

Alarm based Solar Fencing and Pump Control System

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Abstract: The protection of agriculture farm from the various wild lives is really a challenging task. To enhance the protection, the electric fences are provided with continues power supply. This existing system is modified by installing IR emitter and detector based virtual fence which is arranged in the circumference of the farm. The IR emitter virtual fence detects the interference of the wild animal and supplies power to the electric fence that provides a shock effect. Here in the proposed method, power consumption occurs only when there is a contact made when the animal strikes the fence.

Keywords : Solar Fencing, GSM, Micro controller, Pump control.

I. INTRODUCTION

Agriculture is the back bone of our country. Many farms are affected by the interventions of animals. Though they are adversely affected by their interruptions. In one model, we provide a limited electric shock to warn the unauthorized obstacles

. Their amounts of shock affect any lines. So, it is safe[1]. By the same time, we combined the moisture sensor with the entire setup. It's very hard to the farmers to operate the motor at the right time.

The Relay makes the pump to operate whenever the moisture level gets down below one set value. Once the water level or the moisture levels gets down below one set value then the pumps gets off [5]-[6].

II. LITERATURE REVIEW

Agriculture and Horticulture sector are rapid growth sector in our country. Many research areas are focused on increase the agriculture products with help of recent technologies [2]-[3]. If any living things crossed the fence the system will immediately sends the information to the concern owner through proper channel. But It is a very old model and the owner cannot come as fast as the trespassers enters the farm. Now many of them designed the system as to make alarm and send message to the owner of the land. They have connected with the GSM module [4]. Since the existing system just sends the message only it is outdated mechanism now.

III. BLOCK DIAGRAM

The proposed block diagram for solar fencing and pump control is given below.

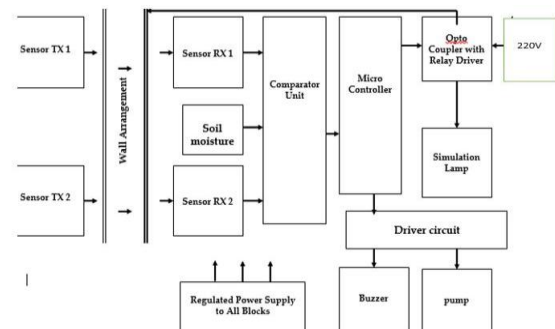


Fig.1. Block diagram for proposed work

The proposed set up is to mainly protect the farms from the animals and the humans. The overall system is cordially to make the farmers work very easier. The fence is planned to made for the four sides of the farm. We have planned to detect the entry with the LDR and the laser light. We have an idea of sending SMS through GSM to the concern owner in addition to make a sound with the buzzer. We are thinking to operate the pump with the solar in order to make the connections with the current. The moisture sensor will be used which is to be incorporated with the pump system. The entire system will be energized with a switch which is charged by a solar system or otherwise a battery.

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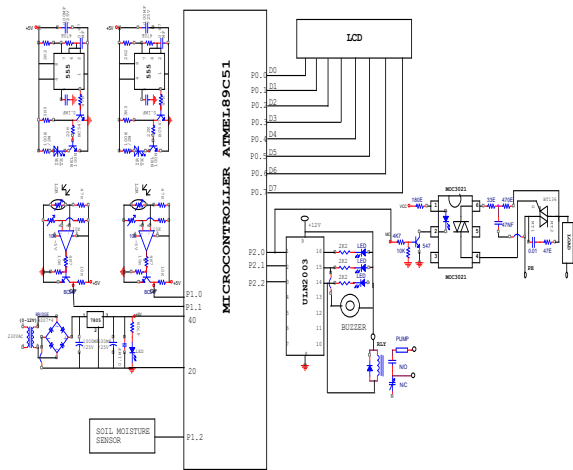


Fig. 2. Microcontroller Circuit

The whole process is carried on using AT89C51 which provides the following standard features: 4K bytes of flash, 128 bytes of RAM, 32 I/O lines, two 16 bit timer/counters, a five vector two – level interrupt architecture, a full duplex serial port, on– chip oscillator and clock circuitry.

