DESIGN AND CONSTRUCTION OF A PROTOTYPE OF A SOLAR POWER PLANT PANEL BOX SECURITY SYSTEM USING RFID

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ABSTRACT

The high crime rate, especially theft of vital components in the Solar Power Plant's panel box, causes significant financial losses and disrupts the operation of the power plant. RFID-based security systems are chosen because of their ability to provide more secure and efficient access control than conventional methods. In this study, a security system is designed that utilizes RFID technology to limit access only to users who have valid RFID cards. This system is also integrated with infrared sensors and monitoring devices to ensure real-time monitoring and rapid response to security threats. The test results show that the designed system successfully classifies RFID cards with 100% accuracy in 10 trials of 5 recognized cards and 5 unrecognized cards. In addition, the infrared sensor successfully detected the burglary and the system sent a notification to the Telegram application. The evaluation results show that the use of RFID technology can provide a significant additional layer of security, thereby reducing the frequency and success rate of theft attempts. This study concludes that the designed RFID-based security system is effective in improving access security and reducing the risk of theft of components in the Solar Power Plant's panel box.

Keywords*: Security System, PLTS Panel Box, RFID, Access Control, Theft.*