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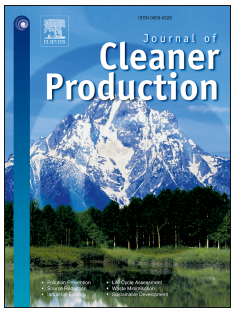

Treatment of actual slaughterhouse wastewater by combined anaerobic–aerobic processes for biogas generation and removal of organics and nutrients: An optimization study towards a cleaner production in the meat processing industry

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Treatment of actual slaughterhouse wastewater by combined anaerobic–aerobic processes for biogas generation and removal of organics and nutrients: an optimization study towards a cleaner production in the meat processing industry

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ABSTRACT

Environmental protection initiatives and the increasing market demands for green practices are driving the meat processing industry to consider sustainable methods for wastewater treatment since slaughterhouse wastewater (SWW) is seen as detrimental worldwide. Thus, on-site treatment is the preferred option to treat the slaughterhouse effluents for water reuse and potential energy recovery due to the conversion of organics into biogas. The treatment of an actual SWW is studied in a combined biological system. An anaerobic baffled reactor (ABR) followed by an aerobic activated sludge (AS) reactor are used in continuous mode at laboratory scale. Response surface methodology (RSM) is used for the process optimization to maximize biogas yield and to remove the total organic carbon (TOC) and total nitrogen (TN) while minimizing the total suspended solids (TSS) residuals. The effects of the flow rate, the pH, the influent TOC concentration, and their interactions on the overall treatment efficiency as well as

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