

The Implementation of a Numerical Technique to Thermal Design of Fluidized Bed Cooler

Authors : Damiaa Saad Khudor

Abstract : The paper describes an investigation for the thermal design of a fluidized bed cooler and prediction of heat transfer rate among the media categories. It is devoted to the thermal design of such equipment and their application in the industrial fields. It outlines the strategy for the fluidization heat transfer mode and its implementation in industry. The thermal design for fluidized bed cooler is used to furnish a complete design for a fluidized bed cooler of Sodium Bicarbonate. The total thermal load distribution between the air-solid and water-solid along the cooler is calculated according to the thermal equilibrium. The step by step technique was used to accomplish the thermal design of the fluidized bed cooler. It predicts the load, air, solid and water temperature along the trough. The thermal design for fluidized bed cooler revealed to the installation of a heat exchanger consists of (65) horizontal tubes with (33.4) mm diameter and (4) m length inside the bed trough.

Keywords : fluidization, powder technology, thermal design, heat exchangers

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