

AQUA REFORMER

An Environment friendly Aquafarming

By:

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Incubated with HITAM-IIC



Problem Statement

- Fish Ponds are stagnant.
- The amount of dissolved oxygen in the water falls due to the respiration of fishes.
- Released Carbon dioxide reacts with water and forms Carbonic acid which makes the pond acidic.

Existing solution

- Aerators are traditionally used to enhance the oxygen levels.
- Lime is traditional solution to neutralize the acidic stagnant pond.



Environmental risk due to existing solution

- Lime reacts with carbonic acid and forms Calcium Carbonate.
- Calcium Carbonate precipitate at the pond's bottom which depletes the soil fertility.
- It is extremely detrimental to both the soil and the ecosystem.



PRECIPITATION(CaCO_3)

Proposed Solution

Aqua Reformer

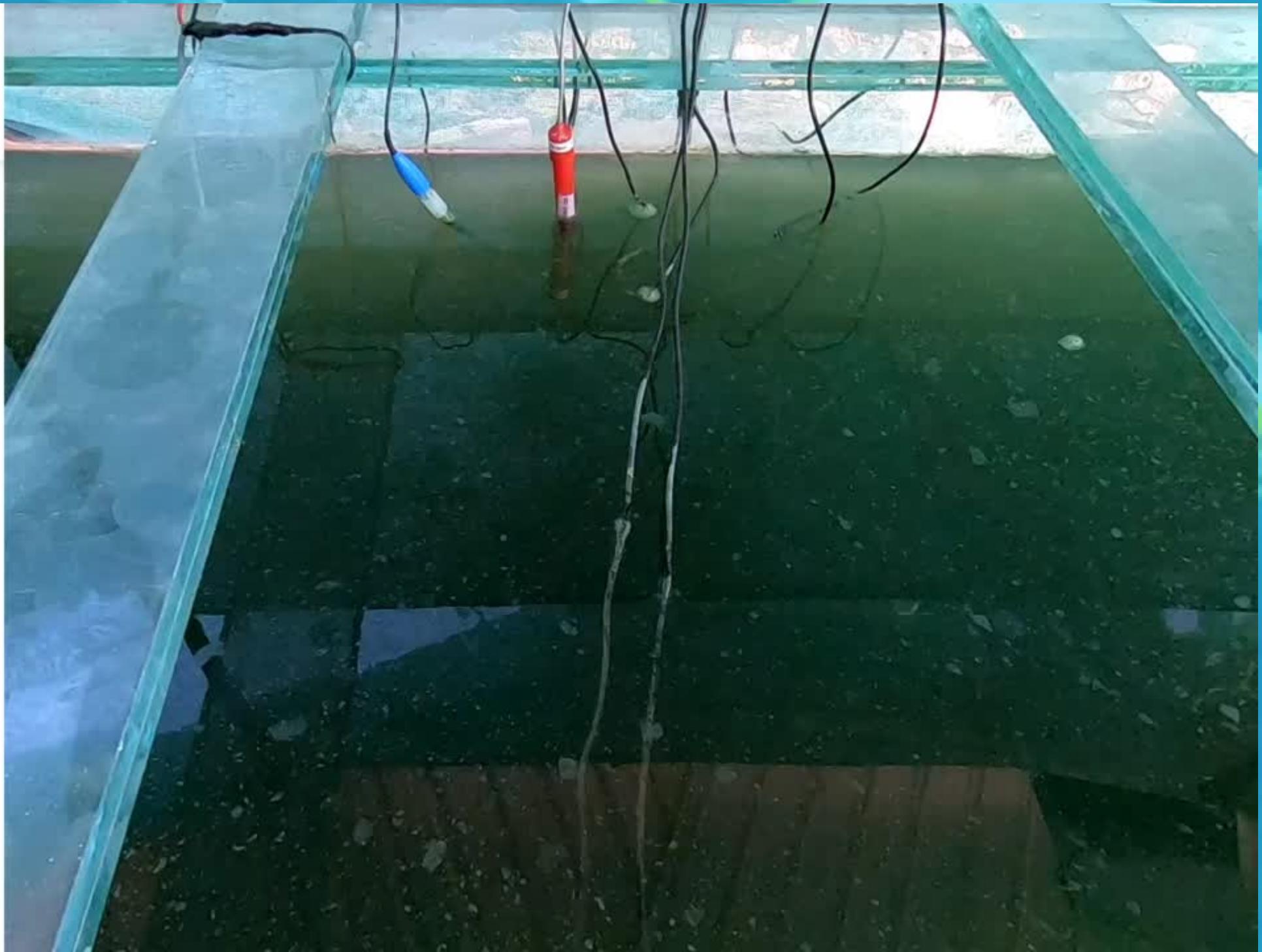
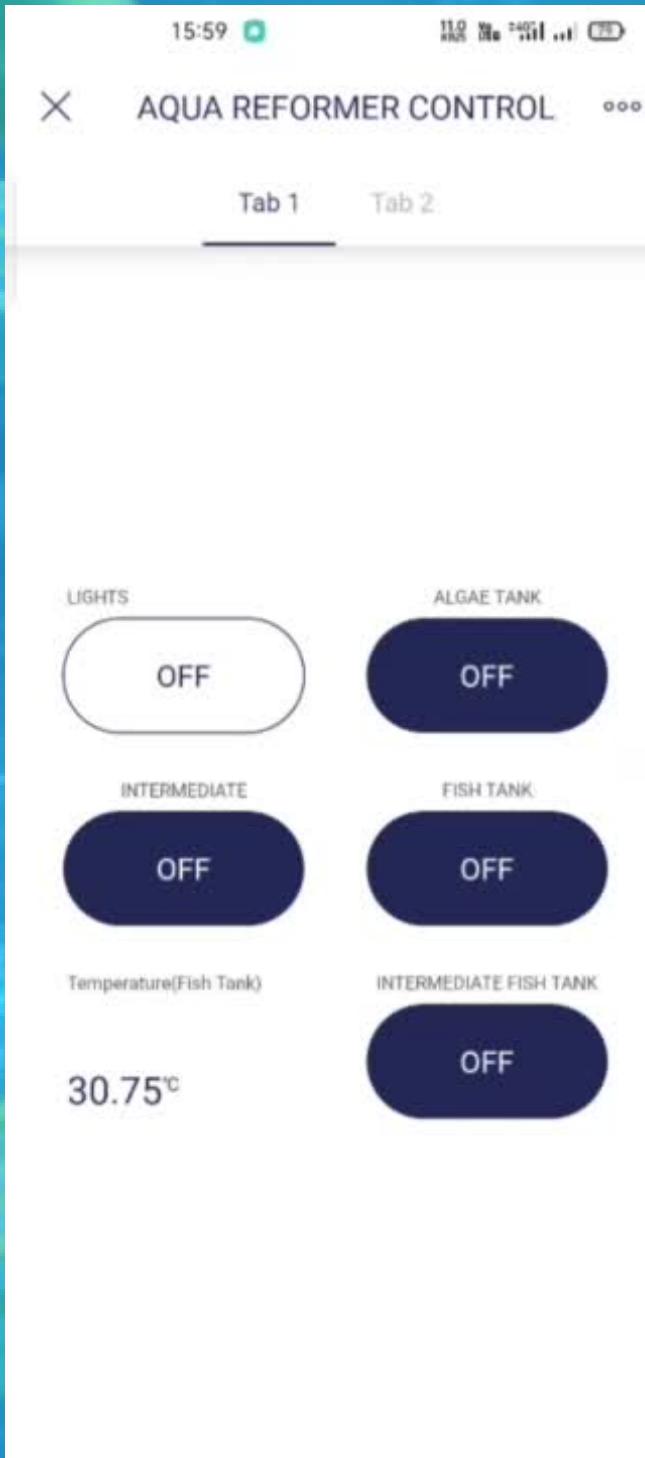
Recreating aquaculture

- The Aqua Reformer is a system that replaces traditional way of existing aqua farming.
- It is an eco-friendly approach with numerous advantages.
- The Process of pond acid neutralization by liming is replaced by spirulina algae.
- Spirulina algae is used to maintain the water quality as per the aquafarming requirement.
- Fish excreta is used by spirulina algae as nutrients for its growth.
- A closed loop formed between the algae and fishes, which helps in the maintenance of water quality for the betterment of fish farming.

