STUDY OF ELECTRICITY CONSUMPTION IN COLLEGE OF LOGISTICS AND SUPPLY CHAIN BUILDING 1, SUAN SUNANDHA RAJABHAT UNIVERSITY.

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ABTRACT

Currently, the College of Logistics and Supply Chain building 1 has unclear for electricity usage statistics. Therefore, it is not able to manage or control the electricity usage within the building as well as it should be. This qualitative research is research method. The research objective is to study the amount of electricity consumption in the College of Logistics and Supply Chain building 1. In order to be a more efficient and systematic solution to improve the electricity used in the building. Electricity usage data is collected and air conditioning and lighting technical in classroom are surveyed in semester 1/2560. In order to calculate the maximum electricity usage, air condition and lighting within the college of Logistics and supply chain building 1. The electricity consumption of air conditioners and lighting in the first semester 1/2017 is 155,461 units and 10,565 units, respectively. The maximum electricity consumption during October 2017 - June 2018 in the college of logistics and supply chain building 1 is 87,500 units and the average monthly rate is 70,038 units by using the air conditioners 55% and the lighting 3.8% when compared to the total electricity consumption of the building.

Keywords: electrical energy, electrical consumption

INTRODUCTION

Due to, Thailand currently faces energy problems with energy reduction. It because of the increasing population and having more technology. Causing the population to have more energy demand and the destruction of resources is increasing so, these resources are reduced. In addition, the current economic situation in different countries, Thailand still has to spend a lot of money to import energy such as foreign oil. Oil is one of the resources that is very necessary in terms of energy production or even in everyday life for humans.

Therefore, in this research, concern to the effects from wasting electricity. Thus, the electricity consumption is collected, and air conditioners and lighting technical are surveyed in the building. In order to the electricity usage analyzed in the classroom then compared to the electricity usage in the whole building. In which, the information obtained from this research will be utilized for systematic and efficient energy development or the information used in terms of economical electricity used campaigns as well.

OBJECTIVES

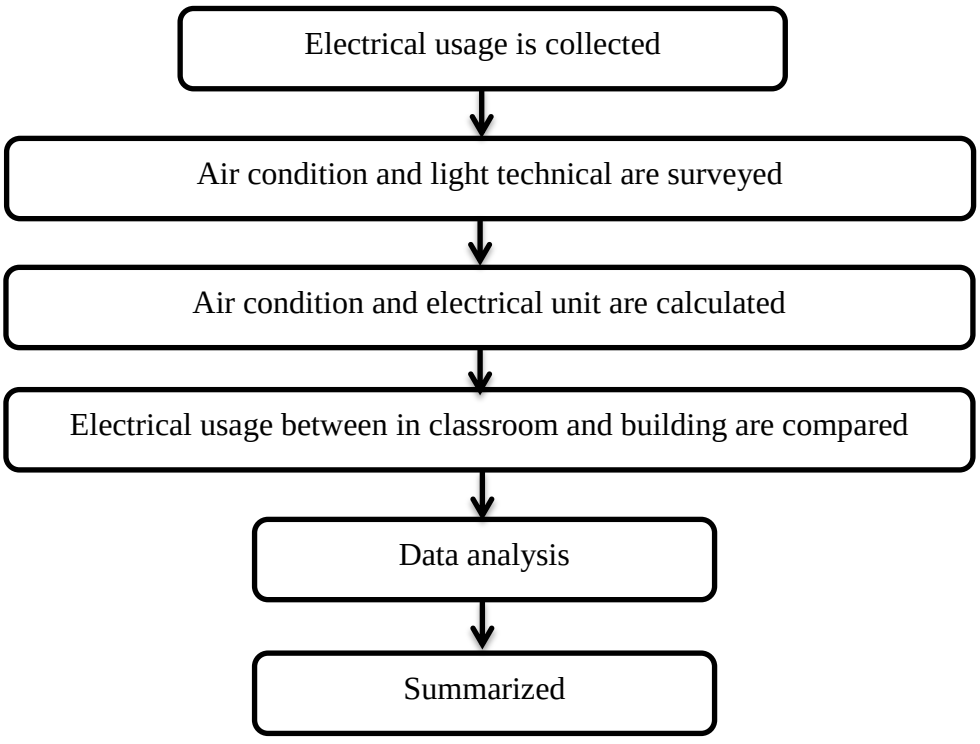
1. To study the maximum electricity usage in the College of Logistics and Supply Chain building 1.
2. To study air conditioners and lighting consumption in the College of Logistics and Supply Chain building 1.

