

Sintering of iron ores with preheating of the sintermix

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Sintering with hot air, sintering with oil or high temperature preheating together with mixed firings belong to special sintering processes.

Experiments and calculations were performed in the Institute of Iron Metallurgy at the Technical University Aachen in order to preheat sinter mixtures in neutral and reducing atmospheres.

These tests were made to substitute favorably the blast furnace coke breeze by other fuels and to replace a large part of the energy for the sintering process by injecting hot exhaust gases out of the combustion of oil, coal dust or gases of differing compositions.

This may lead to a preheating of the sintermix or furthermore to a prereducing.

In this report an increase of the preheating temperature causes a decrease in the amount of solid fuel by over 50 % . (see fig. 1).

A modification of the exhaust gas composition was presented.

If the substitutes for preheating or prereducing contain less harmful substances (e.g. sulfur) or produce less (e.g. NO_x) than the normal coke breeze, in this case the total amount of the pollutions will appear in a lower degree, (see fig. 2)

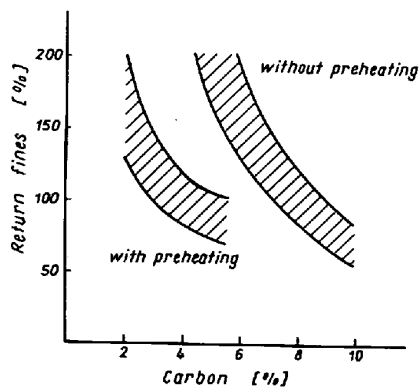


Fig. 1 Influence of the carbon content with and without preheating (750°C) on the balance of returns with various amounts of return fines.

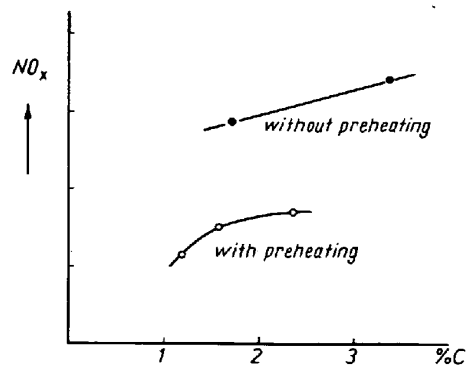


Fig. 2 Influence on the NO_x -content with and without preheating with different carbon contents.