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Abstract

OPTIMIZATION OF LAMELLA SETTLERS

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Lamella settlers are installations used for water clarifying. There are made up of n parallel plates (tubes) system, inclined with an α angle from the horizontal through which water containing suspensions is clarified by a process of liquid – solid separation through gravitational way and in laminar conditions. Starting from the current forms met in practice for lamella settlers, both the independent and combined with other solid-liquid separation installation (superpulsator and pusatube clarifiers) it is studied their insertion into cyndrical or parallelipipedic tanks

For the optimal design of lamella settlers inserted into cylindrical or paralelipipedic tanks it is adopted as criterion of optimization the minimization of the critical settling velocity depending on the geometrical elements of installation and the entering velocity in the tank. In function of inclination angle of lamella module, it is established maximum efficiency and geometrical elements of installation for some significant cases. For the optimization of the lamella settlers is realized a simulation of behavior of this installation for a certain domain for the parameters involved in designing.

From the multitude of efficient function values is searched minimum value establishes the best relative value of size which may be retain at given upward velocity.

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