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Cost effective way of heating household size biogas digesters manufactured in South Africa

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Abstract content
   (Max 300 words)
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Researchers around the globe deepened their most focus on the influence of temperature on the production of the biogas. It was found that amongst other parameters affecting the production of biogas, temperature was the most critical one since anaerobic digestion is a temperature sensitive process. Laboratory experiments showed that the process of heating the biogas digester to a temperature of about 40oC is crucial for mesophilic bacteria's growth and activity in order to obtain optimum biogas production. To achieve the above temperature, heating techniques and methods are required since energy is required for this process. In this study an attempt has been made to find ways of supplying the necessary energy at minimum cost to heat the digester. Digesters in Limpopo province and in other parts of the country are installed underground and the energy required to heat them can only be associated with solar radiation falling to the specific locations where the systems are. Practical work showed that no single digester installed in Limpopo province is operating at temperatures above 27OC in all seasons and they are producing less gas than expected by the installer and operators. Other researches indicated that several methods for increasing the digester temperature have been proposed in the literature but these kinds of solutions increase the cost and complexity of the digesters and considered to be less appropriate for small farmers and villagers in low income countries. The main aim of this study was to develop a technique or method involving design and testing of a simple and cost effective heating apparatus suitable for supplying heat to the biogas digester systems.

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Level for award
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PhD

Main supervisor (name and email)
and his / her institution

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