



Chemical Engineering Processes for Local Resource Utilization in Moroccan Phosphate Production

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Abstract

Morocco is a significant producer of phosphate, which requires efficient chemical engineering processes for sustainable resource utilization. A hybrid computational design approach combining process simulation software with empirical data analysis was employed to optimise process conditions. The optimised process increased yield by 15% compared to current industry standards, reducing energy consumption by approximately 20% and decreasing waste disposal costs by 10%. The new chemical engineering processes demonstrate significant improvements in phosphate production efficiency and sustainability. Further research should focus on scaling up these processes for industrial implementation and assessing their scalability across different geographical regions. Morocco, Phosphate Production, Chemical Engineering Processes, Sustainability The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Morocco, Phosphate Production, Chemical Engineering, Process Design, Computational Modelling, Sustainable Technologies, Resource Utilization

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