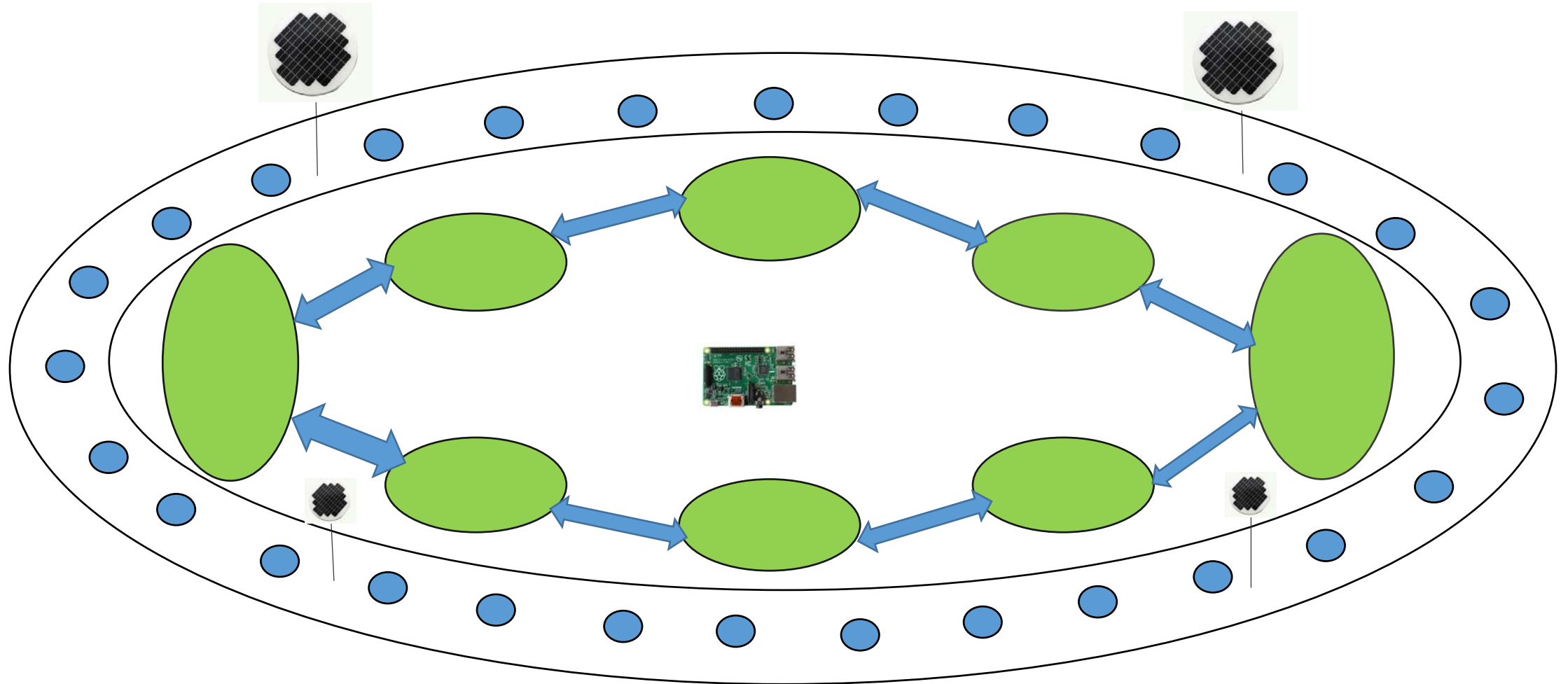


Design for a portable, responsive and sustainable Garden

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System Design – seen from above



Sustainability: Rainwater Harvesting System

- What is it?

Rainwater harvesting means collecting rainwater and storing this water in a tank for later use.

