

Energy Audit: A case study

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ABSTRACT

Energy-Audit is the key to a systematic approach for decision-making in the area of energy management as it improves the energy efficiency of facilities. It gives a positive orientation to the energy cost reduction, quality control and safety operations. Through proper data collection, systematic inspection of existing energy systems and money-energy correlative analysis, a sincere energy audit has been carried out in Machakos University to estimate the daily, monthly and annual energy consumption. The purpose was to identify strategies of adjusting and optimizing the energy consumption by using systems (technologies, methods & procedures) to achieve and maintain optimum energy procurement and utilization within the university. The study attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in the university. The results show that the university wastes a considerable amount of energy through the idle loads and improper use of the available systems. Lack of integration of renewable energy technologies and automatic control systems within the university are considered reasons for increased energy cost within the university. The study reveals an inconsistency in the meter readings relative to the activities intensity within the university and lack of proper communication between the Kenya Power and Lighting Company and the Machakos University in regards to the electricity readings that are used to claim payments. The study also suggests ways of optimizing the use of energy by integrating renewable energies, implementing the loading control systems and development and implementation of energy use policy within the university. The audit process is aimed at putting the university to a higher bar in terms of the technological advancement and embracing the green-energy for the realization of the sustainable development.

Keywords: Energy-Audit, Management, Optimizing, Integration, Renewable-energy, Sustainability.