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EVALUATION OF A PILOT-SCALE SEQUENCING BATCH BIOFILTER GRANULAR REACTORS (SBBGR) SYSTEM FOR MUNICIPAL WASTEWATER TREATMENT

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Abstract

Sequencing Batch Biofilter Granular Reactors (SBBGRs) represent an innovative technology; coupling granular and attached biomass and operating in a batch mode. These systems allow good removal rates with low sludge production and space requirement. A particular application, consisting of an aeration unit and an upflow SBBGR in series, has been tested at pilot scale. The pilot system was installed at a conventional activated sludge plant and fed with average-strength urban wastewater after pretreatments. This work reports and discusses the experimental results, with reference to removal efficiencies and sludge production. Experimental results have shown a good flexibility of the system with respect to strong variations of influent loading, and adequate removal efficiencies for organic matter (as Chemical Oxygen Demand, COD), total suspended solids (TSS) and total nitrogen (TN): observed removal efficiencies were respectively 88%, 90% and 72% with volumetric loading rates ranging from 0.8 to 1.3 kg COD/m³/d. Simultaneous nitrification/denitrification has been observed.

Key words: aerobic granular sludge, nitrogen removal, Sequencing Batch Biofilter Granular Reactor, sludge production, wastewater treatment

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