

**REAL-TIME AND AUTOMATIC METER READING SYSTEM FOR  
CONSUMER'S ENERGY ELECTRIC METER USING ARDUINO**

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## **ABSTRACT**

This project presents a system that allows for real time reading energy consumed in kWh and auto calculate the costs in Ringgit Malaysia (RM) for user's quick reference. Users also can retrieve the data through Global System for Mobile (GSM) technology for billing purposes once a month. The system is recommended to the electrical provider that is Tenaga Nasional Berhad (TNB) to use GSM technology to enhance billing process with accurate cost consumed by the customer. This project allows for an effective data management which includes user's box meter and the SMS to both user and electrical department at the energy provider's side. This allows the user to keep alerts on their exact electricity units consumed and the real time costs direct from their box meter. So it becomes convenient for the user to control the electricity usage according to their monthly budget. This could help TNB reducing the cost to pay employees, while providing good service to consumers. The proposed system consists of a GSM modem connected to an Arduino it works continuously by monitoring the electrical pulses and calculates the unit consumption.

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

In this chapter, mainly an overview of study about the project will be described. In this chapter will state the problem statement and several of objectives. Besides, it will also report the scope of the work, significant of the work and the organization of the report.

Nowadays, electrical power is something that very important to human life. This is because, in making a human requires electrical energy, such as watching television, ironing, listening to the radio, and so on. Therefore, measures the energy distribution easier and more efficient should be done to accommodate the high demand of electricity consumption [1].

Malaysia only has a company providing electricity that is Tenaga Nasional Berhad(TNB). Following that, Malaysians have no other choice to use electricity and necessarily need to use electricity supplied by TNB. Therefore, TNB should provide the best service to their users. According to history in 2008, the Energy Provider of Malaysia received many complaints from consumers regarding electricity billing, metering, disconnection and reconnection [2]. According to statistics from TNB, this happens because of the meter is inaccessible due to certain problems such as bad weather problems and so on. Therefore, the meter reader will make the meter reading of an estimated. Pursuant TNB again, in 2008 was the highest recorded in relation to the estimation problems of meters that are 839,478 compared to the previous year 559,834 in 2007 and 447,339 in 2006. Next, TNB should immediately resolve this issue in order to maintain the quality of their services.