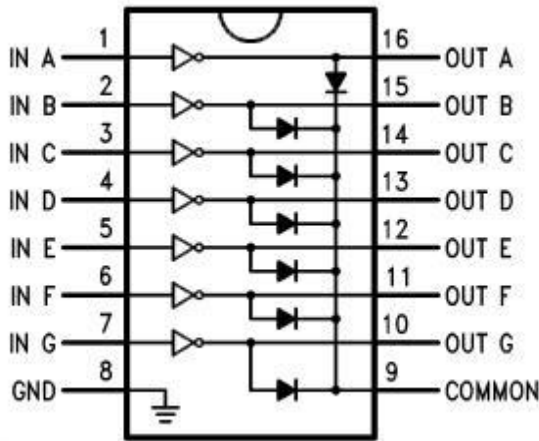


Fig.3.Pin Diagram

IV. RESULTS

In the proposed system, IC 741 used for moisture sensor setup. It is a comparator IC. Since to operate the pump in ON&OFF condition, we need a switching device, so we use a relay circuit. A laser is provided to pass the light to LDR. If there is any interruption in the laser light the normal one state output(5V) becomes as zero state output. Then the zero state output goes to the controller. Where the program is dumped to activate the 230V for the fence. LED is provided to show the indication that the 230V supply is running through the fence shown in figure 4.

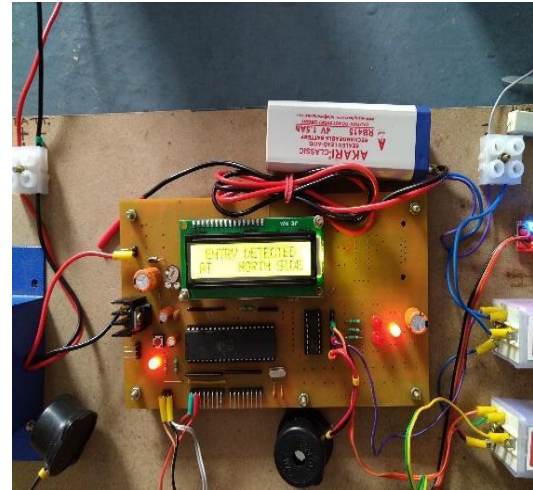


Fig. 4 Wild animal's entry display

At present we operate the setup with the 12V battery. The Main switch is provided to switch in three positions, i.e. ON, OFF & Charging through solar. The Output of the switch is given to the controller. A Filter is produced to provide pure DC. The Constant output is produced by the regulator which is kept at the main controller.

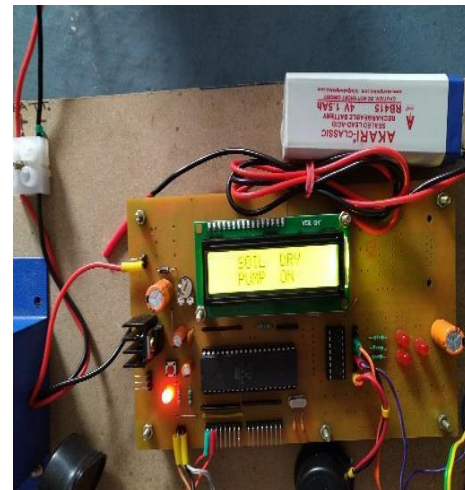


Fig. 5. Soil Moisture condition display

We have used the 780s regulator as we are using the 5V. The Indicator is provided to verify the system is ON condition. A 16*2 LCD in set up for show case the condition of the operation. AT mcl 8952IC the main IC consist of 40pins 20th pin is ground &40th pin is supply. It has 4ports namely port0, port1, port2, port3.The ATmcl IC only accept the digital signal. The 0port is connected to LCD& The first & third ports are the input & the second port is output. The LDR output is the input for one kit. Sensor output is also the input for one kit. The Output of one set up switching on the fever, if there is any interruption. A Buzzer is also activated when there is any interruption.

The above figure 5 shows that soil is dry and send a signal to turn on pump. The Crystal oscillator generates the required frequency of one's IC. ULN IC is used for the driver circuit. It is a 16 pin IC. Ninth pin supply and Eighth pin is ground. We can take up to 7 outputs from ULN IC but for one setup, we have taken just 3outputs.We have provides 3 LED for the indication of charging with the solar.

V.CONCLUSION

The protection of agriculture farm is demanding situation as the cultivation of plantations and crops have been reducing year by year. The slopes of mountains where the movement of animals are higher, creates panic to the lands where cultivation is made. The proposed method of protection reduces the risk to the farmers and also impact of shock will not affect the animal life, so that the animals just don't enter the farmlands and also agriculture land is protected. The consumption of power is reduced to a greater extend and the saved power can be used for other farm purposes.

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