

A computational method of a convective activated sludge model (ASM) in reaction tanks of wastewater treatment plants

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ABSTRACT

Electricity is used to power the blower in wastewater treatment plants in populations of more than twenty thousand. The small upgrade efficiency yields a large amount of energy since, in some trains, the blowers are operated for 24 h. To estimate the temperature and the amount of air, we developed a computational method that predicts the state variables of inhomogeneous activated sludge, such as dissolved oxygen (DO), in reaction tanks and final stabilization ponds. We propose a model for sludge that is less the size of the computer cell for N and Pa. The computer model includes ASM to predict the SS, the organic SS, and the growth rates of the density. The flows in the large scale computational domain are computed to form sedimentation. The benchmark computations were successful in separating the density and form sedimentation.

Keywords: Activated sludge model; Aeration; Turbulence; PFM
