

## **THE TOTAL ENERGY USAGE IN BLOCK A STUDENTS RESIDENTIAL HALL (DPP) TM, UUM USING ENERGY AUDIT**

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### **ABSTRACT**

Nowadays, people are more aware of energy efficiency, energy use in buildings. The energy audit was a through examination of the use and waste of energy in a building. My studied is about energy audit. Energy audit is also very important to know the amount of energy used in a building. In energy audit I studied about the total of light, the light energy is used and the number of bills to be paid. The present article on energy studies conducted in the fluorescent lights in Block A DPP TM. In this study, energy audit and use data collected in all places, in block A. There are many of these studies the use of waste energy used by the students in the building blocks A DPP TM. This proposal discusses about the savings made to avoid wastage.

Keywords: The total of fluorescent light, fluorescent light energy in used and the number of bill to be paid.

### **INTRODUCTION**

According to Zainal Abdul Wahab (2013), an energy audit is a systematic review of equipment for high energy consumption, through the provision of data and energy balance to identify energy efficiency as well as its flow to determine where energy is wasted. Preparation of the technical report involving the monitoring and analysis of energy consumption. In the technical report are also suggestions energy consumption levels and costs to reduce energy consumption. If an energy audit used wisely it can identify where energy is being wasted and how to save on energy consumption.. It can study the energy based electricity bills. These data are important as they can understand their usage patterns. The need to reduce energy practices the managing an audit expenses. Besides that, it also can identify energy measurement techniques in the building.

The energy audit there are three sorts to be specific walk through, mini audit, maxi audit. Walk through is the slightest excessive and distinguishes preparatory vitality sparing. The maxi audit usual review is obliges test and estimations to measure vitality uses and misfortunes and focus the financial matters for changes. Maxi audit is goes above and beyond than the mini audit. It contains an assessment of the amount of vitality is utilized for every capacity, for example, lighthing, procedure.

The energy audit discussed in this paper is focused on the south of the building Blocks of A DPP TM. It is carried out for the purpose of identifying and analyzing savings of lighting energy use.

The building Blocks A DPP TM entire building using fluorescent lights. It makes it easy to analyze because it only uses one type of lamp only.

### **Problem statement**

The lighting is very important in the life of every society. This is so because the lights can illuminate any room in the home and building. Without using light energy we might arriving in darkness. But we have to plan the use of force against the light. especially when the definition of electricity has increased announced by the government, the bill will rise if we do not take advantage of their occupational.

Wasteful use of light is very significant nowadays among consumers Block A DPP TM. To avoid wastage of energy consumption for fluorescent light effect. At night the hallway lights can be reduced from about 12 am onwards from 10 to 5 fluorescent light bulbs in each level of a block.

A part from that, we also need to check the condition of the possibility of faulty fluorescent lights and led lights are always open. this will lead to wasted energy taps installed at all times. So, to avoid this problem occur, each party should be sensitive to this issue and to report to the relevant authorities.

The problem statement for this study is how to reduce energy consumption for fluorescent lights in Block A DPP TM. This is intended to reduce the wastage that occurs and can save money on electric bill.

## **ENERGY AUDIT PROCESS**

The energy audit process consists of four phases. diulangi audit process with the time frame specified to increase the level of energy efficiency. Energy audit is designed to measure a particular useful to systematically identify and implement energy conservation programs more effective. Energy audit involves measuring the energy consumption of the system, the system of collecting information, for choosing the most effective. Proactive facilities continue to improve energy efficiency by repeating the process on a regular basis.

### **Preplanning process**

Preplanning energy audit begins making a commitment to conservation level of energy. The variety of dedicated business must make a priority for the whole audit process. The initial goal is to establish pre-planning experts to make decisions regarding the audit scope of the audit, the task of developing a timeline for implementation team members and assign responsibilities. Normally the preplanning process in place for several weeks or several months depending on the size and scope of the audit facility.

### **Conducting the audit**

The part of audit energy audit consists of two phases. The first phase is the members of the audit team conducted an investigation and then help prepare the audit report. In addition, they are also involved in providing audit report. The audit investigation involves examining every system in the scope of the audit. it is the effect of the source or sources of energy for each point of use. test equipment is widely used in the performance analysis to identify the rest of the energy used. The

audit assesses the efficiency, physical condition and operating equipment profile, including functionality, load and control.

