Ideation Phase
Brainstorm & Idea Prioritization

Date	19 September 2022
Team ID	PNT2022TMID30948
Project Name	Project – Real-Time River Water Quality Monitoring And Control System
Maximum Marks	4 Marks

PROBLEM

HOW TO MONITOR AND CONTROL THE QUALITY OF RIVER WATER IN REAL-TIME?

Abishake B	Boopathi Raja P	Deepan Raj V	Dinesh Kumar P

Abishake B

Wireless Sensor Network (WSN) that assists to monitor the quality of water with the support of information sensed by the sensors dipped in water.

A monitoring system consisting of a water capsule with sensory devices, microcontroller, and communication device is developed and the system is named as Q-water. To prolong the life of the batteries, a solar panel is installed on Q-water. The energy saving technique is implemented to sustain the lifespan of water

The system consists of several sensors which are used for measuring physical and chemical parameters of water. The parameters such as temperature, pH, and dissolved oxygen of the water can be measured. Using this system a person can detect pollutants from a water body from anywhere in the world.

Boopathi Raja P

Special causes of errors are also possible in designing of system like errors in calculations, tool wear, operator error, resetting of machines, and errors in measurements.

Natural variability such as changes in temperature, humidity fluctuations, electrical fluctuations, natural resource variations, and deterioration of equipment performance. The natural variability is the cumulative effect unavoidable chance causes of variation are also measured.

The main components of Wireless Sensor Network (WSN) include a Microcontroller for processing the system, communication system for inter and intra node communication and several sensors. Real-time data access can be done by using remote monitoring and Internet of Things (IoT) technology.

Deepan Raj V

Getting quantitative information on the physical, chemical, and biological characteristics of water via statistical sampling

Statistical process control (SPC) makes uses of statistical techniques to improve a process's quality. SPC is a useful method for detecting problems, reduce variability to improve the capacity and showing process stability to get error free data.

We have two sensors to determine water quality, we include PH sensors as well as turbidity sensor and a dissolved oxygen sensor. These sensors will detect the presence of suspended particles in the water. We also have a GPS module and micro SD card, which will log the data from sensors as well as GPS locations as well as transmit the same online over IOT at particular intervals.

Dinesh Kumar P

The system is designed for monitoring water quality such as water temperature, water level, water pH, turbidity of water and Carbon dioxide on the surface of water by using WQM system consists of sensors, Field Programmable Gate Array (FPGA), Zigbee wireless communication protocol and personal computer.

GSM module is used to transfers wirelessly the data further from the microcontroller to the smart phone/PC. The system has proximity sensors to alert the officials by sending a message to them via the GSM module in case someone tries to pollute the water body. This system can keep a strict check on the pollution of the water resources and be able to provide an environment for safe for drinking water.

To make certain the supply of pure water, the quality of the water should be examined in real-time. Smart solutions for monitoring of water pollution are getting more and more significant these days with innovation in sensors, communication, and Internet of Things (IoT) technology. The paper proposes a cost effective and efficient IoT based smart water quality monitoring system which monitors the quality parameters uninterruptedly. The developed model is tested with three water samples and the parameters are transmitted to the cloud server for further action.

REPORTS:

Each and every data like pH, turbidity temperature of the river water are measured and generated in the application in up-to-date.

The comparison between the water bodies in different areas are also generated graphically.

The report shows the actual value and the measured value of the water body.

FUTURE PLANNING:

Charging the batteries of the system by using solar energy.

Underground water system development toget the data for each and every second.

Can measure the natural variabilities and also the equipment performance.

QUALITY IMPROVEMENT:

Controlling the pollutionof water by alerting the authorities when the water bodies exceeds the polluted level.

Error detection as well as correction.

Statistical technique to improve a process quality.

ALERTS AND NOTIFICATIONS:

This system continuously monitors the river water parameters (pH, temperature, turbidity).

Each and everyday the sensed valueof the river water is measured and notified to the user.

The sensed value is above or below to the actual value and it automatically alerts the user.

FINANCIAL MANAGEMENT:

Cost effective equipped system.

App installation is user friendly and flexible with free of cost.

AUTOMATION:

The app also gives the exact location of the polluted water body with the help of GPS to make the user to know the correct location.

The values are already fed into the system which helps the user to know the actual values to compare with measured values.