An analytical determination of attrition velocity and particle size distribution of an erosion product in a fluidized bed

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Abstract

The process of erosion of loose material particles is one of the most crucial phenomena which has an influence on the efficiency course of combustion in boilers with circulating fluidized beds. An analytical determination of the parameters of particles erosion in a fluidized bed is presented in this paper. An elaboration of a matrix model of particles erosion in a fluidized bed was an aim of authors’ research. An experimental parametrical identification of the proposed mathematical model was also done. On the basis of identification results the following conclusions can be drawn: the proposed model accurately describes the real process, and the erosion velocity of inert material is proportional to the square of particle size.