

The Convection Heater Numerical Simulation

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Abstract : This paper is focused on modeling and simulation of the tubular heaters. The paper is structured in four parts: the structure of the tubular convection section, the heat transfer model, the adaptation of the mathematical model and the solving model. The main hypothesis of the heat transfer modeling is that the heat exchanger of the convective tubular heater is a lumped system. In the same time, the model uses the heat balance relations, Newton's law and criteria relations. The numerical program achieved allows for the estimation of the burn gases outlet temperature and the heated flow outlet temperature.

Keywords : heat exchanger, mathematical modelling, nonlinear equation system, Newton-Raphson algorithm

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