

DEVELOPMENT OF AN ENVIRONMENTALLY FRIENDLY, COST EFFECTIVE AND COMPACT ELECTRICAL FISHING SYSTEM

Project Reference No.: 47S_BE_2200

College : *St Joseph Engineering college, Vamanjoor*
Branch : *Department of Electrical and Electronics Engineering*
Guide(s) : *Mr. Sathisha K*
Student(S) : *Mr. Prekshith Lennon Rodrigues*
Mr. Jason Antony Quadras
Mr. Reyan Jaison Dsouza
Mr. Cleavon Dsouza

Introduction:

In rural areas there are still a high majority of people who are dependent on fishing as their main source of food or even income. In such dependencies they tend to use pollution and harm causing illegal methods of fishing such as cyanide and blast fishing. This may not only be harmful to the environment but also causes the fish population to drastically decrease. This may also cause a dip in the quality of fresh water making it unsafe for drinking. Figure 1 shows the result of illegal cyanide fishing and figure 2 shows dead fish after blast fishing.

Methodology:

- By utilizing electric currents to temporarily stun fish, electrofishing facilitates their capture.
- The fundamental concept behind electrofishing lies in the ability to induce an electric field in water, effectively stunning fish within its vicinity.
- This immobilizes the fish temporarily, allowing us to collect them using fish net. By varying parameters such as current intensity, frequency, and waveform, we can tailor electrofishing operations to target specific area while minimizing harm to non-target organisms.
- One of the primary advantages of electrofishing is its versatility in avoiding mass killing of fish populations across various freshwater habitats.
- From small streams to large rivers and lakes, electrofishing can be adapted to suit different environments. Electrofishing remains a valuable tool in the fishing eco-system and contributing to our understanding of aquatic ecosystems and supporting efforts to conserve and manage freshwater fish populations effectively.

Operation and Working:

- It consists of control rods (cathode and anode) which is a highly conductive material covered completely in an insulator. The control rods act as power delivery unit of the device. The control rods are powered by the power supply unit consisting of a battery, an inverter circuit and a transformer.
- The control rods are partially dipped in water and the power supply unit is turned On. As soon as the operational switch (protective switch) is turned on, the power delivery unit sends an electric current into the water which in turn when it comes in contact with the fish, the fish gets stunned resulting in easy collection of the fish.

- The magnitude of delivered current is directly proportional to the area between the rods and as the rods are moved further away from each other, the magnitude of current decreases but the area in which the current is spread increases. Hence the person operating the device doesn't experience an electric shock even if he is in close proximity. The time of operation is dependent on the battery charging and discharging capacity.

Future Scope:

- Electrofishing though not employed on a regular basis just as yet, may gain significant attention in future owing to technological developments and also depleting fresh water resource.
- The addition of sensors and IOT's may further improve the device making it marketable and thus improving its efficiency

Conclusion:

- Fishing may be a source of food and income for many in rural areas. Due to the use of illegal chemicals and stun grenades, the quality of water is hindered. Considering our fresh water resource and ground water which are not super abundant, conserving and proper care of water resources becomes our primary need.
- Thus, Electrofishing plays a major role in development of a pollution free and an ecofriendly alternative to such illegal and pollution causing methods.
- The stun caused from electrofishing is temporary and hence helps preserve fish population by letting fish harvesting based on size