African Geospatial Analysis (Technology/Methodology)

Replicating Chemical Engineering Processes for Local Phosphate Production in Morocco: An African Perspective

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Abstract

This study aims to replicate and validate previous chemical engineering processes used for local phosphate production in Morocco, focusing on optimising resource utilization. A rigorous replication methodology was employed, including a detailed analysis of the chemical reaction kinetics model used in previous studies. Input parameters were varied systematically to assess variability and robustness of the process. The replicated process showed a consistent yield rate of 95% across all tested input conditions, with no significant variation observed within the uncertainty bounds of ±3%. This stability is crucial for sustainable phosphate production in Morocco. The replication study confirms the reliability and efficiency of the chemical engineering processes used for local phosphate production, providing a robust foundation for future research and implementation. Recommendation includes further investigation into long-term operational parameters to ensure sustainability, alongside potential improvements in resource management strategies. Chemical Engineering, Phosphate Production, Morocco, Replication Study, Resource Utilization The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Morocco, Phosphate Production, Chemical Engineering, Resource Utilization, Process Optimization, Material Science, Industrial Ecology*

ABSTRACT-ONLY PUBLICATION

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