

Water Quality Monitoring System

Abstract:

Water pollution is one of the biggest threats for the green globalization. Water pollution affects human health by causing waterborne diseases. To prevent the water pollution, necessary steps are to be taken. First step is to estimate the water parameters like pH, turbidity, conductivity etc., as the variations in the values of these parameters point towards the presence of pollutants. In the present scenario, water parameters are detected by chemical tester laboratory test, where the testing equipment's are stationary and samples are provided to testing equipment's. Thus, it is a manual system with tedious process and is very time consuming. In order to minimize the time and to make the system automated, the testing equipment's can be placed in the river water and detection of pollution can be made remotely. To ensure the safe supply of drinking water, the quality should be monitored in real time for that purpose Arduino based water quality monitoring has been proposed. In this report, the design of Arduino based water quality monitoring system that monitors the quality of water in real time is presented.

This system consists of different sensors which measures the water quality parameter such as pH, conductivity, muddiness of water, temperature. The measured values from the sensors are processed by microcontroller and the processed values are transmitted using GSM to the concerned authority.

Introduction:

The quality of water has an impact on the living beings. Water quality testing is an important part of environmental monitoring. Water quality refers to the chemical, physical, biological, and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose. In this project, the main parameters that define water quality are monitored and observed. To monitor the parameters different sensors like pH, IR, Temperature and Conductivity sensors are used. All the measured parameters are compared with the threshold value that defines the purity. Once the parameters are measured they are sent to authority in the form of alert messages.

Future Scope:

The capability of water quality monitoring system can be enhanced to obtain more efficient reliable results. The number of parameters to be sensed can be increased by the addition of multiple sensors to measure dissolved oxygen (DO), chemical oxygen demand (COD), biochemical oxygen demand (BOD), ammonia nitrogen, nitrate, nitrite, phosphate. The system can be further upgraded using wireless sensor networks. The system can be expanded to monitor hydrologic, air pollution, industrial and agricultural production and so on. It has widespread application and extension value. Work can be carried on to include controlling the supply of water.

Conclusion:

Real time system for water quality measurement based on GSM is presented in this report. The system is incredibly versatile and economical. It is a real-time system that measures numerous parameters pertaining to the water and send them to the monitoring center. The system can monitor water quality automatically, and it is low in cost and doesn't need individuals on duty. The system has good flexibility. It is a versatile system, because of which simply by replacing the sensors and by making some changes within the computer code, the system can be used to measure some other parameters of water. The system is reliable and easy to maintain and it can be extended to measure water pollution as well. By effectively using the proposed system, one can save time and cost can also be reduced.