

عنوان مقاله:

Hydraulic characteristics analysis of an up-flow anaerobic sludge blanket fixed film (UASB-FF) using tracer experiments

محل انتشار:

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خلاصه مقاله:

The hydraulic characteristic of an up-flow anaerobic sludge blanket fixed film (UASB-FF) were studied by changing two important hydraulic factors that can impact significantly on the hydraulic regime of the UASB-FF bioreactor: the Up-flow velocity (V_{up}) and biogas production rate (Q_g). The analysis of the reactor hydraulic performance was performed by studying hydraulic residence time distributions (RTD) obtained from tracer (Rhodamine B) experiments. The region of exploration for the process was taken as the area enclosed by V_{up} (0.5 and 3.0 m/h) and Q_g (14.87 and 7.96 l/d). Three dependent parameters viz. deviation from ideal retention time (σ), dead volume percentage and Morrill dispersion index (MDI) were computed as response. The maximum and dead volume percentage were 33.58 min and 26 % at V_{up} of 0.5 m/h and Q_g of 14.87 l/d, respectively. While, the minimum responses (4.15 min and 19.3 %) were obtained at V_{up} of 3.0 m/h and Q_g of 7.96 l/d, respectively. The values of MDI computed at the minimum and maximum V_{up} and Q_g are identified as 11.33 and 10, respectively, showing that the hydraulic regime in UASB-FF bioreactor is a semi-complete mixing.

کلمات کلیدی:

Up-flow anaerobic sludge blanket fixed film Hydraulic characteristics Tracer experiment

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