

ABSTRACT

Electricity is an important thing for Sekolah Tinggi Teknologi Telkom, which used it to run its activities. As the electricity rate and electricity payment cost increases, thrift actions should be conducted. There are solutions for more economical usage of electricity, such as operational procedure improvement which correlated with employees awareness in economical electricity usage, automatic operational procedure improvement using Building Automation System (BAS), installing power limit at every room to avoid excessive usage of electricity, and also by installing a tool which could help to more economical electricity usage to avoid pseudo power and to improve the quality of electricity power. However, the real condition is the power consumption is uncontrollable. Therefore, the automatic operational improvement using BAS is the most appropriate solution.

Building Automation System is a programmed, computerized of electronic devices that monitor, control and optimize the mechanical systems, lighting systems and building control sub-systems such as security and fire/life safety in a building. While on this research using BAS which concern on controlling electricity usage. As a controller between hardware and system is used PLC (Programmable Logic Controller). This controller eventually will arrange system to work in automatic and *real time* situation. For easier to use, this system is made with interface or HMI (Human Machine Interface) which connects user and device on the existing system. HMI is designed simple, concise and also equipped with additional facilities and security system.

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 basis of the design are electricity efficiency using time parameter, room condition, and also user's needs. While system control is refer to capacity or electrical power output which arranged by MCB and relay. The form of thrift generated from the system is described by the lighting and electricity usage arrangement for work days and also the electricity demand at non-workdays. As the container and user interface, this system is equipped with HMI which is easy to use with additional facilities and security which is also given attention.

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 will be increase, and cost which paid for electricity is on the optimum value.

Keyword(s) : Energy Saving, BAS, PLC, HMI, Efficiency