LITERATURE REVIEW

Piyawat Mankhong and Narong Sangwara-at studied on the verification of the modified electric meter at the connection point. In order to study the techniques for verifying and modifying the electricity meter by using the data test to verify the modification of the digital electricity meter of the Central Probation Division between 2013 – 2015 years. By correcting experiments at the connection point of the electric meter by switching the control cable and using a copper wire straddling the connection point of the electric meter. The deviation percentage was used as a tool for data analysis. The results show that the percentage error of the electricity unit of the electricity meter in the manner of switching control cables and using copper wire across the connecting point. Reduced to 66.80 and 9.28 percent, respectively

METHODOLOGY

Action research is this research method by collecting electricity consumption data in the college of logistics and supply chain building 1 with the main distribution board (MDB). There will be able to inform the electricity usage each month. The electricity usage is calculated by using electrical unit equation and compare electricity usage each month in which the number of hours of study as a variable is used to calculate. To determine the air condition and light electric consumption. This will know the electricity cost from using air conditioners and lighting that can be calculated as a percentage of the total electricity usage in the building.



RESULTS

Study of electricity consumption in the College of Logistics and Supply Chain Building 1, this research has collected data to calculate the electricity consumption in the building and the classroom. By calculating the maximum air conditioners and lighting electricity consumption in the classroom in Semester 1/2017. The data is divided into 2 main parts as follows

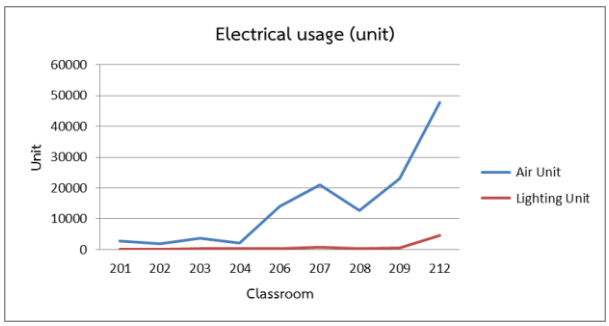
1) Data is collected from MDB

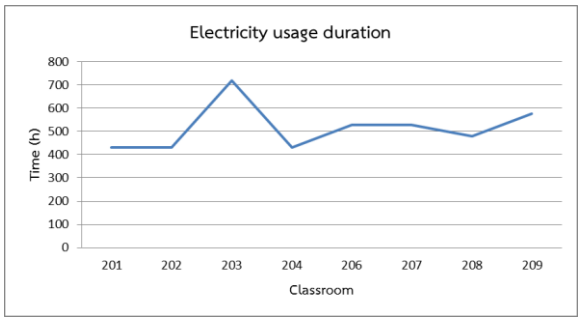
2) Information collected from air condition and light electricity consumption technical

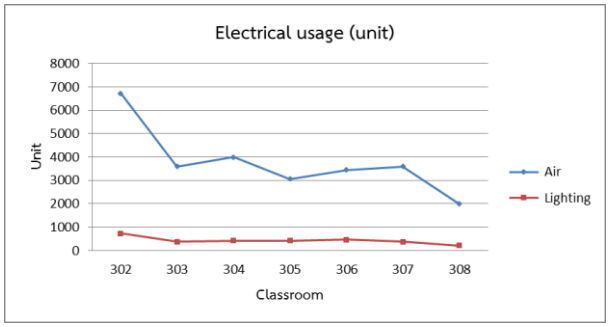
No.	Month	Amount/unit	Electricity cost/unit	Electricity cost/baht
1	October	60,400	3.1355	189,384.20
2	November	87,500	3.1355	274,356.25
3	December	22,400	3.1355	70,235.20
4	January	60,800	3.1355	190,638.40
5	February	60,000	3.1355	188,130
6	March	75,400	3.1355	236,730.25
7	April	73,500	3.1355	230,459.25
8	May	72,900	3.1355	228,579.95
9	June	69,800	3.1355	218,857.90

