

## ABSTRACT

Electricity is an important thing for Institut Teknologi Telkom, which used it to run its activities. As the electricity crisis in Indonesia, economical policy of electricity by government, and electricity rate increases with electricity payment cost increases thrift actions should be conducted. There is a research that gives solution for these problems by automatic operational procedure improvement using Building Automation System (BAS). However, that solution cannot be implemented because the research only designed of one floor in C Building whereas its Building consists of three floors. Therefore the automatic operational improvement using BAS in comprehensive for C Building IT Telkom is a solution for this case.

In constructing this system, there are some cases which are done in solving problem which divides in 5 phases, i.e. beginning study phase, initialization phase, creative phase, testing and analyzing project phase, and conclusion and suggestion phase. Beginning study phase includes determination problem and aim that want to be reached, initialization phase to learn book and field study, continued by analyzing existing system and make model project in creative phase. After model system finishes to be design then the next process is testing phase and continued by analyzing system for examine the system that be design with first aim and feasibility system to be implemented. The final is conclusion and suggestion phase.

The system's design was created to fit with the existing condition, so the drastic change which could affect users would not be occurred. Matters which used as the parameter of the design are electrical device (socket, lighting, exhaust fan), room (in this case related to MCB), and also time use. . The form of thrift generated from the system is described by lighting setting, socket lighting for one month, electricity setting directly and electricity requirement for laboratory for weekend.

From the result of research, it can be concluded that the Economical Electricity Usage System with *Building Automation System* which has been designed can monitor, control, and give report in *real time* so the electricity usage efficiency in C Building will be increase, and cost which paid for electricity is on the optimum value.

Keyword: Energy Saving, Automation, Building Automation System (BAS), Programmable Logic Controller (PLC), Human Machine Interface (HMI)