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Web based water turbidity monitoring and automated filtration system : IoT application in water management (Article) (Open Access)

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Abstract

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Water supplied to residential areas is prone to contaminants due to pipe residues and silt, and therefore resulted in cloudiness, unfavorable taste, and odor in water . Turbidity , a measure of water cloudiness, is one of the important factors for assessing water quality. This paper proposes a low-cost turbidity system based on a light detection unit to measure the cloudiness in water . The automated system uses Intel Galileo 2 as the microprocessor and a server for a web - based monitoring system . The turbidity detection unit consists of a Light Dependent Resistor (LDR) and a Light Emitting Diode (LED) inside a polyvinyl chloride (PVC) pipe. Turbidity readings were recorded for two different positionings; 90° and 180° between the detector (LDR) and the incident light (LED). Once the turbidity level reached a threshold level, the system will trigger the filtration process to clean the water . The voltage output captured from the designed system versus total suspended solid (TSS) in sample water is graphed and analyzed in two different conditions; in total darkness and in the present of ambient light. This paper also discusses and compares the results from the above-mentioned conditions when the system is submerged in still and flowing water . It was found that the trends of the plotted graph decline when the total suspended solid increased for both 90° and 180° detector turbidimeter in all conditions which imitate the trends of a commercial turbidimeter. By taking the consideration of the above findings, the design can be recommended for a low-cost real-time web - based monitoring system of the water quality in an IOT environment.

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