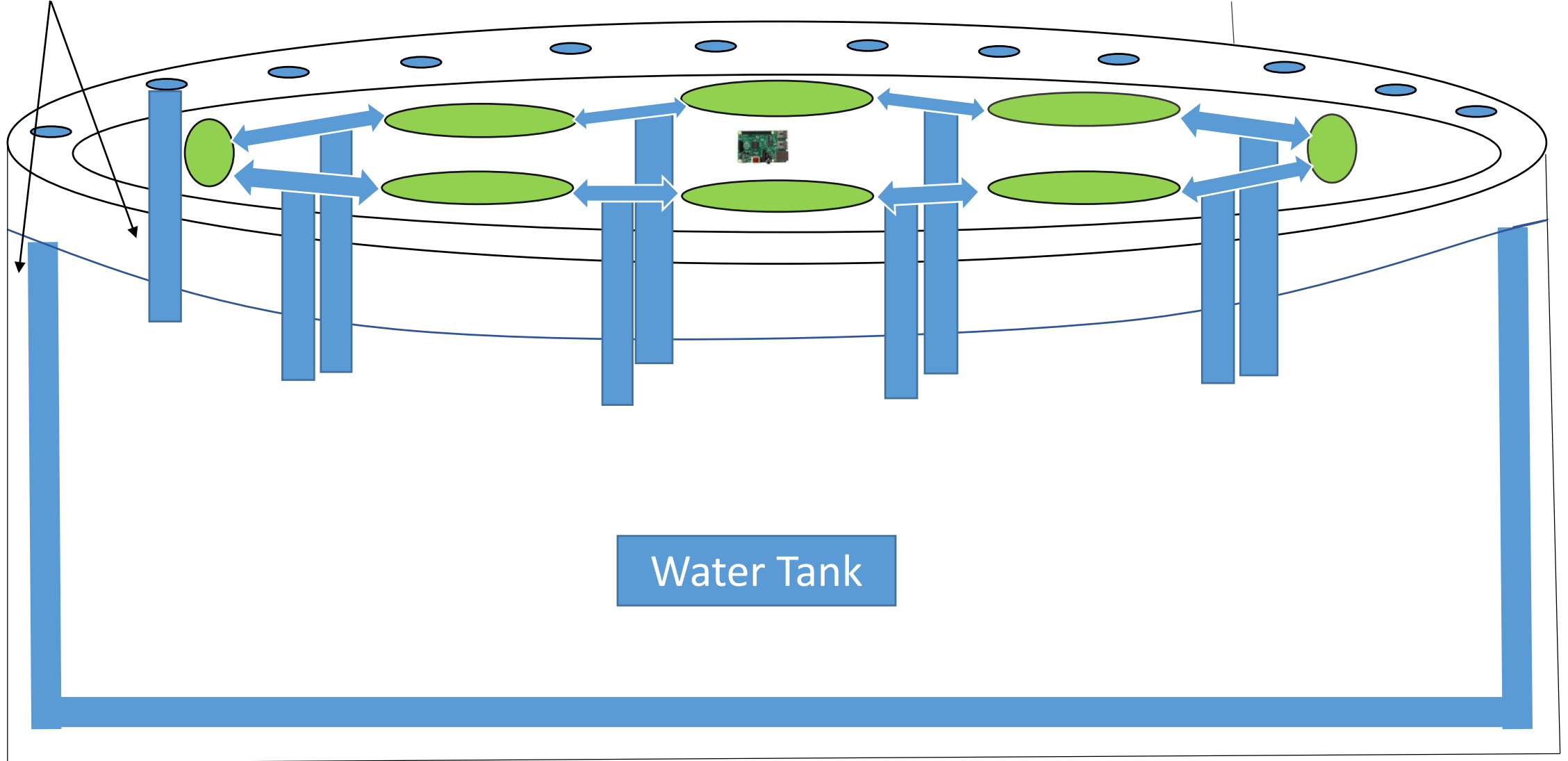
Rainwater can be collected from the roof of buildings or directly from rain fall.

It is stored in tanks either above or below ground.

- Why is it a good system?
 - Rainwater is naturally soft and free from pollutants, chlorine and man-made contaminants.
 - The decrease of water resources is a major issue in the world. Using a rainwater harvesting system will help in reducing wastage of drinkable water.
 - Using filtered rainwater ensures less odour and less deterioration of the water in the tank.

Rainwater harvesting system design

Dry areas for electronic cables



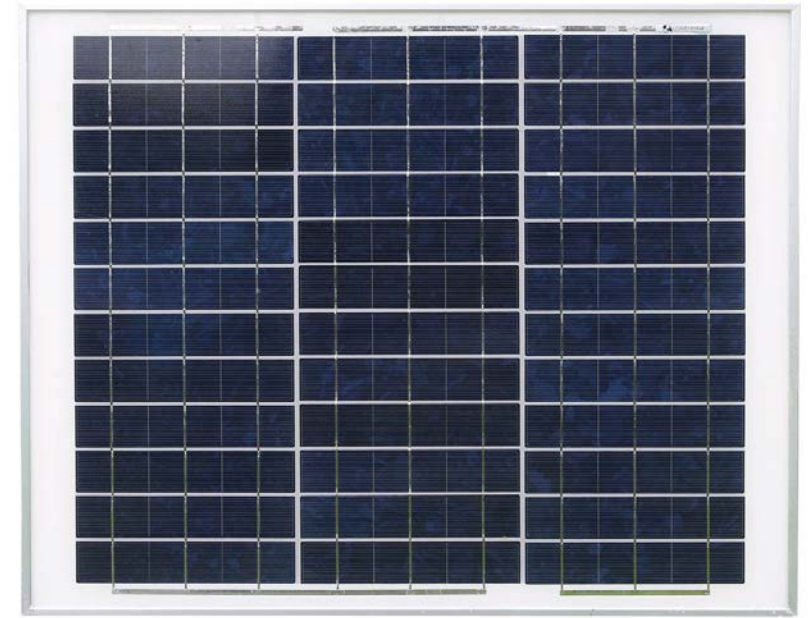
- How will it be powered?