Target audience or market

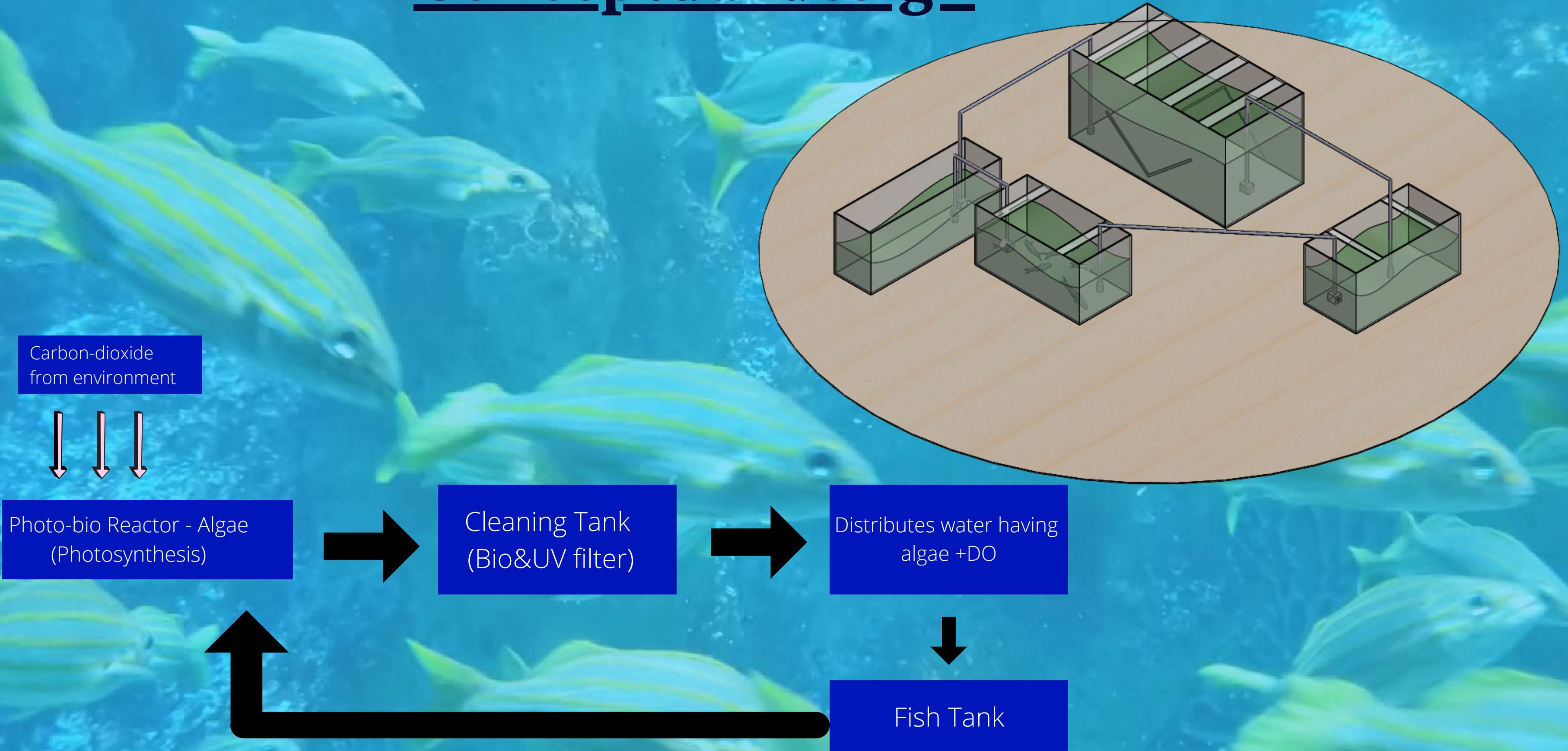
- This project is mainly targeted to the aquafarmers.
- Over 34.2% of the global fish stocks are produced through aquafarming.
- Fish consumption increased from 9.0kg/per capita in 1961 to 20.5kg/per capita in 2018.
- Fish trade had increased from 7.8 billion USD in 1976 to 164 billion USD in 2018.
- We can estimate the reach of our project which can be implemented on large scale.
- Aquafarming industry should meet demands of the growing population which is estimated to 9 billion by the end of this decade.
- This population boom provides room for new technologies to emerge and we hope to fill this void.

