International Conference on Hydroinformatics

2014

Decision Making System For Water Production And Treatment Process As Well As Blending Of Multiple Water Sources Gat Micro Grid

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DECISION MAKING SYSTEM FOR WATER PRODUCTION AND TREATMENT PROCESS AS WELL AS BLENDING OF MULTIPLE WATER SOURCES GAT MICRO GRID

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1. INTRODUCTION

In order to enable sequential utilization of water resources, retaining and using substitute resources is much more economical than expanding pre-existing water resource facilities. Therefore, the development of the best process for water treatment for diverse water products—which is needed all over the world—is being predicted as the main tactic. The expansion and diversion in the demand for water, and equal quality regardless of the use have induced problems of expensive cost for producing and disposing water. Thus, the importance of developing the optimum water processing treatment (WPT) technology in order to produce diverse and high-quality water as a solution is being brought up.

Therefore, the technology to monitor the exact process and disposing pollutants according to unit process and diagnosing whether the needed quantity and quality is being qualified is needed.

Especially, while the water sources are recently being multiplied, the water processing technology in order to produce the demanded quantity and quality of water to meet demands in cutting the cost for water production is very much needed. The intelligent management program, which would operate the following WPT process, is being needed as well.

Therefore, this study focuses on the WPT compound process to produces diverse water through Water Blending (surface water, underground water WPT, treated wastewater, rain water treatment compound process, and WPT compound process for seawater, seawater combined with stream water, and rain water) based WPT Intelligent Treatment Decision-making (ITD) system consist of Water Blending ITD, ITD for deciding and producing of the quantity and quality of water by use, ITD for optimum operation for each unit process, the intelligence to decide on the processing efficiency of each and entire process, and to check the defects and suggest countermeasures.

The goal is to develop an ITD program that could enhance the performances of each unit process, producing much safer and stable quality and quantity of water, as well as managing an economical system, which could cut the cost and energy.

This study focuses especially on the disposal process of blending surface water and underground water during the disposal of the blending of multiple water sources.

2. THE PROGRAM CONSTRUCT OF DECISION MAKING AND FRAME OF WPT

The structure of WPT technology can be divided into two major states: Steady-state process operation and Stead-state process diagnosis. Process operation is defined as Water Blending, the processing algorism, the deciding algorism for water production due to use, and optimum operation algorism for unit process. On the other hand, process diagnosis is consist of error-diagnosing algorism for diagnosing and solving problems of declining efficiency, process efficiency diagnosing algorism, and error history information algorism.

3. The composition and analysis of unit process deciding LOGIC for treating surface water and underground water.

Figure 1 and Figure 2 show the Logic for decision making within the WPT for surface water and underground water. Figure 1 shows the Blending Logic within the decision making Logic for the WPT for surface water and underground water.
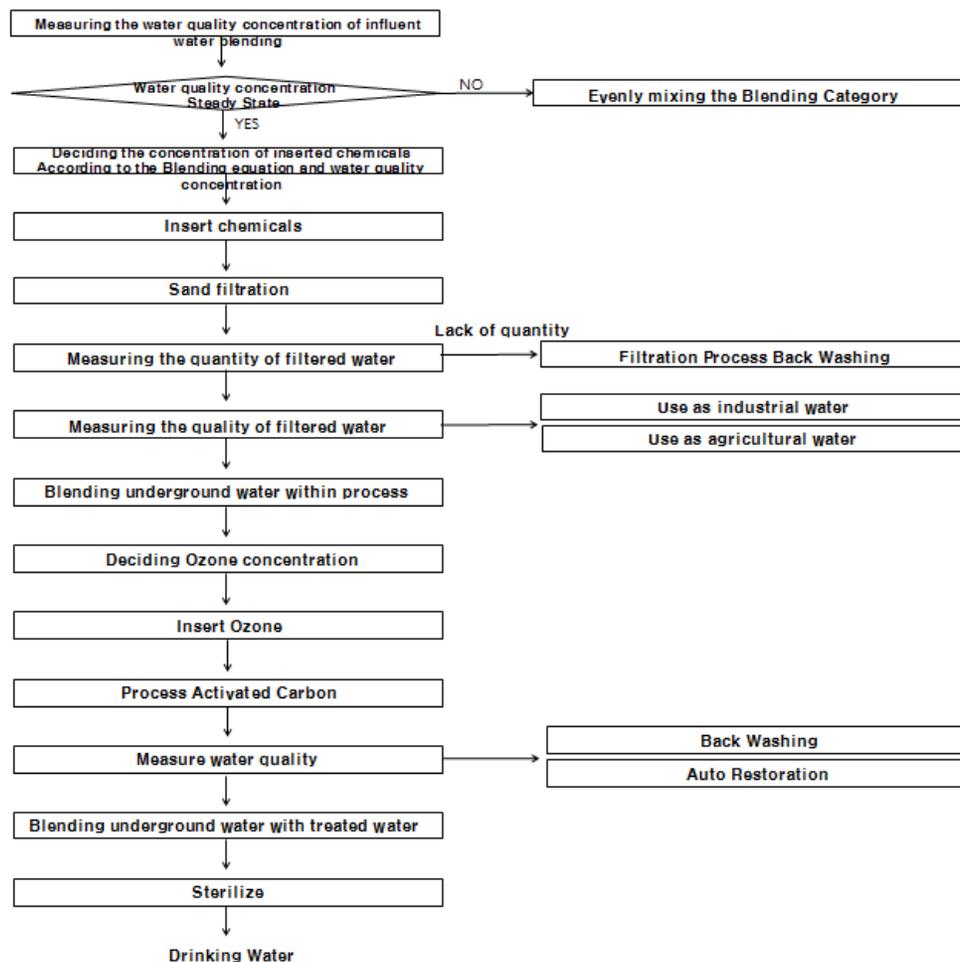

