solar-powered portable power bank. Suitable for outdoor and industrial usage.

Objectives:

- . Select appropriate battery and solar panel components
- . Design a durable and fully submergent, waterproof enclosure
- . Calculate power bank capacity and power output
- . Integrate charging circuits and safety protections
- . Test the prototype in relevant conditions (wet, outdoors and industrial settings).

Method / Approach

- . Research suitable battery cells, waterproof casing, solar panels, components
- . Research the marketplace and how and where Poseidon would fit in, pros and cons
- . Calculate capacity, power outage and temperature interference
- . Create a schematic diagram of the power bank circuit
- . Build a prototype unit
- . Test functionality and durability
- . Analyse results and make improvements if necessary

Expected Outcomes

- . A working prototype of the Poseidon power bank
- . Technical drawings and schematics
- . The designs of the other variations
- . Test report demonstrating waterproofing and solar charge efficiency

Resources / Requirements

- . Lithium-ion battery cells
- . Solar panel and charging controller
- . Waterproof casing
- . Multimeter, soldering tools and safety equipment
- . Lab access and testing environment

Timeline / Gantt Chart

Week	Task
1 -2	Research and component selection
3 -4	Marketplace research
5 -6	Circuit design and schematic creation
7 – 8	Component procurement and safety checks
9 – 10	Build prototype
11 - 12	Testing and evaluation

Task / Week	1	2	3	4	5	6	7	8	9	10	11	12
Research & Component Selection												
Marketplace research												
Circuit Design & Schematic Creation												
Component procurement and safety checks												
Build Prototype												
Testing & Evaluation												

This is a brief timetable that will be flushed out and explained in more detail via Gantt Chart, directly indicating the time and tasks planned for the duration of this project.

Project Proposal

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

33/100

Intro / A&O (400 words)

Good project title. Clear aim, although objectives are not SMART.

No discussion of what the project needs to do in order to be a success. - 8/20

**Background to the Project /
Literature Review (400 words)**

No engagement
with literature. No discussion of ethical issues. No
identification of previous
work done in the field. 0/20

**Project
Design (500 words)**

Method is present, but only a list of possible tasks.
No
description of what data will be collected or how it
will be analysed. 10/30

**Resources
/ Planning (200 words)**

Outcomes are listed but not described. Ethics form completed satisfactorily.
Gantt chart present, although lacking detail and only spans 12 weeks. 7.5/15

**Document
Presentation**

An attempt at structure, but the proposal is lacking a narrative in places. No referencing or bibliography present. Word count is significantly below the limit. 7.5/15

Total 33/100

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