How it works



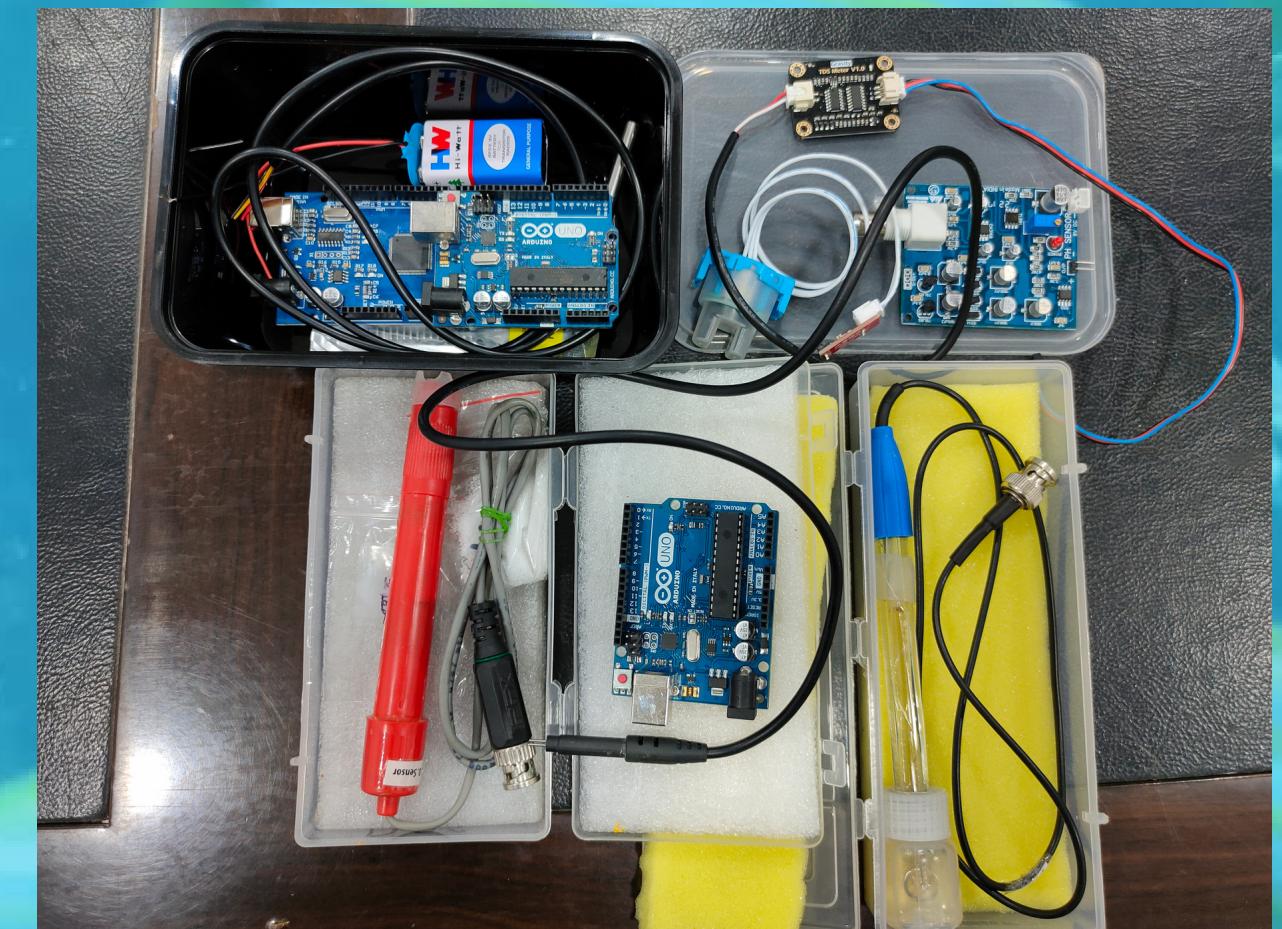
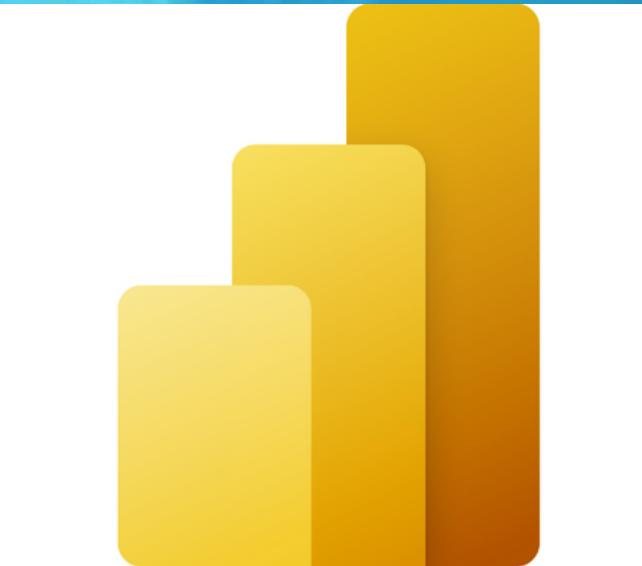
The screenshot displays a web-based dashboard for the "AQUA REFORMER CONTROL SYSTEM". The top navigation bar includes links for "Dashboard", "Timeline", "Device Info", "Metadata", "Service", and "Datastreams". The main interface shows two devices: "AQUA REFORMER" and "AQUA REFORMER CONTR...". Control switches for "Grow Lights", "Photosbioreactor", "Intermediate Algae Tank", "Fish Tank", and "Intermediate Fish Tank" are shown, with "Photosbioreactor" and "Fish Tank" currently set to ON. A circular gauge indicates the "Temperature(Fish Tank)" at 26.06°C. A "Temperature Analysis" graph shows a stable temperature over time. The bottom right corner of the dashboard has a small note: "Region S11".

