ENHANCING AUTOMATED DOMESTIC ELECTRICAL FAULT ISOLATION SYSTEM: The case Study of Dar Es Salaam Region.

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ABSTRACT

Most of electrical equipment's are more sensitive, they have to be protected from over voltage and short circuit occurrence. Until now for tripping responds, fuse and circuit breakers are employed to safeguard the electrical equipment's. Due to existence of sensitive components, much attention is taken to care about the protecting system. Circuit breakers like fuse and miniature breakers are preferred for breaking the circuit once short circuit is occurred, when over voltage fault occurs. Miniature circuit breaker (MCB) is based on the thermal bi metal lever trip mechanism. MCB is very slow and the trip time varies according to the percentage of overload and surrounding temperature. The research objective is to enhance automated domestic electrical fault isolation system. The area focused was to assess the factors that influence the implementation of automated domestic fault isolation system, to develop an automated fault isolation system prototype for handling the challenge of short circuit and over current and to validate the automated domestic electrical fault isolation system prototype to handle the challenge of short circuit and over current. Researchers has putting effort on finding the way of improving the performance of protective devices using automated. This dissertation uses both primary and secondary data, primary data include qualitative and quantitative data. Documentary review provided quantitative data while qualitative data collected through personal observation and field of measurement.
The designed automated circuit cut off the power supply whenever overload or short circuit occur and reset after the fault cleared using hardware and embedded system software on mini controller. The experiment is performed three times setting the voltage at 220v ac at 2.7. 5A and 8A.

The findng of the designed circuit shown through the graph the tripping responds of the circuit of approximately 2.2us. This system is cost effective and has less wear and tear.

Automatic fault isolation system is more preferred for using in electrical domestic appliances because of its safety, environmental friendly, system is cost effective and has less wear and tear. Also we can adjust preset current rating according to load and its tripping not depends on surrounding temperature.

MCSE