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LIFE CYCLE ASSESSMENT (LCA) AND ECONOMIC EVALUATION OF TREATMENT OF WASTEWATER. COMPARISON OF TWO DIFFERENT PROCESS LINES

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The aim of the current study was the evaluation of the environmental impacts and the economic performance associated with the wastewater treatment in two typical plants. In the first plant, dewatered sludge is subjected to anaerobic digestion and the resulted biogas is treated in cogeneration unit for the production of electricity and heat. The whole process line, including sludge thickening, anaerobic digestion, biomass post-treatment, as well as conversion of biogas to energy was taken into consideration for the evaluation of the environmental performance. In the second plant, the sludge is incinerated for heat production. Sludge thickening and incineration processes were evaluated. The Life Cycle Assessment was carried out using GaBi software. Various environmental impact categories, such as global warming, acidification, eco-toxicity and eutrophication were examined. In parallel, preliminary economic evaluation for the two plants was performed, for the determination of the cost of the various treatment technologies, including operation and maintenance stages. The results of the present study showed different environmental impacts and economic performance for the two plants. The different environmental footprint and cost analysis indicate the importance of choosing the most suitable treatment technology.

BIOGRAPHY

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