Conceptual design



Core Technologies

- **Arduino IDE.**
- **Blynk IoT**
- **Azure IoT.**
- **Power BI**

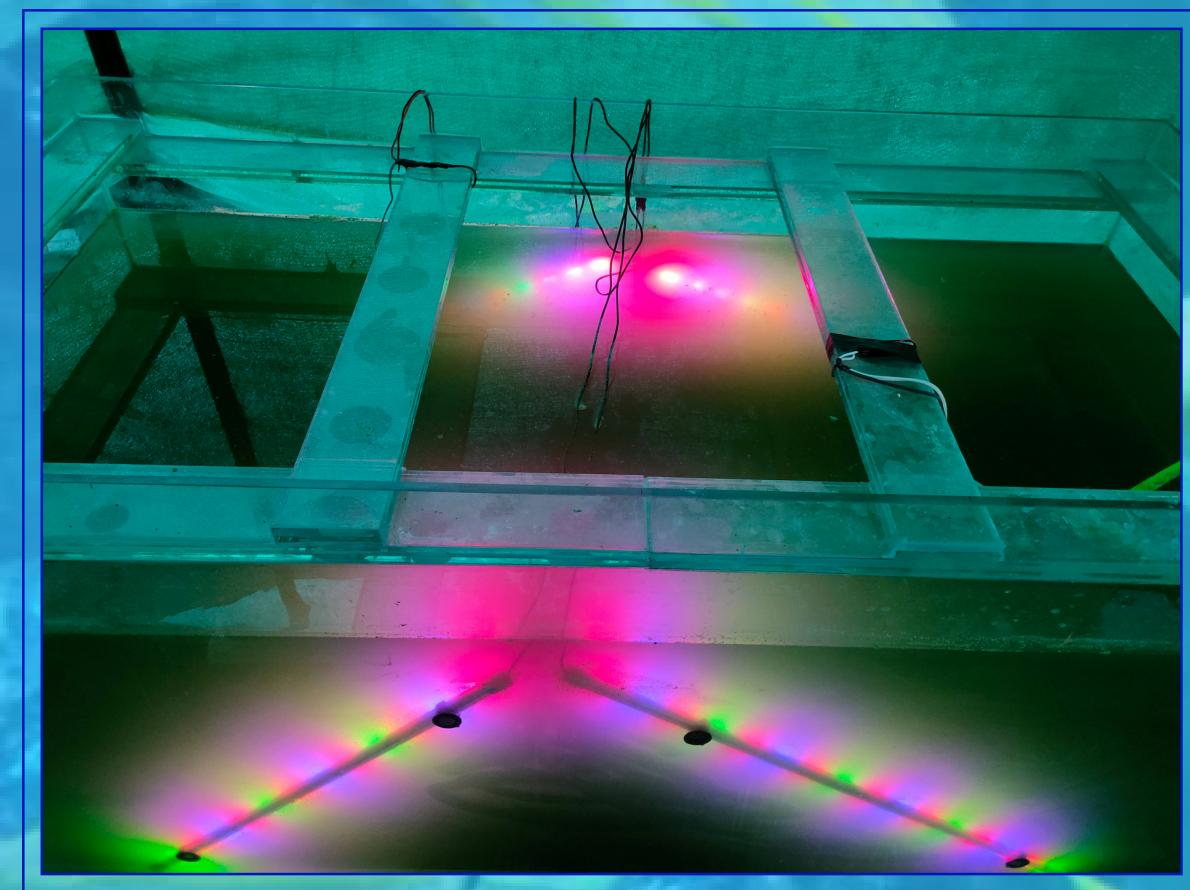


The Business plan

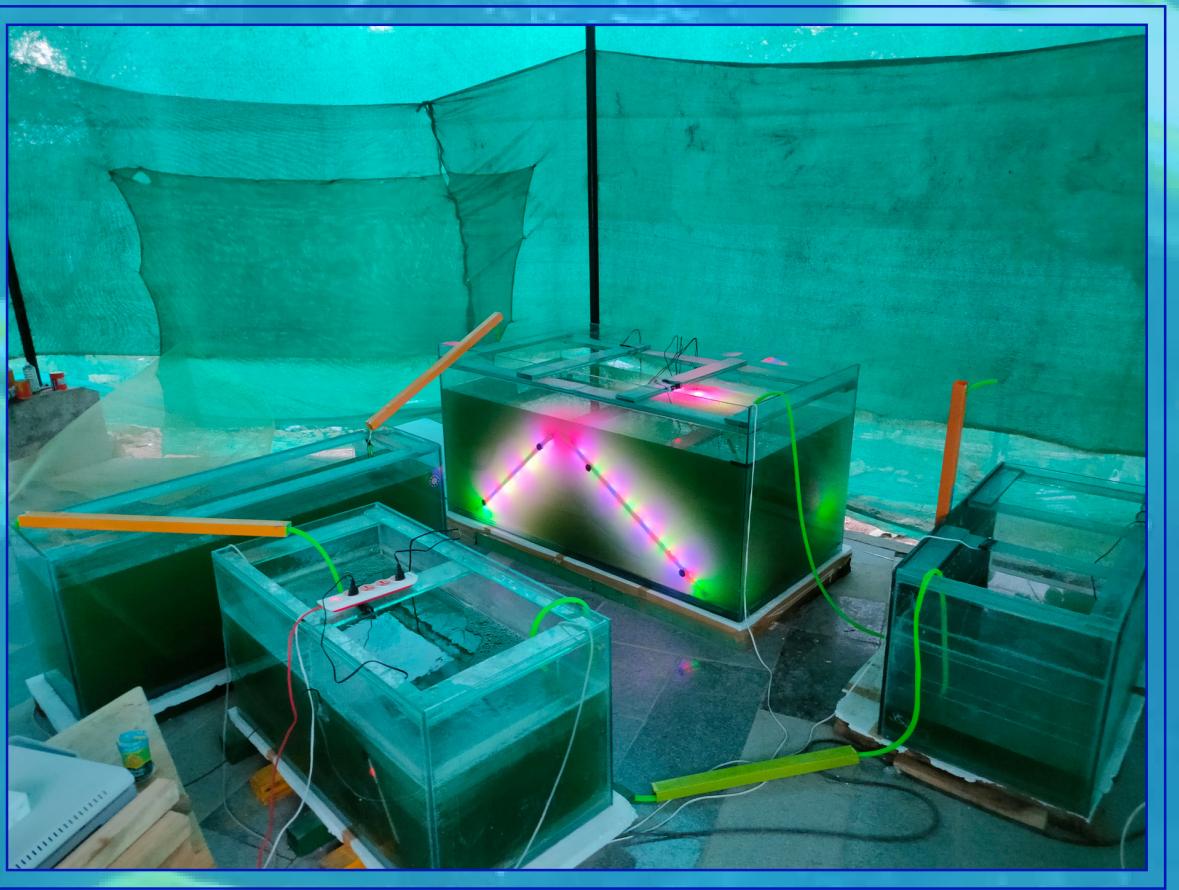
Competition:

- No existing product in the aquafarming industry.
- The approach is ecofriendly and works towards automation of the current system.
- Ecofriendly aquafarming creates a new category in the market.
- We envision our product to replace the current aquafarming process.
- Reduces the investment by farmer - Quantification yet to be done.
- Environment friendly aquafarming creates more opportunities in the market.
- Estimated product Cost : Rs.5,00,000 /one tonne fish.

