

Using Machine Learning to Predict the Performance of Circulating Fluidized Bed

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Machine Learning (ML) has recently gained interest by most researchers across different fields. While it has chalked a lot of success in areas such as language processing, image detection, stock trading, health care, fraud detection, error detection and many others, its exploitation in the field of chemical engineering is not fully harnessed because of limited data issues in certain applications. This study explored machine learning techniques which were implemented on circulating fluidized bed (CFB) simulation results. Aspen Plus was used to model and simulate the circulating fluidized bed to produce electricity from biomass. After the validation of results with literature, different operating conditions of the plant were executed to generate data for the machine learning. The techniques provided insights which are beneficial to plant operations and hence presents the possibility of using actual process data to analyze and predict plant performance in terms of char conversion. The accuracies of the various algorithms developed in this study were appreciable in prediction.