# Anti Theft System for Aquaculture

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## *Abstract*

*Fishing in India is major industry in its coastal states, employing over 14million people. India's water and natural resources offer a tenfold growth potential in aquaculture from 2010 harvest levels of 3.9 million metric tons of fish. According to these statistics aquaculture plays main role in revenue of India. And also Andhra Pradesh is in the top second place in India in producing fish. So we work on the aquaculture problems. The most important and as well as dangerous problems of aquaculture is maintain certain levels of ph value, dissolved oxygen, temperature, and also many of aqua farmers facing the problems by thief's. This thief's are very dangerous and very harmful to the aqua farmers because they can change the whole profit of the pond in one night. That's why many of aqua farmers are scared about this thief's. Now we find out a new technique to minimize these thefts that is "anti theft alarm system". This system is simple and user friendly and important thing is maintenance cost is very less. Now, if we observe current scenario of protecting aqua ponds is very costlier. The capital and maintenance costs are comparably very high. In order to make a very economical, maintenance free and efficient way of protecting the aqua ponds we go with "anti theft alarm system".*

*Keywords: aquaculture, anti theft alarm system, cost effective, eco friendly, maintenance free, efficient.*

## 1. Introduction

As the human population continues to grow, finding means to feed those people is one of the most important challenges faced around the globe. Even in troubled economic times, men, women and children need to eat. And a healthy diet, high in protein is necessary to ensure that growing population does not succumb to sickness and disease. Fish and other aquatic organisms fit the model for healthy sources of protein.

Harvests of wild sources of fish, crustaceans and other aquatic species cannot keep up with the demand presented by the growing human population. Trying to match demand through commercial fishing interests would eventually result in over-fishing and the loss of those species entirely. Therefore, while aquaculture is required to meet the human demand, it also relieves the strain on wild species to allow them to continue to be a significant source.

The role of aquaculture in ensuring a consistent supply of aquatic species for human consumption cannot be overstated. Medical research into the health benefits of frequently eating fish is plentiful. One popular buzz word within the healthy eating movement is Omega-3 fatty acids, which are typically found in most fish. Multiple research studies indicate these fatty acids help reduce many forms of cancer and promote healthy brain tissue. Eating fish regularly has also been shown to reduce the risk of heart

disease through reducing the probability of clot formation, lowering blood pressure and increasing the good cholesterol levels in the blood stream. Some studies also suggest inclusion of fish into a healthy diet can have a positive impact on the development of Alzheimer's disease in elderly persons or blood sugar levels in diabetics.

Professionals in all aspects of agriculture struggle with improving their efficiencies and outputs to meet the food demands of the constantly increasing human population. Aquaculture is no different, and in fact, plays a critical role in this arena. Fish farming is typically much more efficient than cattle or pork production and other forms of agriculture. Land dedicated to fish ponds will produce ten times or more consumable product than the same land used to raise cattle or pork, while requiring significantly less input. But aquaculture does not exist without drawbacks. Depending on their location, whether it is a landlocked fish pond, or a floating cage in a saltwater estuary, high concentrations of aquatic species can alter or destroy existing wild habitat, increase local pollution levels or negatively impact local species genetic makeup.

## 2. Proposed System

Here we made a circuit that helps to simplify the detection of thieves. In this circuit we used simple electronic components it leads to minimize the total circuit cost. Now let see how we made a project, in this project main components are laser light, LDR and 555timer by using these components we made a project. First we identify the loop holes in that problem that is, how actually thieves enter into the pond for theft the aqua organisms. So we understand the scenario of thieves for entering into pond. In order to that, we use a one logic that is, if any thief want to enter into the pond then they compulsory cross the embankment of the pond. We made a laser security along the embankment. Laser security means along the pond embankment we pass a laser light. We build poles at the corners of the pond. The laser lights and light receivers nothing but light depended resistors (LDR) are placed on the poles. Laser lights are used for emitting the light very linear beam and LDR is used detect the light intensity in environment. The output of receiving end (LDR side) is connected to the timer circuit. This circuit used for hold the buzzer sound for a while. The output of timer is connected to buzzer. This buzzer is employed for making sound, that sound is used for awaking the owner or labor from sleeping. Then owner get alerted and for catching the thieves. The advantage of this project is, we can easily identify from which side that thief comes into pond.

