Abstract

All electrical energy is generated, transmitted, and distributed in the form of a three-phase system. Ideally, the perceived stress of the equipment is a three-phase voltage with a sinusoidal and balanced shape. However, the unbalanced loading and impedance of the line impedance causes the voltage felt by the equipment to become unbalanced. For large power consumers, such as educational institutions, hotels, offices, shopping centers, industries, etc. are connected with 3-phase electricity (phase R, S and T). In the planning and installation of electrical installations by installers (Electrical Experts) it is always planned that the load connected to the R, S and T phases is attempted evenly (equally), but in operation (ON / OFF) electricity is not always evenly distributed in each phase, so it occurs unbalanced load between phases. As a result of unbalanced load between phases causes electrical power losses. The purpose of this study is to test the intelligence of the control of the balance of the three-phase electrical load and compare the unbalanced load current with the load current after being balanced. The results obtained are in the form of a prototype control of the three-phase electric
load balance, which can control unbalanced and balanced currents on the input side sensor as well as the voltage on the sensor output side. From the results of testing the current at unbalanced load with the current after being balanced, obtained phase unbalanced phase data \( R = 4.43 \), \( S \) phase = 1,162 phase \( T = 3.18 \) after being balanced by the system to \( R = 2.78 \), phase \( S = 3.27 \) phase \( T = 3.27 \), from the results of measurements and calculations in theory the average percentage error is obtained for each current test in phase \( R, S, T = 0.01 \) A

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Index Terms

Computer Science Control Systems
Keywords

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