|  |  |  |  |
| --- | --- | --- | --- |
| **Title:** | IoT-Based Real-Time Monitoring and Control System for Distribution Substation | | |
| **Author(s) Name:** | Md. Abu Talha, Rashedur Rahman Rashed, Shameem Ahmad, Ruham Rofique, Muhibul Haque Bhuyan, Sujan Howlader, Md Shahriar Parvez, Mahamudul Hassan | | |
| **Contact Email(s):** | muhibulhb@aiub.edu | | |
| **Published Journal Name:** | Proceedings of the 10th IEEE International Conference on Power Systems (ICPS), 2023 | | |
| **Type of Publication:** | Conference Proceedings | | |
| **Volume:** | 10 | Issue | - |
| **Publisher:** | IEEE | | |
| **Publication Date:** | 14 February 2024. | | |
| **ISSN:** | - | | |
| **DOI:** | https://doi.org/10.1109/ICPS60393.2023.10428721 | | |
| **URL:** | https://ieeexplore.ieee.org/document/10428721 | | |
| **Other Related Info.:** | Place: Long Beach Hotel, Cox’s Bazar, Bangladesh, pp. 1-6, Conference Date: 13-15 December 2023. | | |
|  | | | |

|  |  |
| --- | --- |
| **Abstract:** |  |
| Abstract—This paper presents the development and deployment of an IoT-based monitoring and automatic control system for power substations to address equipment failures, energy losses, and safety concerns. This system utilizes a network of sensors to collect voltage, current, and temperature data from various substation components in real-time. The collected data is then sent to a centralized control center and a user-friendly Blynk IoT application that authorized personnel can access. Utilizing sophisticated analytics and algorithms enables proactive maintenance by identifying potential malfunctions and initiating prompt actions. In addition, the system maximizes resource utilization by monitoring voltage levels and balancing loads. Integration with the Blynk application enables remote monitoring, real-time alerts, and remote-control capabilities, thereby improving accessibility and expediting responses to urgent situations. Results show that the proposed system compared to existing ones, improves the substation’s efficiency, minimizes downtime, and increases grid reliability, thereby contributing to more resilient and sustainable power infrastructure. | |