

SENSOR BASED AUTOMATION OF WATER PUMP ON THE BASIS OF WATER QUALITY

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Abstract- The Municipal Corporation takes the water from the water bodies and then that water goes under various purification stages before sending to the storage locations. Many times it happens that the purified water may contain some of the unknown impurities in it and that impure water is supplied to the city. In this paper it is told that how we will be able to control the quality of the supply water using various sensors.

Keywords– automation; municipal corporation; sensors; arduino; relay.

I. INTRODUCTION

Water that is taken from the water bodies undergoes various purification processes before it is being send to the storage location or supplied to the people. Many of the times it happens that the quality of the water get disturbed, this may happen due to various reasons. Since there is no monitoring system used that can check the quality of water so the water with impurities is send to the storage location and that is supplied to the local area people. This impure water is responsible various types of the problems in our body or may cause various skin diseases. Since 2018, the technologies which are used or being developed for monitoring the quality of water are on the basis of the sensors that tells us about the quality of water that it is going beyond the limit. This indication is given in many different ways. But the new approach that is being told in this paper is about how the water pump will be operated on the basis of water quality.

II. METHODOLOGY

The water pump will be connected to the Arduino through which the various sensors will also be connected. As the supply will be given the sensors will start working and will check the value of the respective parameters and will provide a feedback to the Arduino if the values of sensor's output in permissible limit the pump will continue to but if the value varies to the permissible limit then Arduino will send signal to the relay to which the water pump is connected and the pump will be cut off by the relay. There can be various sensor connected to the Arduino for the testing of the water quality as there are variety of the parameters upon which the water is being jugde. The fig.1 shown below is the block diagram for the module.

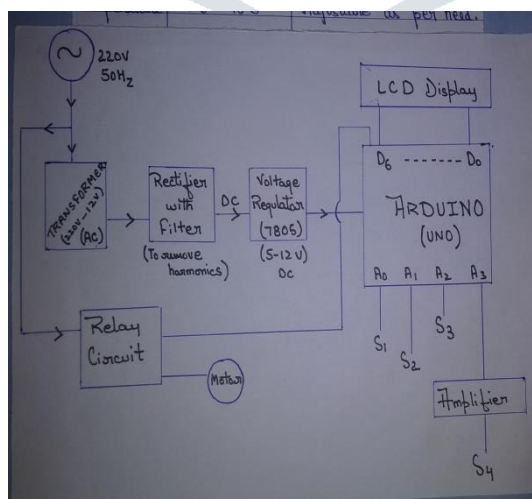


Fig.1 Block diagram for the operation.

1. PH Sensor

The PH sensor used for this purpose is a glass rod type. It has two electrodes in which the glass electrode is the one which have most important work. It has a silver based electrical wire that is suspended in solution of potassium chloride, this all arrangement is packed inside a thin bulb shape glass structure made of special type of glass. The other electrode is called the reference electrode which has a potassium chloride wire suspended in solution of potassium chloride. The permissible limit of ph in drinking water must be in between 6.5 to 8.5 (this is set by Environment Protection Agency). The water with ph 7 is considered to as neutral. If the value of ph is lower than the suggested value then is may increase the volume of certain acids in our body, and if the lave of ph goes above can neutralize some acids in our body that may cause indigestion of food and many of other problems. So it is very important to maintain the value of ph in drinking water.



Fig.2 PH Sensor

2. Turbidity Sensor

The Turbidity Sensor is used for testing the amount of turbidity in water. Turbidity in water is defined as the cloudiness in water, this is due to the presence of the suspended particles in water which are not visible with naked eyes. It uses a light beam to detect the amount of suspended particles in water. The light is transmitted from one end through the water and the amount of light scattered by the suspended particles gives the idea about turbidity. The amount of turbidity in water changes with the amount of suspended particles present in water. The turbidity in water should not be more than 5 NTU and ideally it must be below 1 NTU.



Fig.3. Turbidity Sensor

3. Relay

A relay is an electrically operated switch. It contains an internal coil which creates a magnetic field which attracts the movable part due to which the switch contact changes and the current starts flowing through it. The most typical usage of a relay is to allow a low voltage dc circuit to switch on or off a high voltage circuit. In the model discussed above, the relay is used to control the operation of submersible pump when any of the parameters goes above or below the suggested limits.



Fig.4. Relay

III. CONCLUSION

It can be concluded that sensors are helpful in checking undesirable changes which are occurring in the atmosphere. With the help of these sensors we can test any types of occurrence which leads to the formation of further consequences. As a result of which the situation may be worst. It was found that this model will play a dominant role to check the water quality and could be used for its further enhancement. Based on the field survey, it could be stated that the demand of water is increasing day by day, so to have good quality of water it is compulsory to set the desire parameter of the potable water. It can also be useful to test the temperature of waste water before discharging it into the river so that the life of aquatic plants and animal could be taken to the safe side.

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