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ANALYTICAL APPROACH TO ESTIMATE THE AIR FLOW RATE IN THE BOUNDARY LAYER OF A HEATED FURNACE WALL

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Abstract

The critical analysis of the transfer processes intensification techniques is carried out by identification of the methods that can be applied, regardless of the process nature. The main priority is the development of a consistent methodology that will represent the basis of specific practical methods development by establishing a theoretical frame for studying the heat transfer processes.
The main purpose is to reduce the stationary time of the charge in the installation, accomplishing simultaneously the technological purposes imposed by the process.
For each modeling technique, important aspects have been presented regarding: the transfer mechanisms types; the basic equations; the initial and final conditions; the physical conditions, with connection to the estimations that have been performed and to the variation laws of the physical properties.
This study presents an analysis and a calculation method of the heating rate in semi-industrial conditions.

Keywords: boundary layer, air rate, convection, mathematical model

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