## 3. Hardware Implementation

### 3.1 555timer

The **555 timer IC** is an integrated circuit (chip) used in a variety of timer, pulse generation, and oscillator applications. The 555 can be used to provide time delays, as an oscillator, and as a flip-flop element. Derivatives provide two (556) or four (558) timing circuits in one package.

**Modes of Operation**

The IC 555 has three operating modes:

**Astable** (free-running) mode – the 555 can operate as an electronic oscillator. Uses include LED and lamp flashers, pulse generation, logic clocks, tone generation, security alarms, pulse position modulation and so on. The 555 can be used as a simple ADC, converting an analog value to a pulse length. The use of a microprocessor-based circuit can convert the pulse period to temperature, linearize it and even provide calibration means.

**Monostable** mode – in this mode, the 555 functions as a "one-shot" pulse generator. Applications include timers, missing pulse detection, bounce-free switches, touch switches, frequency divider, capacitance measurement, pulse-width modulation (PWM) and so on.

**Bistable** (schmitt trigger) mode – the 555 can operate as a flip-flop, if the DIS pin is not connected and no capacitor is used. Uses include bounce-free latched switches.

### 3.2 Ldr

A **photo resistor** (or **light-dependent resistor**, **LDR**, or **photo-conductive cell**) is a light-controlled variable resistor. The resistance of a photoresistor decreases with increasing incident light intensity; in other words, it exhibits photoconductivity. A photoresistor can be applied in light-sensitive detector circuits, and light-activated and dark-activated switching circuits.

### 3.3 Laser light

A **laser** is a device that emits light through a process of optical amplification based on the stimulated emission of electromagnetic radiation. The term "laser" originated as an acronym for "**Light Amplification by Stimulated Emission of Radiation**".
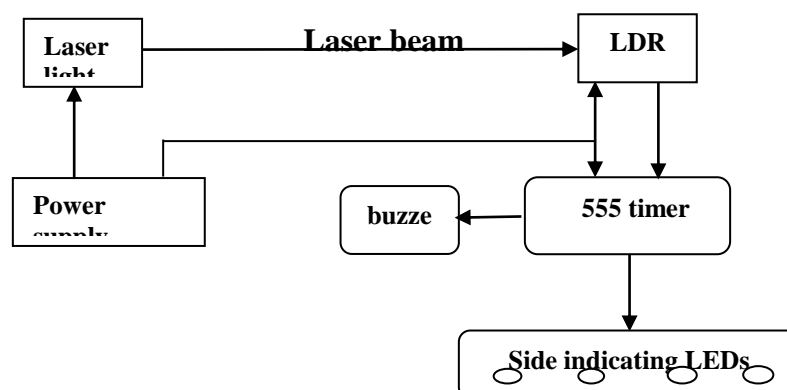
### 3.4 Buzzer

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

**Piezoelectric**

A piezoelectric element may be driven by an oscillating electronic circuit or other audio signal source, driven with a piezoelectric audio amplifier. sounds commonly used to indicate that a button has been pressed are a click, a ring or a beep [7].

