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Energy Efficient Recycling of In-Plant Fines

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Abstract : Numerous amounts of metallurgical dusts and sludge containing iron as well as some other valuable elements such as Zn, Pb and C are annually produced in the steelmaking industry. These alternative iron ore resources (fines) with unsatisfying physical and metallurgical properties are difficult to recycle. However, agglomerating these fines to be further used as a feed stock for existing iron and steel making processes is practiced successfully at several plants but for limited extent. In the present study, briquettes of integrated steelmaking industry waste materials (namely, BF-dust and sludge, BOF-dust and sludge) were used as feed stock to produce direct reduced iron (DRI). Physical and metallurgical properties of produced briquettes were investigated by means of TGA/DTA/QMS in combination with XRD. Swelling, softening and melting behavior were also studied using heating microscope.

Keywords : iron and steel wastes, recycling, self-reducing briquettes, thermogravimetry
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