



Optimization of Hydraulic Retention Time for the Methanisation of Household Waste in the Town of Adrar (the south-west of Algeria)

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Abstract: Household waste from the town of Adrar, in south-western Algeria, has been valorized by anaerobic digestion into a continuous digester, with 12 L reaction volume, and five different hydraulic retention times (HRTs), namely 7, 14, 21, 28 and 35 days, with the same substrate concentration of 16 g / L of total solids (TS), and at the mesophilic temperature of 37°C. The pH, VFA/TA ratio as well as the biogas and methane volumes were recorded throughout the experiment by Biochemical Methane Potential (BMP). The results obtained showed that the best feeding for continuous digester is the one reached after a residence time of 21 days. The latter ensures a volume efficiency of 83.82 L of biogas / L digester / day and an accumulation of a maximum biogas volume (35L) and a maximum methane volume (23L). The consumption of organic matter is fairly good and is around 51.4%, more than other hydraulic retention times.

Keywords: Household waste; Continuous digester; anaerobic digestion; Hydraulic retention time; Town of Adrar.

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