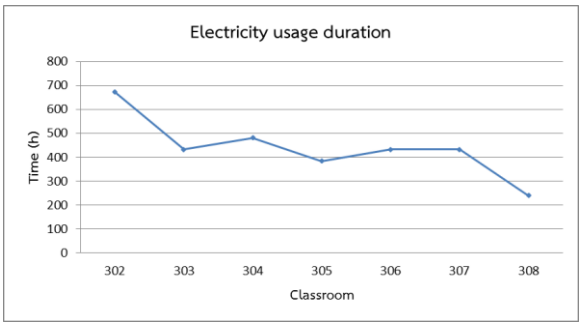
Table showed the amount of electricity usage in the College of Logistics and Supply Chain building 1, which is obtained by collecting the electricity usage from MDB. The electricity usage is calculated to find the amount of monthly electricity use from October 2017 - June 2018, it can be seen that the lowest electricity usage is in December 2017. Due to being in the semester break of the College of Logistics and Supply Chain during the 2 weeks period which results in a noticeable decrease in electricity usage. November 2017 is the highest electricity usage, due to there are frequent activities in the auditorium or room 1-212 which is the room that uses the big air conditioner or DVMS system, the color light and noise throughout the event. causing the highest electricity usage when compared to other classrooms.

Considering the season, it can be seen that from October 2017 - February 2018, the average electricity usage is approximately 60,000 units per month. When, compared to during March 2018 - June 2018, the average electricity usage is about 70,000 units per month. There is increased by using air conditioners, due to the temperature that is higher in the summer. However, at the same time, when the ambient temperature is low, the load of the air conditioner is also low. When the load is low, the power used to supply the air conditioner is also lower.









CONCLUSION AND SUGGESTION

1. The electricity used in the building

The electricity consumption in the College of Logistics and Supply Building 1 has an average monthly rate of 70,038 units, with the majority of the electricity consumed mainly from air conditioners but the light is less consumed. In which the outside temperature affects the operation of the air conditioner in the summer so, the operation of the air conditioner will use high electric power. Due to the high outside temperature, the temperature inside the room is also high due to the heat transfer which is according to the rules of thermodynamics or the theory of heat transfer.

2. The electricity used in the classroom

The electricity usage of air conditioners in the 2nd floor classroom is 46% of the total electricity usage in the building and the lighting consumption is 2.7% of the total electricity consumption of the College of Logistics and Supply Chain building 1.

Electricity consumption of air conditioners in the 3rd floor classroom is 9.4% of the total electricity usage in the building. However, lighting is less consumed when compared with the electricity usage of 2nd floor. It can be seen that the high energy or electricity cost is air conditioners. However, if the department can reduce the use of air conditioners or use air conditioners with energy saving, will definitely be able to reduce the amount of electricity used in the building as well.

Recommendations

The right technique to use of the air conditioner is not to reduce the temperature too much but the temperature should be adjusted as appropriate. The appropriate temperature should be about 24-26 degrees Celsius and adjust - increase the temperature within the classroom as appropriate.

Air conditioning usage circulation is the use of alternate air conditioners, for example in rooms with 4 air conditioners with 2 units being activated per week. In addition to saving electricity, it can also extend the life of air conditioners.

Choosing to use light bulbs that use less power will help to save electricity in another way. There may be a technique to install light bulbs as appropriate, such as a corridor in a pair of lamps. It may be only install one light bulb or a point that has enough light from outside, may choose to turn on the light at some point.

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