DESIGN FABRICATION AND EVALUATION OF PORTABLE BIOGAS DEGESTER

RESEARCH STUDY

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DESIGN, FABRICATION AND EVALUATION OF PORTABLE BIOGAS DIGESTER

A Research Study Presented to the Faculty of the
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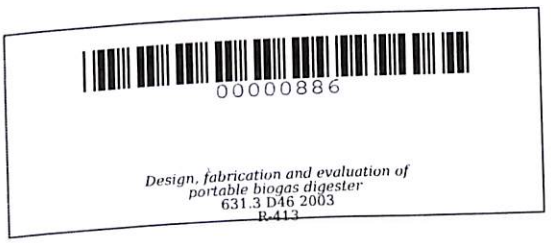
For Graduation



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ABSTRACT

ARANDIA, LLOYD ANTHONY M., PANGANIBAN, CLARISE P., PEGENIA, RHEANEL V., ROMEROSO, EMERALD RHEA NIÑA A., Applied Research III, Cavite State University, Laboratory School, Indang, Cavite **"Design, Fabrication and Evaluation of Portable Biogas Digester".**

Thesis Adviser: Engr. Jaime Q. Dilidili

The study on the "Design, Fabrication and Evaluation of Portable Biogas Digester" was conducted at the College of Engineering and Physical Plant Services (PPS), Cavite State University (CvSU), Indang, Cavite from December 2002 to February 2003. Specifically, it aimed to: (a) design and construct a portable biogas digester; (b) use kitchen wastes and market refuse as raw materials; (c) evaluate the performance of the portable biogas digester in terms of gas production.

Two hundred kilograms of kitchen wastes and market refuse and another two hundred kilograms of water were used in the study. It took 30 days to complete the fermentation of the sludge generating 294.08 liters of biogas from the treatment.

The pH of the effluent was in conformity with the biogas biological process of liquifaction, acidification, and methane production stage.

The temperature of the effluent from day 6 to 60 passed the Department of Environment and Natural Resources (DENR) standards.

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A research study presented to the faculty of the Laboratory School, College of Education, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation under the supervision and advisorship of Engr. Jaime Q. Dilidili.

INTRODUCTION

Biogas digester is an airtight, watertight tank in which organic matter is stored for the purpose of permitting anaerobic digestion until the organic matter no longer carries any disease-causing organisms and until most of the potential for producing methane gas has been used up. (Panorama, 1969)

The first digester was conceived by the rural development experts of the Peoples Republic of China (PRC). The digester of the communist Chinese is made of cement (buhos), pre-cast cement or hollow blocks or brick. These materials make the PRC digester more efficient. (Panorama, 1969)

A small biogas digester is said to have a measurement of 4 to 8 cubic meters; but this measurement can still be considered big for families that cannot have this digester because of lack of space in their backyard where they can place a biogas digester. Moreover, not all families can afford to have another space in their backyard where they can place a small piggery where some pigs will be placed which will be the source of manure, that will be placed into the digester to produce biogas. Considering