

MODELLING OF ENERGY UTILIZATION PATTERN IN THE INDUSTRIAL SECTOR IN NIGERIA

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Abstract

An empirical model and methodology for energy utilization in the small-scale industrial sector of Nigeria is presented. A logarithmic regression method was applied in a quantitative energy analysis, based on production function with different fuel mix quantities consumed in the sector. The industrial sector comprising 5492 registered companies experiences incessant power outage due to a huge mismatch in power supply capacity of 2500MW compared with an estimated 30000 MW demand on the grid. Determining energy requirements for manufacturing activities is a great challenge to efforts directed at providing reliable energy supply. Modelling is a viable innovative tool and solution method for predicting energy requirements in this sector. In this study, various energy models and modelling approaches were reviewed and evaluated. The results from the analysis of energy consumption per unit are presented for the four major segments of the industrial sector, namely: cottage 1%, small scale 38%, medium scale 13% and large scale industries 48%. The aggregate energy intensity during the period under study, at an average annual gross domestic product (GDP) of 999515.40 (N'000), is 9.803 MW per GDP/ year. The model developed, when properly implemented is suitable for energy planning and forecasting in Nigeria's industrial sector.

Keywords: *Energy Model, energy intensity, industrial sector.*

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