
Outlet: Lap Lambert Academic Publishing. AV Akademikerverlag GmbH & Co. KG Heinrich Böcking-Str. 6-8, 66121, Saarbrücken, Germany. ISBN 978-3-659-45060-0 (2013)
Author(s): Olukanni, D. O
Date: 2013

Abstract: Wastewater stabilization ponds (WSPs) have been used extensively to provide wastewater treatment worldwide. It is preferred to the conventional treatment systems due to its low maintenance and operational cost. Existing literature revealed limited understanding of the hydraulics of WSPs vis-à-vis their optimization. This work therefore focuses on the hydraulic study of a lab-scale model WSP, operated under a controlled environment. The study utilized Computational Fluid Dynamics (CFD) coupled with an optimization program to efficiently optimize the selection of the best WSP configuration that satisfy specific minimum cost objective without jeopardizing the efficiency. This work has verified the use CFD that it can be realistically applied for efficient assessment of varying ponds configuration, thereby, addressing a major knowledge gap in WSP design. The significance of this work is that wastewater engineers and regulators can use it to reasonably assess the performance of WSPs, thereby, providing valuable insight on the real investment and operational costs and the requirements for operation and management for this technology that will enhance environmental quality and protection.