

Smart Monitoring System For Servo Voltage Stabilizer Using IOT

Anand Mohokar, Rupesh Pagar, Manas Patil, Prof.N.M.Bhujbal

Department of Electronics and Communication Engineering

K. K. Wagh Institute of Engineering Education & Research, Nashik, India

anandmohokar7@gmail.com, patilmanas7878@gmail.com

rkpagar370222@kkwagh.edu.in, nmbhujbal@kkwagh.edu.in

Abstract: *This paper presents a comprehensive design and implementation of a low-cost IoT-based Smart Three-Phase Power Monitoring and Alert System. The system continuously monitors six voltage parameters - three input phase voltages and three output load voltages - in real-time. The hardware architecture employs an ATmega328P microcontroller for precise analog-to-digital conversion and signal processing, coupled with an ESP8266 Wi-Fi module for cloud connectivity. Voltage sensing is achieved through step-down transformers with precision rectification and signal conditioning circuits. The system features automated SMS alerts via GSM module when voltage deviations exceed configurable thresholds, along with cloud data logging on ThingSpeak platform for remote visualization. The complete design was simulated in Proteus Design Suite and implemented using Arduino framework. Experimental results demonstrate reliable anomaly detection with alert latency under 5 seconds and measurement accuracy within $\pm 1.5\%$ after calibration. The proposed solution offers an efficient, scalable approach for industrial power quality monitoring and equipment protection.*

Keywords: Smart Grid, IoT, Power Quality Monitoring, ATmega328P, ESP8266, Cloud Computing, SMS Alert, Voltage Protection