- Solar panels

- The exceeding energy will be stored in a battery in order to have power when there is no sun.
- Inexpensive, ebay

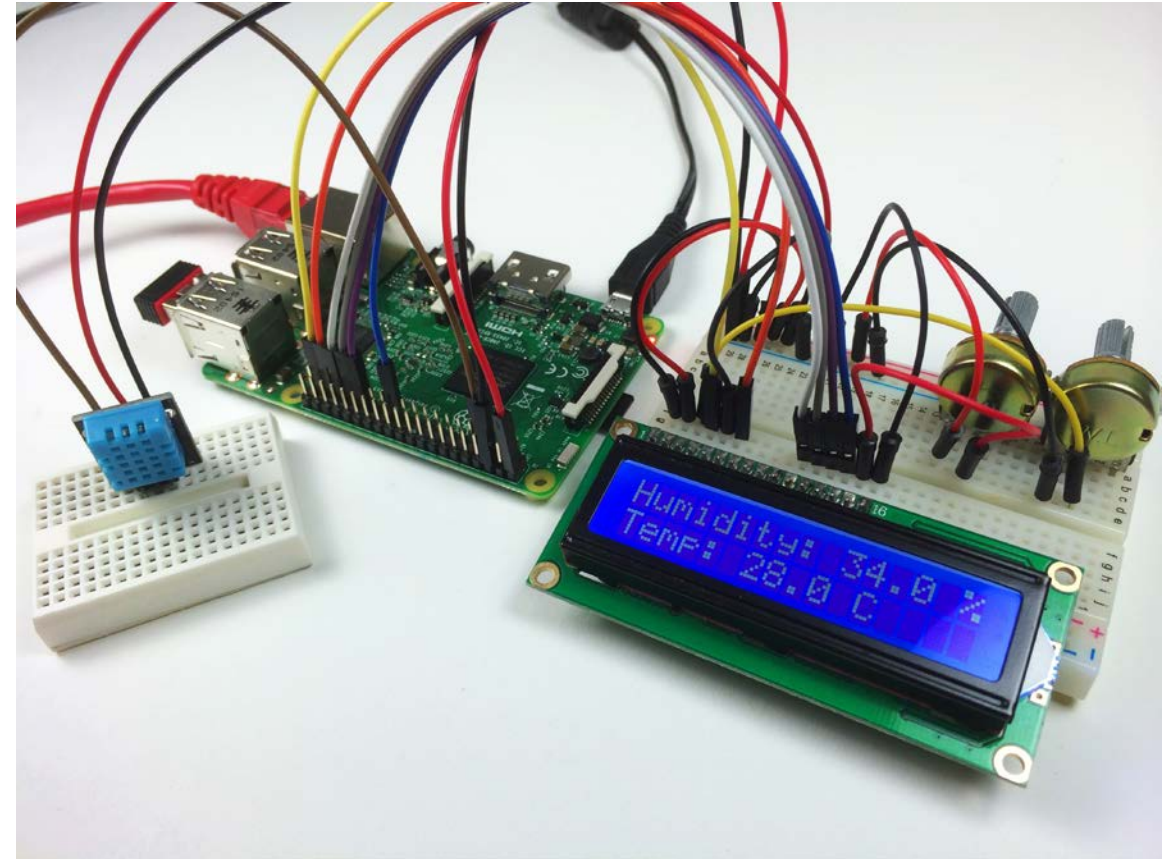
- Battery Banks – storage, effective in all weather conditions