### 3.5 Hardware Implementation

**Fig.1 block diagram of hardware implementation**

For this project we made a circuit. This circuit is helpful to the aqua farmers for easy to identify the thieves. The circuit consists of LDR, laser light, 555 timer, buzzer and rectifier

This all set up is placed at the pond enclosed by proper covering. The wires are taken from this circuit and passed to along the embankment of the pond. The circuit looks like following diagram.
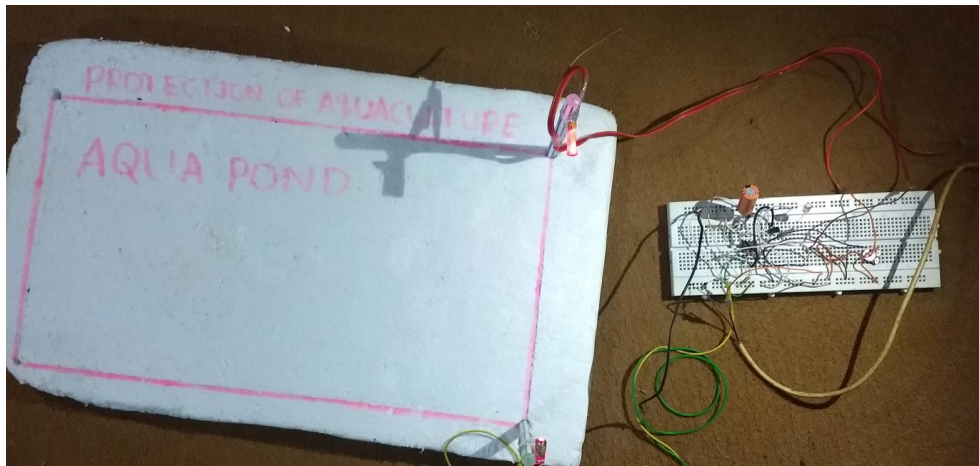


**Fig. 2 The real time implantation circuit**

## 4. Results

Therefore by using this system, the possibilities of catching thieves are increased. The money was saved because there is no require any labor for guarding the ponds. And also huge amount of electricity was saved. This saved electricity is used for remaining areas. In India there is huge amount of electricity is required still now. So this project also helps for electricity departments. This project is very economical and eco friendly. This project will implement in very less amount. Implementation is very easy. Reliability is high. For this project, hardware components are available easily and wiring is also very easy for establish. Accuracy is high.

In normal working condition there is no any disturbance is created so no lights and buzzer is on. So in this time no humans are entering into the pond. When human being is try to enter into pond that picture be like the below diagram.
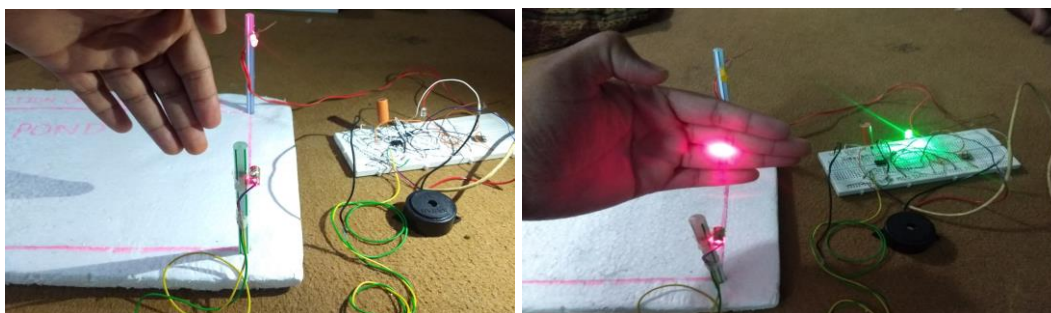


**Fig.3 before & after human is entering into pond**

If thieves enter into pond then immediately lights glow and buzzer makes a sound. Thus farmers are alerted and they are ready to catch the thieves. At the time of thieves enter into the pond the picture is like below.

## 5. CONCLUSION

Security for aquaculture is dying need in India as lot of money is invested in this sector. Our motto was to develop a security system which will provide both high security and be cheaper in cost. Our security system is less bulky as it requires less components and wiring and it has very low power requirements. Any damaged part in the system can easily be removed and replaced; and all the components are easily available. Moreover, the security system can be used in other sector such as perimeter security such as in banks, offices, museums etc. with very little modification. So we are hopeful, our security system will provide investors in aquaculture with the required security.

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