The second phase of the audit was the preparation of audit reports. the complete investigation report briefly. The financial cost of energy wasted by each calculated based on the size of the audit. The associated data can be collected for analysis. For each issue of energy, one or more of the steps listed along with the expected amount of their costs. they also provide a convenient way to make decisions on the relative cost-effectiveness of the proposal.

### **Implementing changes**

The implementation of changes is based on the results outlined in the audit report and decision makers through projects recommended to the budget and other issues. proposals approved by the blueprint used to facilitate implementation. To each member is given the responsibility and the duty to implement and monitor each project. Experts also need to ensure they are completed on the recommendation and in consultation with the audit team if there are changes to the project plan, project planning, including preparation of the project implementation.

### **Verifying and sustaining results**

The energy saving projects and decisions should also be measured to determine whether the project objectives have been achieved or not. The scale audit should also be conducted to verify the energy savings expected and confirms that no negative effects. The permanent installation of equipment for large loads or most critical to directly measure energy consumption. The maintenance program should be adjusted as help maintain energy savings. This also involves improving preventive and predictive maintenance activities and together solve the problem and repair it immediately through a more thorough audit for a longer period of time. Then audit process started again with the planning and forming a continuous cycle of improvement in efficiency.

## **METHODOLOGY**

### **The type and design**

This study uses a quantitative design. This study aims to assess the amount of light and the time of use. This study focuses on the student council student accommodation Block A Students Residential Hall (DPP) TM. This study was conducted using the method of observation and questionnaires to determine the amount of fluorescent light and time of their use in Block A Students Residential Hall (DPP) TM.

### **Sampling study**

The study on the number of lights and time use among students in one block in dpp tm. The study area is in BLOCK A DPP TM. The number of students in DPP TM is about 800 students. The students taken as a total of 100 respondents only. A student block was selected for this study for the use of light and the amount of light present in the block. Related information will be collected at random study among users Block A DPP TM.

### **Method of data collection**

The data and information obtained through the study of the sources of primary data sources. Primary data is data obtained directly from the student respondents to the use of lighting in the room. primary data collected through questionnaires distributed to each room. Questionnaires were distributed to students every room in Block A Student Residential Hall (DPP TM). In addition, the data obtained through observation is also made by the researchers. Researchers conducting observations of light corridors, toilets and stairs.

### **Instrument**

This study uses the method of questionnaire which was distributed to a number of respondents in the study sample were determined and also the form of observation by the researcher. Questionnaires were distributed containing four parts, namely Part A, Part B, Part C, section D. Part A contains three items related to the background of Block A Students Residential Hall (DPP) TM, namely gender, semester and level. The demographic factor information used to determine the amount of light in the room for each student. Part B consists of 4 questions related to the amount of light in the room and the type of lighting in the room and the number of lights that work. These questions using a scale numbers. Part C of the questionnaire containing items Item 4 is the frequency of the use of headlights and lights to learn in every room. In this frequency item researchers used time scales from 12 am to 11 pm. The questionnaire used in this part C is to calculate amount of electricity usage of weekdays and weekends by respondents. Part D of the questionnaire is an electricity-saving suggestions from respondents as well as respondents' opinion.

Observation form contains two tables that is the amount of time lights and outdoor use. In Table 1, it calculates the amount of external light that there are four items such as corridors, toilets and stairs. It examines the amount of light present in the blocks of each level. For 2 table, the table 3.1 to calculate amount of the fluorescent light outside the room such corridors, stairs and toilets. The table 3.2 calculates the fluorescent light usage time outside the room such as corridors, stairs and toilets for the study for 2 weeks.

### **Review procedures**

The researchers will distribute questionnaires to a random survey respondents in the sample of students who stayed in Block A Students Residential Hall (DPP) TM. Researchers will obtain the consent or approval of the respondents whether they agree or disagree answered a questionnaire that will be distributed. Researchers will guide respondents agreed on ways to answer survey questions correctly. Prior to this study researchers conducted a thorough analysis of the 10 respondents who participated in the pilot study based on a questionnaire to seek the confidence of the questionnaire. Hence the positive reliability enable researchers to carry out studies on the whole by distributing 74 more questionnaires to students Block A Students Residential Hall (DPP) TM.

