Abstract

Information is a very important thing from time to time. Lighting is needed by humans to support their daily activities. The problem of the lighting sector today is energy efficiency which is still not resolved. Where the use of electricity for lighting is still using old technology that is not environmentally friendly and costs a lot of money per month. One of the concepts of IoT, namely smart lighting, emerged as a solution to overcome problems in the lighting sector. However, the current smart lighting still requires a direct power source from the government (PLN), In addition, sectors such as tourist attractions in rural areas still need to be considered because there are still many areas that do not have a power source that can be used for street lighting. the tourist attraction. So we need a smart lighting technology that can produce its own power source to reduce the electricity costs that must be incurred. This study aims to build a tool or device that can manage and optimize the energy expended by building an IoT device using a piezoelectric sensor as the main material to generate an electric field that will produce electrical energy for lighting or lighting in rural tourist destinations and using fuzzy algorithms. Mamdani logic is a determinant of the intensity of the light obtained from the light sensor on the IoT device. The overall results of the system that has been built can work properly and the Mamdani fuzzy algorithm can be used properly with an accuracy of 93% power saving at the time of testing. In addition, the monitoring system built is also following the data obtained from the system. The suitability between the fuzzy system and Matlab as a whole is in accordance with the value of 100%.

Keywords: Piezoelectric Sensor; IoT; PLN; Smart Lighting; LDR Sensor: Fuzzy Logic