Figure 1. Blending Logic within the decision making Logic for the WPT for surface water and underground water.

The ground water first diagnoses the safety of water produce, which would meet the demands and provide the appropriate quantity. Then, considering the quality, it is organized to process,

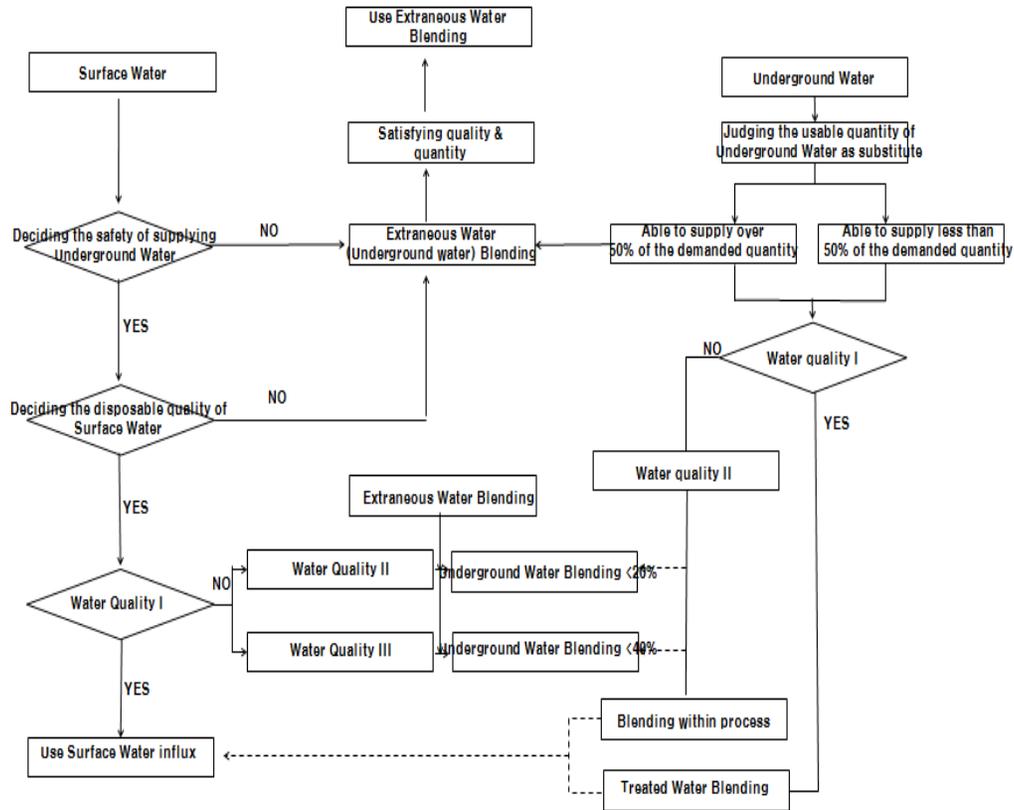classifying whether it is extraneous water blending, inter-process blending, and treated water blending.

Figure 2. Processing Logic after the extraneous water blending, out of the unit process decision making Logic of surface water and underground water

By blending the extraneous water of surface and underground water, it is flown into the Blending category. Then, by analyzing the change of quality, the mixed degree of the Blending category is diagnosed. Also, the quality and mixed degree of the Blending category helps deciding the concentration of inserted chemicals, stabilizing and maintaining constancy of the optimum chemical insert through feedbacks on the quality of treated water.
Filtration process, ozone process, activated carbon process which follows are organized in order to produce water, and the treated water is decided on its use of industrial water and agricultural water according to the quantity and quality of the consumer's demand.

Acknowledgement

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