

Estimation of solids distribution and settling velocity of solid particles in secondary clarifiers: large-scale measurements and numerical modeling

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ABSTRACT

Within the framework of environmental preservation, a self-monitoring must be imposed on the wastewater treatment plants (WWTPs) and industries to make the industrialists and the decision-makers responsible for the quality of their discharges. The main objective of this study is to develop a mathematical model that allows simulating the variations of the sludge blanket height (SBH) according to the concentrations, integrating the different operating parameters of the WWTPs. This model is validated by a wide range of full-scale experimental results to obtain an operational model, which can also be used in simulation tests. On the other hand, the calibration of the sludge volume index values allowed the model to reproduce the variations of the SBH and ensure a good liquid/solid separation.

Keywords: Sedimentation velocity; Secondary clarifier; Clarification and thickening zones; Mathematical modelling; Biological treatment

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