ANALYSIS AND DESIGN OF 3 PHASE LOAD BALANCE MONITORING EQUIPMENT ON OVERHEAT NETWORKS (DL 7901TT) BASED ON INTERNET OF THINGS

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ABSTRACT

A 3-phase system can experience load balance between phases if the load used is also balanced between the three phases R, S and T. To meet the electrical power needs, there is a distribution of loads which is initially evenly distributed but due to the asymmetry of the ignition times of these loads This creates a load imbalance that impacts the supply of electrical power. This load imbalance between each phase causes current to flow in the neutral. This research uses 4 PZEM-004T sensors and 8 D Lorenzo DL 7901TT input and output monitor modules as readers of current and voltage values for each of the R, S, T and Neutral phases. The ESP8266 NodeMCU is used as a microcontroller which will process sensor reading data displayed in the Blynk application installed in the design box. Based on the IEEE 446-1995 standard, the permitted load unbalance percentage is 5% to 20% per phase. After testing 3 times, the smallest percentage was on the PZEM-004T sensor where the percentage in the 1st experiment was 31.1%, the 2nd experiment was 31.02%, and the 3rd experiment was 31.31% and the percentage comparison The highest analysis imbalance was in the measuring instrument where in the 1st experiment it was 58%, in the 2nd experiment 49%, and in the 3rd experiment it was 50.6%.

Keywords: Load Balance, PZEM 004-T, Blynk, Monitor Module