

بسم الله الرحمن الرحيم

**SUDAN UNIVERSITY OF SCIENCE AND
TECHNOLOGY**

**Design, manufacturing and evaluation of Portable bio
gas unit for use in Nomads areas**

تصميم وحدة غاز حيوي محمولة للاستخدام في
المجتمعات الريفية انشاؤها وتكوينها

By

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DEDICATION

To my father soul
With great love to my mother, brothers
and sisters
To all who helped me

Acknowledgement

I am greatly indebted to my supervisor Dr. Khalifa Ahmed Khalifa for his deep interest, keen supervision and critics while preparing this thesis.

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Thanks to all my colleagues and brothers for their moral support

English Abstract

An experiment was conducted at Al -kalakla Quba town, Khartoum state - Sudan. The objective of the study was to design, fabricate and evaluate a portable biogas unit to be used in rural communities.

The unit was fabricated using steel barrel designed from a barrel as a portable container and the abundant cow dung as a substrate.

The cow dung was left for ten days in the digester before the first reading .Reading were taken for twenty days .the successive reading showed an increasing rate of gas production.

The fabricated unit is mobile carried on a cart for transportation in nomad areas and it can work as affixed unit wherever it needed.

The results showed that small amount of gas was from this unit and this is due to the small size of the unit fabricated.

Despite this fact the gas produced from the designed unit satisfied the daily need of a rural family.

خلاصة البحث

تم إجراء التجربة في مدينة الكلاكلة القبة ولاية الخرطوم السودان . هدف الدراسة تصميم وتصنيع وتقييم وحدة إنتاج بيوجاز متنقلة للاستخدام في المناطق الريفية تم تصنيع الوحدة من برميل حديد كوعاء لوحدة إنتاج متحركة واستخدم روث الأبقار لوفرتة وسهولة جمعه كخام تخمير.

لقد ترك روث البقر لمدة عشرة أيام في الهاضم قبل اخذ أول قراءة. لقد أخذت القراءة لمدة عشرون يوما. لقد أوضحت القراءات المتتالية زيادة معدل إنتاج الغاز.

إن الوحدة المصممة هي وحدة متحركة تحمل علي عربة للنقل في مناطق الرحل ويمكن أن تعمل كوحدة ثابتة متى ما تم الاحتياج اليها.

لقد أوضحت النتائج أننتاج كمية قليلة من الغاز من هذه الوحدة وهذا يرجع إلي صغر حجم الوحدة و بالرغم من ذلك فان الغاز المنتج يكفي احتياجات الأسرة الريفية اليومية

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