

The influence of temperature on the production of biogas under mesophilic regime

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Abstract

Morocco currently witnesses an important economic and social development, accompanied in parallel to an exponential energy demand which increases the bill of the state, since 95% of the energy is imported from abroad. It also gives a high priority to the development of renewable energies including biogas, given its important deposit and its environmental, economic and social interest. With its energy potential, biogas may figure more prominently in the energy equation, if the optimization of the anaerobic digestion process improves more.

To contribute to the improvement of this process, the objective adopted by the present work is to study the effect of different temperatures belonging to the mesophile plan on the performance of production of biogas as well as its content in methane and carbon dioxide. With this aim in mind, a digester with a capacity of 14 liters has been used, equipped with an integrated control device. The digestion temperatures were set at 35, 37 and 40°C, with a time of stay of 21 days. For all experiments, the size of the particles of municipal solid waste has been reduced to 10 mm.

The obtained results show a high correlation between the temperature, the production of biogas and the content of methane, with an improvement of the quantity and the quality of biogas of the product registered for a temperature of digestion of 40 °C.

Keywords: renewable energy, anaerobic digestion, mesophilic, biogas, methane.