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HEAT BALANCE COMPONENTS OF A SMALL SEQUENCING BATCH REACTOR APPLIED FOR MUNICIPAL WASTEWATER TREATMENT

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Abstract

In Romania, over 40 % of the population lives in rural areas where wastewater infrastructures are poor or missing. Development of infrastructure in water supply and sewerage is essential for improving living conditions and human health. To solve the problem of domestic wastewater treatment in the areas where only decentralized sewage treatment systems can be implemented, compact installation that operating as a Sequencing Batch Reactor (SBR) process can be used. Unlike the conventional biological mechanical wastewater treatment systems, in which the process is divided into several basins, the treatment system that uses the SBR process segregates the treatment process by working times. Therefore, the compact installation that uses SBR process is among the most effective alternatives to the conventional wastewater treatment with low flow. To ensure a high degree of treatment in small treatment plants which operates by SBR process, it is essential to identify the correlations among some parameters, such as: qualitative and quantitative characteristics of the influent, construction characteristics of the treatment system and operating factors.

The main direction of this research aims at identifying the mathematical model able to describe the heat balance for a SBR used in a small municipal wastewater treatment plant. Moreover, the theoretical model was correlated with the numerical values obtained during 30 days of measurements and monitoring of a small wastewater treatment plant used to treat real municipal wastewater. The installation used in this research was used in real condition to obtain the values as close to reality for the component of the heat balance.

Key words: heat balance, SBR, wastewater treatment

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