

## **Benchmarking Energy Challenges in Palm Oil Production Industry in Ghana**

**Authors :** Mathias B. Michael, Esther T. Akinlabi, Tien-Chien Jen

**Abstract :** The current energy crisis in Ghana has affected significant number of industries which have direct impact on the country's economy. Amongst the affected industries are palm oil production industries even though the impact is less as compared to fully relied national grid industries. Most of the large and medium palm oil production industries are partially grid reliance, however, the unavailability and the high cost palm biomass poses huge challenge. This paper aimed to identify and analyse the energy challenges associated with the palm oil production industries in Ghana. The study is conducted on the nine largest palm oil production plants in Ghana. Data is obtained by the use of questionnaire and observation. Since the study aimed to compare the respective energy challenges associated with nine industrial plants under study and establish a benchmark that represents a common problem of all the nine plants under study, the study uses percentile analysis and Analysis of Variance (ANOVA) as the statistical tools to validate the benchmark. The results indicate that lack of sustainability of palm biomass supply chain is the key energy challenge in the palm oil production industries in Ghana. Other problems include intermittent power supply from the grid and the low boiler efficiency due to outmoded conversion technology of the boilers. The result also demonstrates that there are statistically significant differences between the technologies in different age groups in relation to technology conversion efficiency.

**Keywords :** palm biomass, steam supply, energy challenges, energy benchmark

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