

IMPROVEMENT OF MAINTENANCE STRATEGY FOR APPLICATION OF RELIABILITY CENTERED MAINTENANCE(RCM): Case Study of Mtoni Sub-station in Zanzibar.

By HAJI SALIM HAJI

ABSTRACT

The maintenance activities under Zanzibar Electricity Corporation (ZECO) sub- station which are currently based on corrective and breakdown maintenance strategy are not performed well, something that leads to frequent failure of equipment. The equipment failure increases outage time and downtime resulting into higher maintenance costs, reduced corporate revenue and increase in customer complaints.

In this study, improvement of the maintenance strategy by using the Reliability Centred Maintenance(RCM) techniques is based on planned and scheduled preventive maintenance performance at system equipment level for the increase of Overall Equipment Effectiveness (OEE) and Reliability) applied to substation critical components. The Reliability Centred Maintenance (RCM) which incorporates Computerized Maintenance Management System (CMM) in substation reduce power outage to customers, maintenance cost, and maintenance downtime and hence increase the revenue collection to ZECO.

The study survey was conducted at Mtoni su-station related at 132/33kV and 33/11kV; the survey was on the maintenance practice in ZECO substations. Results of the survey revealed that, the substation follows a corrective and breakdown maintenance concept. It also indicated that, there was no any routine maintenance and equipment's testing undertaken since the commissioning of the sub-station. This means that, the application of reliability centred maintenance at Mtoni sub-station identifies the causes of failure modes which affect the performance of the sub-station.

The distribution of questionnaire and in-depth interview to maintenance personnel were the tools used in this study, and the obtained data was analyses by using Statistical Package for Social Sciences(SPSS) version 16. the results of the analyses show that, the sub- station maintenance was undertaken on breakdown maintenance strategy.

The model was developed and used to optimize performance of maintenance practices at Mtoni sub-station for improving substation operation and maintenance. Appropriately, conceptual modeling was incorporated with computerized maintenance management system (CMMS) for the purpose of managing the sub-station data in order to optimize maintenance scheduling and allocation of resources by using the RCM.

The application of RCM model incorporated with CMMS was to optimize the operation and maintenance in the Mtoni sub-stations which will. In turn, improve the maintenance strategy.

Masters in computational science and Engineering