Design of an Automatic Transfer Switch (ATS) with Telegram-Based Microcontroller Control for Monitoring the Operation of a Solar Power System. Ir. Michael Joko Wibowo, M.T. (Chief Counselor)

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ABSTRACT

The need for a stable electricity supply drives the use of backup systems such as Solar Power Plants (PLTS) combined with Automatic Transfer Switch (ATS) systems. This research aims to design and develop an ATS system based on the NodeMCU ESP8266 microcontroller, which can be remotely controlled using the Telegram application. This system enables both automatic and manual switching between PLN (State Electricity Company) and PLTS power sources, and provides operational monitoring features through current and voltage sensors displayed on an LCD. A Telegram Bot is used as the user interface to send control commands and receive real-time system status notifications. The test results show that the system can operate stably in three modes: manual, automatic, and local, and provides a quick response to changes in power conditions. The integration of Internet of Things (IoT) technology with PLTS in this system demonstrates great potential for enhancing efficiency, reliability, and control in renewable electricity management.

Key words : Automatic Transfer Switch, IoT, Telegram Bot, Solar Power Plant, NodeMCU ESP8266.