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Reclamation of used Green Sand in small scale foundries

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Abstract

Disposal of Used Foundry Green Sand (UFGS) remains one of the significant challenges faced by foundry industry nowadays. Experiments were performed to reduce the total clay content from 12% to as low as 2.2% in waste foundry sand. Three prototypes were developed during the course of this work. They include vertical fluidized bed, horizontal fluidized bed and a novel ball-mill type attrition and sieving unit. The cost per ton of reclaimed sand is higher in case of fluidized bed based prototypes while in case of attrition and sieving based prototype, it is less than half of the cost of the fresh sand. The experimental data generated on the two-stage attrition and sieving unit under different conditions is further used to arrive at a semi-empirical correlation and the optimum set of design and operating parameters to get the best performance.

Key Words: Green Sand, Clay Content, Mechanical Attrition, Reclamation, Economics.

1. Introduction

According to a modern casting staff report, 2013 (AFS), India is the third largest producer of castings in the world with annual production of about 10 million metric tons per annum between

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