

**DESIGN AND DEVELOPMENT OF A PORTABLE BODY
TEMPERATURE REGULATOR**

Design Project

**JOHN ANDREW A. GARCIA
MARIELLA G. PANGILINAN**

College of Engineering and Information Technology

CAVITE STATE UNIVERSITY

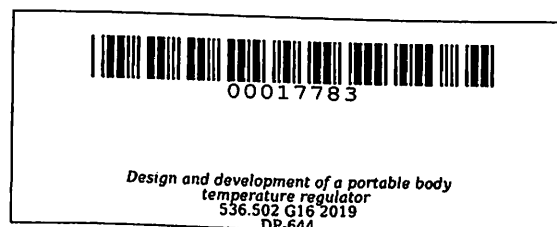
Indang, Cavite

December 2018

DESIGN AND DEVELOPMENT OF A PORTABLE BODY TEMPERATURE REGULATOR

Undergraduate Design Project
Submitted to the Faculty of the
College of Engineering and Information Technology
Cavite State University
Indang, Cavite

In partial fulfilment
of the requirements for the degree
Bachelor of Science in Electronics Engineering



JOHN ANDREW A. GARCIA
MARIELLA G. PANGILINAN
December 2018

ABSTRACT

GARCIA, JOHN ANDREW A. and PANGILINAN, MARIELLA G., Design and Development of a Portable Body Temperature Regulator. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. November 2018. Adviser: Michael T. Costa.

The study was conducted March 2018 at Cavite State University, Indang, Cavite to design and develop a portable body temperature regulator. Specifically, it aimed to design and construct a controller unit for the cooling and heating regulator, develop the program for the controller unit, modify the sleeping bag, test and evaluate the performance of the body temperature regulator through pilot testing; and conduct a cost benefit analysis.

The design project was composed of an Arduino Nano which serves as the microcontroller unit, thermoelectric cooler peltier that serve as the cooling and heating elements of the temperature regulator, the temperature sensors for the sensing of body temperature and ambient temperature inside the sleeping bag, and the snail fan for transferring the generated cool air or hot air from the device to sleeping bag. The microcontroller gives the output signal Liquid Crystal Display (LCD). The LCD Display displays the parameters sensed by the temperature sensors. It also has a keypad buttons for the setting the desire ambient temperature inside of the sleeping bag.

The project was tested and evaluated at the second floor of Engineering Science Building of College of Engineering and Information Technology. It was also evaluated by the patients of the Trece Martires City, Cavite to determine the efficiency of the device and its user friendliness.

Based on the results of the evaluation, the project met the given objectives. The system was able to regulate the temperature inside the sleeping bag. The device was also able to prove its functionality, safety, usability, and user-friendliness.

The total cost of the design project was P14, 614.00.

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John Andrew A. Garcia
Mariella G. Pangilinan

An undergraduate design project submitted to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite, in partial fulfilment of the requirements for the degree of Bachelor of Science in Electronics and Communication Engineering with Contribution No. CEIT 2018-19-1-004. Prepared under the supervision of Engr. Michael T. Costa

INTRODUCTION

One of the most essential requirements for the human body to function properly is having good sleep. It plays a very important role in ensuring the wellness of the human body both physically as well as mentally. Not only does it help maintain our physical and mental health; rather it also helps in maintaining a decent and healthy lifestyle along with ensuring safety from a number of fatal diseases. However, there are instances that ambient temperature while you sleep can actually have a huge effect on the length and quality of your sleep.

One variable that is often overlooked as a powerful tool to help you sleep better is ambient temperature. Getting enough sleep has numerous benefits: it helps your brain function better the next day, keeps your body healthy, and improves your emotional well-being. Ambient temperature has a profound effect on sleep. Too hot and you'll wake up sweating. Too cold and you'll shiver yourself awake.