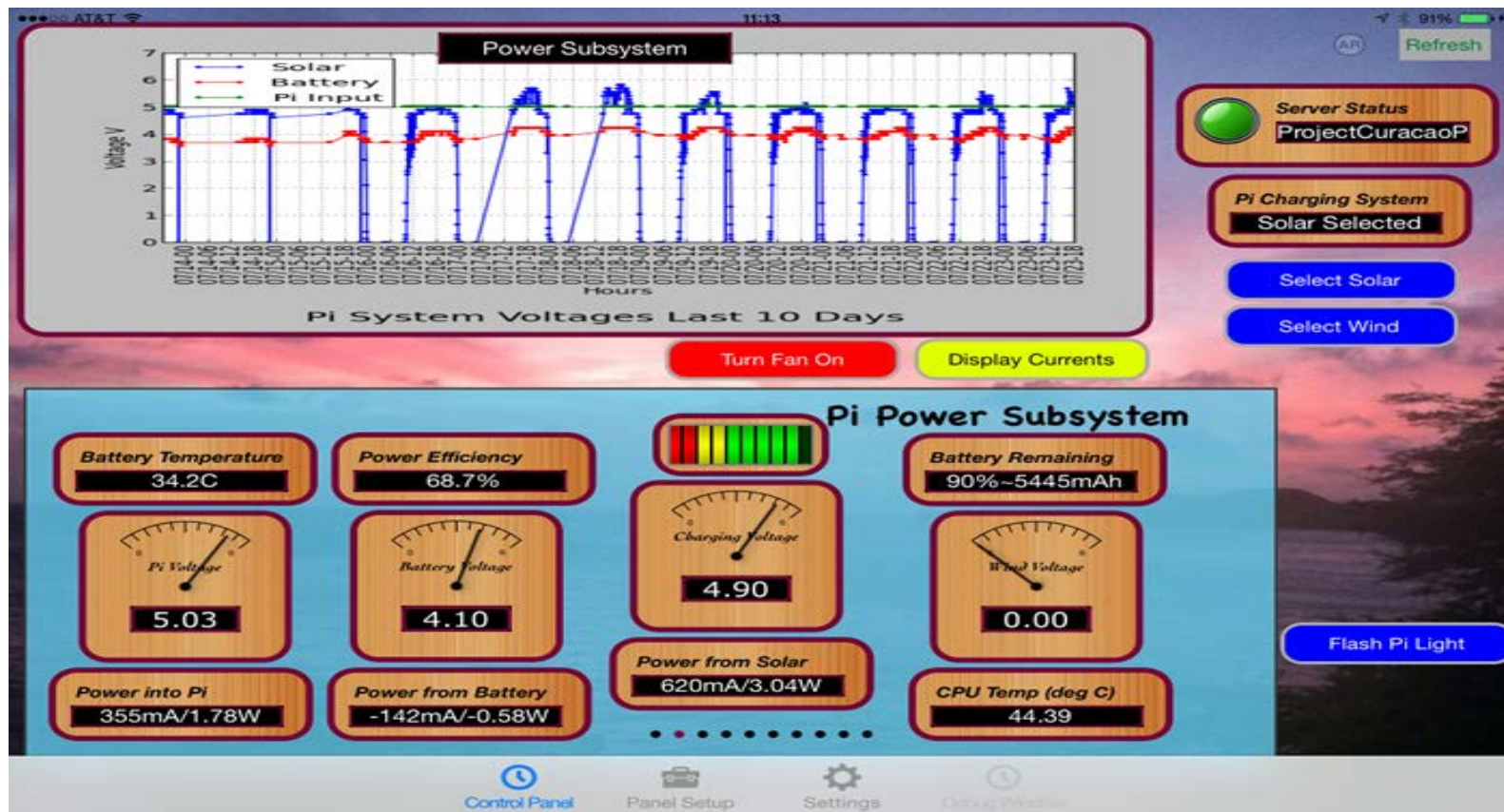
- Solar Charge Controller including USB & DC 12V output plug/ cable



Raspberry Pi Software

- Protect the raspberry pi from autonomously turning off
 - Monitor the power level of the battery, shutdown when power falls below a specific threshold
- Cycle the pi on and off to reduce power consumption





Raspberry Pi Board	Current Consumption	Daily Power Consumption (Amps x 5V x 24hrs)
Model A+	200mA	24Wh
Model A	260mA	31.2Wh
Model B+	300mA	36Wh
Model B	480mA	57.6Wh

The rainwater harvesting system explained to children

- The children will be able to see inside the water tank through glass walls
- Sensors - send a signal when the plants need water, monitor temperature, humidity, luminosity
- Children will be able to irrigate the plants by pushing a button on the screen (next slide)
- Water will go up the pump to the plants

Virtual Reality Application

- VR app – android, ios, windows
- VR headset
- Simulations of plant growth – plant life cycle, seasonal effects on plants
- Playful content – children interacting with the plants, smileys – sad (if children plucking flowers), happy (water the plants)



Future Prospect

