HYDROPOWER FARM

PROJECT OBJECTIVES

This project aims to utilise a climate-friendly energy source (water) to generate power to secure a low-carbon future, aligning with government efforts to build Singapore's climate resilience and prepare for the long-term effects of climate change. This project explores the use of hydropower to generate electricity without generating carbon emissions.

PROJECT SUMMARY

Electricity is generated when a turbine, installed in a hydropower farm, channels water to generate current flow as a form of fuel. This works when there is continuous water flow. When water on higher ground flows onto the turbine, the force pushes against the turbine blades, causing it to spin. This prototype is also supplemented with a gearbox to increase the shaft speed in the event that water does not flow at the required speed. The gearbox is integrated to the turbine shafts which convert mechanical energy to electrical energy. The team has incorporated a self-made water ballast tank to provide stability to the hydropower farm to compensate for uneven ground. LED lights are installed and will light up when power is generated.

PROJECT OUTCOMES

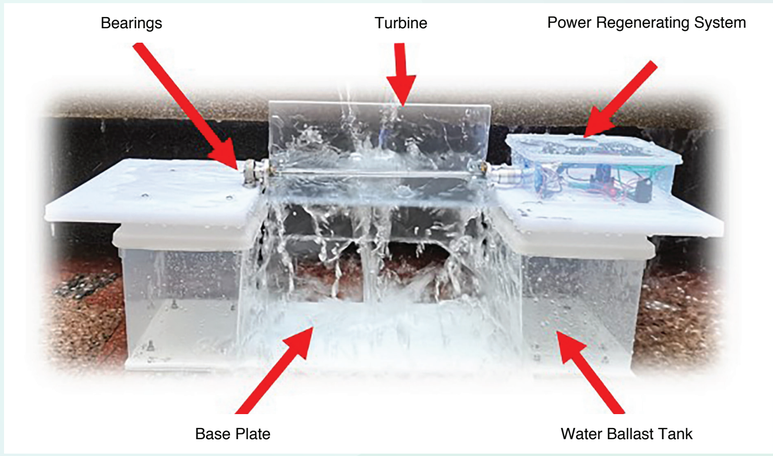
The proto-type was successfully tested in the campus' water fountain. The fast flowing water current was able to generate sufficient power to light up the LED lights.

The team hopes that this prototype can be incorporated into the everyday lives of Singaporeans, and has approached Sports Singapore to explore the feasibility of installing this project at public swimming pools. The team is also working to have the project PUB certified. From 2010 to 2018, 75 projects have received the ABC Waters Certification through PUB's sustained efforts in encouraging adoption of the ABC waters concept by both public and private sectors.

Possible areas of the installation of the hydrofarm include:

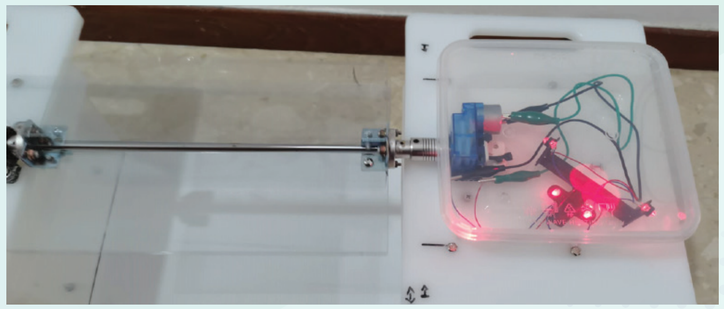
1. Swimming pools – Fitted at the water play area with flowing water.
2. Water dams – PUB water supply of water is currently 430 million gallons a day (mgd). That is enough to fill 782 Olympic sized swimming pools.
3. Drainage along PUB's drainage system.

HYDROPOWER FARM



PROTOTYPE PLACED IN THE FOUNTAIN AT ITE CC THAT USES THE FLOW OF WATER TO GENERATE ELECTRICITY. THE TURBINE WILL LIGHT UP THE LEDS WHEN POWER IS GENERATED.

CLOSE UP VIEW OF LED BEING POWERED UP



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