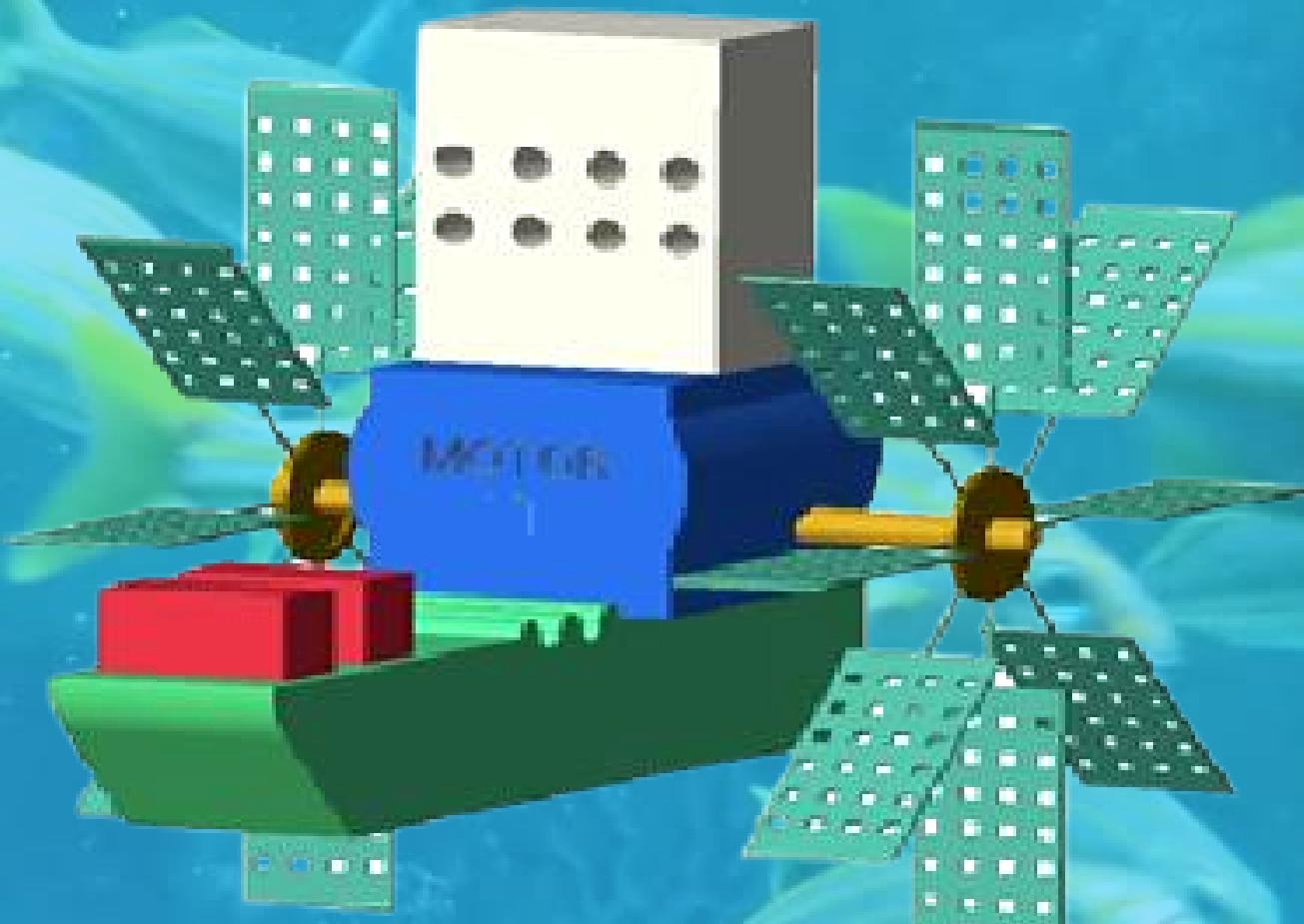
Our Products



Photobioreactor



Aqua Farming Setup



Aqua Reformer robot

Our Team



Dr K Siva Prasad



Pavan Kumar



Giridhar



Yuvaraj



Geethika

Thank You!