

DESIGN AND CONSTRUCTION OF URINE POWER
GENERATION SYSTEM

THESIS

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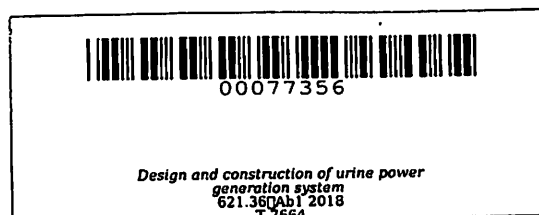
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DESIGN AND CONSTRUCTION OF URINE POWER GENERATION SYSTEM

**Undergraduate Thesis
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College of Engineering and Information Technology
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ABSTRACT

ABEJERO, JOHN JOEL C. and PAULINO JR., ROGELIO G. Design and Construction of Urine Power Generation System. Undergraduate Thesis. Bachelor of Science in Electrical Engineering. Cavite State University, Indang, Cavite. July 2018. Adviser: Prof. Ronald P. Peña.

The study was conducted from December 2017 to January 2018 inside the premises of Cavite State University – Main Campus, Engineering Science Building, 2nd floor male comfort room. The study was consisted of five (6) methods: (1) design and construction of Microbial Fuel Cell/s; (2) testing the power output of each MFC/s (3) construction of the MFC stack, (4) assembling the male urinal system, (5) test and evaluate the urine power generation system; through pilot testing and (6) conduct cost computation.

The study covered proposal of microbial fuel cell design and its construction of urine power generation system that was evaluated.

Test and evaluation were done by determining the 18 series microbial fuel cells peak output open circuit voltage of 8.15V with 10.12 mA short circuit current. The configuration of microbial fuel cell stack was made of 9 cells in parallel together and able to supply a 1 watt 5mm LED rated 3.3V, 20mA for 10 hours without continuous feed of urine having a storage capacity of 107mAH.

Outputs also include the soft and hard copy of the evaluation results, circuit diagrams and graphs.

The total cost of the study was 20, 400 and the cost of 18 (eighteen) microbial fuel cells was 1,984 pesos.

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INTRODUCTION

The current society is now becoming more dependent on technologies that resources in powering these technologies start to deplete. Promising technologies such as photovoltaics, wind – turbines and wave – generators dominate the field of natural energy harnessing for electricity and indeed provide practical solutions in areas where solar radiation, wind force and wave power are abundant. One other type of alternative energy source that has been receiving increased attention, is biomass and its conversion to electricity from chemical energy. Using microbial fuel cell (MFC) is one of a promising energy converter.

Microbial fuel cell is a bio – electrical transducer that transforms waste materials into a renewable source of electricity. The one that has been already proven to be exceptionally good and an efficient fuel for MFC is human urine. It has the ability to directly convert chemical energy into an energy that is useful – electricity.