

8th International Conference on **Environmental Chemistry and Engineering**
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Real time monitoring and control system for drinking water quality insurance

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Monitoring and control technologies are indispensable for the production of safe drinking water. They allow for the surveillance of source water quality and the detection of environmental pollution threats, thus defining the boundary conditions for the subsequent treatment and providing early warning in case of unexpected contaminations. They are mandatory for the permanent control of the treatment process and the efficacy of each single treatment step and they safeguard the high quality of final stage consuming water. Furthermore, appropriate analytical techniques are indispensable for the detection of changes in water quality during distribution and for monitoring drinking water quality at consumers' tap. Reliable monitoring technologies contribute to a large extent to the consumers' trust in a high drinking water quality. It has been completed and implemented the design of online continuous monitoring system which include electrodes for measuring the pH, temperature, turbidity, free chlorine TDS, conductivity, salinity and dissolved oxygen. This monitoring system has been linked to the processing drinking water line in Waziriya site-Baghdad city for a period of ten consecutive days and the extent of the work amounted to two and a half hours a day. At the same time samples were withdrawn from the same source for the purpose of laboratory testing and the results were compared to the online results which gave nearly consistent between the two tests. The current design might be expanded to include the possibility of adding future sensors to measure bacteriology picture and add modem for the purpose of wireless signal transmission. The plan of project consisted of purchased and connected parts of the whole system according to the final layout of proposed monitoring system as a compact panel and connects this panel to one of drinking water stream (Al Waziriya site was selected for our work) to monitor continuously the quality of drinking water and comparing the on-line results with laboratories results for the same stream of drinking water. Also this research work included design and implementation of wired signal transmission system that transforms the online results of drinking water to a central control room within distances of 1-250 m.

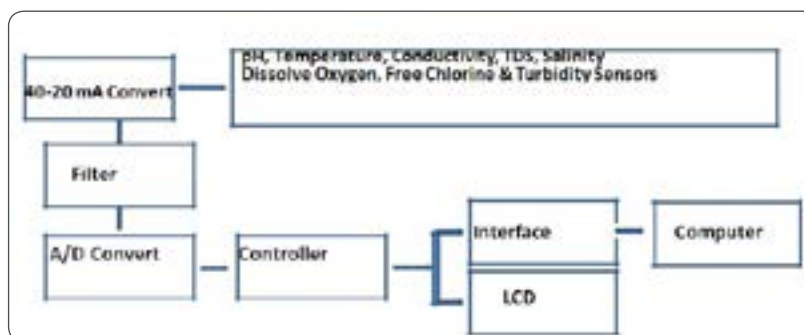


Figure: Electrical diagram of monitoring system

Recent Publications

1. U.S. Environmental Protection Agency (EPA), December 2005, Water Sentinel System Architecture, EPA 817-D-05-003, Draft Version 1.0.
2. J.A. Schlegel, January 2004, Automated distribution system monitoring supports water quality, streamlines system management, and fortifies security, Journal of American Water Works Association.
3. U.S. Environmental Protection Agency (EPA), August 2005, Technologies and Techniques for Early Warning Systems to Monitor and Evaluate Drinking Water Quality: A State-of-the-Art Review, EPA. 2005. EPA/600/R-05/136
4. U.S. Environmental Protection Agency (EPA), May 2007, Water Security Initiative: Interim Guidance on Planning for Contamination Warning System Deployment, EPA. 2007. EPA 817-R-07-002.

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5. J.M. Salman, March 2006, Measurements of Water Criteria in Five Drinking Water Stations South of Baghdad near Very Polluted Sources.

Biography

Jasim M Salman (Assistant Dean for Scientific Affairs-Al-Nisour University College, Iraq) holds a PhD in chemical engineering, in addition to numerous international certifications in the field of environmental management. Dr. Salman's achievements span more than three decades of significant leadership in the fields of chemical engineer process, adsorption process, preparation of activated carbons, environmental applications, water, soil, air monitoring and analysis (laboratories & fields), solar energy applications. Dr. Salman published more than 100 scientific manuscript, book and patent, he participated many scientific conferences, meeting and workshop. He got many awards from different national & international sides; the last one was scientist's medal 2017 from International association for advance materials in Sweden. Dr. Salman has provided critical projects management and implementation services to international private sector companies operating in Iraq in addition to consultation and advisory services to the international companies in Iraq since 2003.

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