

Development and Implementation of Performance Evaluation System for Water Treatment Plant: Case study of Taipei Water Treatment Plant

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摘要.

Abstract

To implement performance assessment, it is necessary to develop adequate and representative performance indicators. Good performance indicators can specify the measurable evidence that is necessary to document the achievement of a goal. To provide the higher quality and stable water to the customers, the water utilities themselves should establish the proper maintenance and management programs to enhance the availability of plant facilities and equipments in the water treatment plant. With the appropriate performance indicators, the objectives and/or targets of the business plan can be evaluated quantitatively. The aim of this research work is to set up the performance evaluation system for the Taipei water treatment plant. After the establishment of performance indicators (seven in this research), the corresponding evaluation items and their relative weights were revealed throughout forum discussion and questionnaire survey and based on the comprehensive performance evaluation technique and analytic hierarchy process method, respectively. Meanwhile, according to the results of performance evaluation and simulation studies by the developed model, an implementation plan for upgrading the performance of the Taipei water treatment plant was proposed, with two important items: (1) proper adjustment of the water production rate, PAC dosage, and sludge management for different turbidities in source water based on the required finished water quality can minimize the total treatment cost and enhance the performance of the water treatment plant; and (2) establishing a regular performance evaluation system to identify potential and existing problems so that correction action could be immediately taken. Developing a sound database program, and cooperating with the stakeholders for source water protection are the major tasks that should be implemented to achieve the objectives of safe drinking water and clean water.