

ABSTRACT

Green house effect is getting worst nowadays as the temperature is increasing and this leads to global warming. One of the contributing factors is due to the unlimited usage of non renewable energy. Thus, energy saving plays a very important role in saving the earth.

In conjunction with the energy saving plan, Smart Hall is designed to avoid wastage of energy by controlling the energy usage subjected to the number of users in the hall. The core hardware used in this project is the microcontroller PIC16F877A which works as the brain to control every single operation. When the user enters the hall, IR sensors send a signal to the microcontroller. Counter will start the counting operation and the system will turn on all the light bulbs and fans in the hall. In this context, when a user leaves the hall, the counter will decrease by one. When there is no user in the hall, all the light bulbs and fans will be automatically switched off. The light intensity and fan speed will be varied according to the number of users in the hall. Natural light from window is controlled using an automatic curtain controller system. Hall ventilation system is monitored by installing an exhaust fan to control the air flowing in and out. When the exhaust fan turns in clockwise direction, it allows the fresh air from outside to flow into the hall. When it turns in counter clockwise direction, it sucks out the air from the hall to outside. In addition to the automation on lights and fans, the system is able to detect any malfunctioning of the light bulbs. When number of users allowed in the hall is exceeded, the control system will turn on a buzzer and an LED to signal that the hall is overload. Two additional features equipped into the system are an automatic sliding door and a light bulb monitoring system.

This report begins with the background and objectives followed by a block diagram that explains briefly on how the overall system works. Subsequently in the literature review, the descriptions on main components used in this project are explained. The chapter of methodology explains both hardware and software designs of the project. Finally, discussion is enclosed and conclusion on the outcome of the project is established.