

ANALYSIS OF OXYGEN TRANSFER PERFORMANCE ON CASCADE DIFFUSED AERATION SYSTEMS

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Abstract

Cascade aerators are normally used in water treatment for recreational lakes, in post aeration of drinking water supply, which generally have quite low efficiencies with dissolved oxygen, serves as healthcare element in human body when consumed as drinking water. The development of cascade aerator is to identify the relationship between properties of cascade aerator with water potential energy, water flow rate, saturation level of D.O., water temperature and water pressure. This paper presents the experiments on developing an method for evaluation of oxygen transfer capacity in clean water. Experiments were set up in a model of working cascade aerator. Standard oxygen transfer coefficient ($K_{La_{20}}$) was calculated based on the variation of dissolved oxygen concentration with time. Oxygen transfer capacity (OC) and Oxygenation Efficiency (E) was calculated based on variation with water depth. All the data on dissolved oxygen concentration and tested water temperature was read by an electronic DO meter. Study also includes evaluating the impact of oxygen transfer at water surface. The results are expressed in the form of graph and compare with the control. Research is focused on identifying the parameters that influence the performance of a cascade aerator by means of theoretical study and by referring to the finding of the earlier research works.

Keywords: Cascade, Aeration, Oxygen transfer, D.O., $K_{La_{20}}$

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