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OPTIMISATION STUDY OF THE OPERATION OF AN ANAEROBIC FILTER

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Anaerobic Filter has been used in the treatment of a wide variety of industrial wastes, since its development at the end of the sixties, presenting some advantages over other anaerobic processes.

However, in most of the Up Flow Anaerobic Filters it is observed that the substrate is removed only at the lower end of the column: Therefore 30 to 40% of the total volume of the reactor is enough in order to obtain a 95 to 100% efficiency system.

The operation of an Up flow Anaerobic Filter was studied, with two main goals: 1) to characterise its behaviour in terms of substrate removal capacity when the organic load increases from 0.33 to 10 kgCOD/m3.day; 2) to study the system behaviour in terms of feed distribution throughout lhe column, considering a situation were V3 of the feed rate was introduced at the bottom, and the other 1/3 was in~roduced at 1/3 of the reactor's height, and another situation where the feed rate is uniformly distributed among three equidistant intakes.

It was possible to conclude that the Anaerobic Filter has a 80% removal efficiency for an organic load of 10 kgCOD/m^3.day and a hydraulic retention time of one day. Just 30 to 40% of the reactor's volume were enough to obtain this result.

It was observed that the double feed has led to a raise (6 to 7%) of the system's performance and the concentration of organic acids was reduced; the triple feed has produced a homogeneity of the properties throughout the reactor, but no additional raise of the efficiency (84%) was observed.