The researchers also observed the number of fluorescent lights that are outside the rooms on each level through the table 3.1. In addition, the researchers also observed for 2 weeks to know the fluorescent light usage time outside the room for 2 weeks for each level through the table 3.2.

**Study of the method analysis**

The method used to analyze data is descriptive and inferential methods. Descriptive analysis was used to describe the demographic background of respondents to the use of lights. It is also seen to count the time they use the lights. Infancy also be used to test the hypotheses that have been carried out by several studies.

Data and information obtained by the researcher will be analyzed using the Microsoft Excel. The method will be able to determine the amount of energy consumption for each level.

Observation methods are also used by researchers to calculate the amount of energy used by the students for electricity outside the room. While amount of energy to be derived by using Microsoft Excel.

**RESULT AND ANALYZE DATA**

Table 1: Total usage electricity

ITEM	WEEKDAYS		WEEKENDS		MONTHS
	KWh	Price (RM)	KWh	Price (RM)	
Level					
1	343	RM 62.00	173	RM 38.00	RM 400.00
2	459	RM 77.00	180	RM 39.00	RM 464.00
3	556	RM 89.00	175	RM 38.00	RM 508.00
4	319	RM 70.00	168	RM 37.00	RM 428.00
Semester					
1	221	RM 48.00	196	RM 43.00	RM 364.00
2	304	RM 67.00	122	RM 27.00	RM 376.00
3	356	RM 78.00	126	RM 27.00	RM 420.00
4	198	RM 43.00	79	RM 17.00	RM 240.00
5	495	RM 108.00	178	RM 39.00	RM 588.00
6	162	RM 35.00	72	RM 16.00	RM 204.00
7	202	RM 44.00	81	RM 18.00	RM 248.00
Block	1677	RM 336.00	534	RM 166.00	RM 2008.00

Table 1 shows the amount of energy used and the cost of the respondents for each level and semester according to weekdays and holidays as well as the total cost incurred during the month and the total number of blocks.

By levels, the highest level of use is 3 levels with 556kWh energy levels and cost of RM 89.00 weekdays and 175KWh and costs RM 38.00 weekends. The costs incurred by RM508.00 per month. While the lowest level is level 1 at the rate of 343kWh of energy and the cost of a weekdays and 173kWh RM62.00 and cost RM38.00 weekends . Costs incurred RM400 monthly.

According semester, the highest semester use is 5th semester with a utilization rate of 495kWh and the cost of RM108.00 weekdays and 178kWh and cost RM39.00 weekends. A total cost of RM588.00 per month. While the lower half of its use is the 6th semester with a utilization rate of 162kWh and the cost of RM35.00 weekdays and 72kWh and RM16.00 cost of weekends at a total cost of RM204.00 per month. For the overall cost Blocks utilization rate of 2211kWh and costs incurred by RM2008.00 month.

## **CONCLUSION AND SUGGESTION**

### **Conclusion**

Based on studies conducted on respondents Block A Students Residential Hall (DPP) TM on the use of lights and some conclusions can be made. Overall, the respondents do not use light energy to perfect or correct. This is because the energy used in each of the rooms is quite high. Saving lamps use could be saved, but not saved.

In addition, the respondents know how to use energy-saving but they do not practice it because of lack of knowledge of energy saving. Attitude of respondents who do not care about the concept of green earth they cause pollution and increase carbon dioxide. Attitudes and levels of understanding among respondents to the efficient use of energy is simple. The majority of respondents understood the need for them to save electricity but they do not have the awareness to do so.

In conclusion, it is clear that the use of electricity for prudent and efficient management can reduce energy costs in the form of payment of money so as to ensure the good use of energy-efficient in the future.

### **Suggestion**

There are some suggestions that should be undertaken to identify the main problem of electrical energy waste in Block A Students Residential Hall (DPP) TM. First, respondents do not have to use all of the lights in the room is only open to illuminate the room only to save electricity.

The second proposal, the use of automatic light sensor lights in the room. The light sensor will automatically light saving electricity because it works automatically when it was dark and it will close on its own when the time for lunch. This will reduce the use of light as respondents will not be able to open and lights when not needed to waste their use during the day. This type of lighting is only 3 wire connection. The unit will be placed in a small hole next to the lights to control the On / Off the lamp assembly. The proposal is proposed as a very significant wastage in electricity consumption.

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