

## Modeling, Development and Analysis of Low Cost Device for Water Quality Testing



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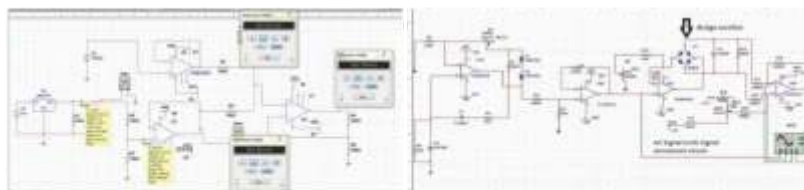
**Keywords:** Water Quality Monitoring , Water Quality Testing Device

### Abstract:

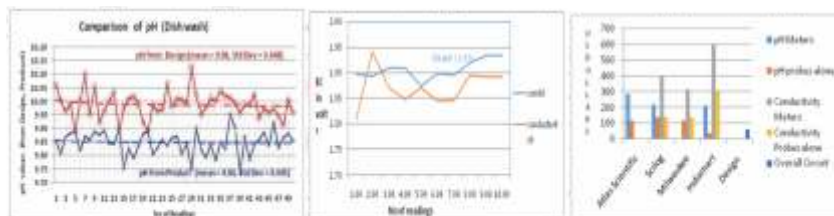
In recent days, the most important problem that our society faces is low quality of drinking water. Quality monitoring of water is important because contaminated drinking water can spread diseases faster than any other sources. With existing techniques, the general public is not aware of the potability of water. Lack of accurate and efficient low cost systems are a reason for poor awareness on the same.

This dissertation is focusing on modelling and developing a water quality testing device and analysing its performance with the currently available products. The parameters like pH, Conductivity, TDS and Temperature are measured using the developed device by considering as different sub-systems. The circuits for measuring pH, TDS, Conductivity and Temperature are modelled and its outputs are send to microcontroller through an analog to digital converter. Sub-systems are analysed for its accurate measurements. The implementation of the same is performed on hardware and results are verified for samples like distilled water, salt water, tap water, dish wash water, curd.

Implementation results are compared with actual products available in market. Cost for developing the device is comparatively less than the available products in market. Results of pH measurement comparison of device and product are found to be stable at pH 7. But for lower and higher values of pH, developed device shows better results than products available in market. Error rate of Conductivity and Total Dissolved Solids measurements can be reduced to half by using the developed device. The developed device can be used at different places like home, hostel, canteen, bus-stand or any other public establishments to check the quality of water being used for drinking purpose.



**Signal conditioning circuit for Ph, conductivity, TDS and temperature**



**Analysis of developed water quality testing device with products in market**

**Conclusion:** Developed device results for pH is found to be stable at pH7 and accurate at lower and higher values of pH. Error rate for conductivity and TDS is reduced to 50%. Cost of the developed device is reduced to half compared with other available products in market.