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Energy optimization in rotary kiln of Yasouj cement plant using Exergy analysis

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Abstract

Exergy analysis is a useful tool optimization and solution for analyze thermodynamic process. An application Exergy balance indicates how much potential useful work is spent into the process by process. In this study, the aim is reducing the total exergy losses for rotary kiln of Yasouj cement plant. Therefore, mass and energy balances were carried out on the kiln. The three types of standard, heating and mixing exergy for kiln input and output were calculated. Then using exergy analysis, Exergy losses of the kiln was calculated. In the next step, to reduce the total exergy losses, changes in intake air temperature, the temperature of feed, and the percentage of excess air have done. Then by using software to reach an optimum state where the losses are lowest, three values for air temperature, feed temperature and the percentage of excess air have achieved. Finally, a comparison of the results presented in separate charts. All computing by MATLAB software was planned in this study.

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