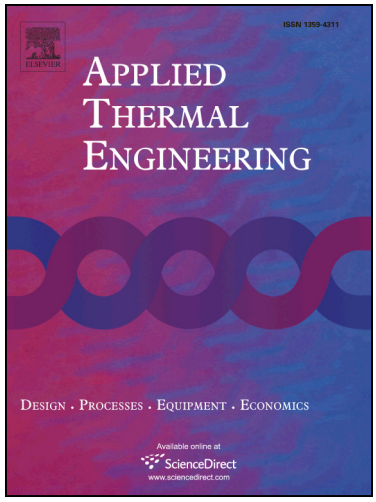

Research Paper

The finite volume method for evaluating the wall temperature profiles of the superheater and reheater tubes in power plant

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The finite volume method for evaluating the wall temperature profiles of the superheater and reheater tubes in power plant

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Abstract: A single tube model based on the finite volume method and measured temperature of inlet and outlet steam is proposed to evaluate the wall temperature profiles of the high temperature surface tubes in power plant. The model permits the consideration of oxide scales in the inner wall, which can leading to the overheating of material. With the increasing of outer oxide scale thickness under the same condition, the temperature of the outer wall will be rapidly increasing more than inner wall. In the same condition without oxide scale, steam is more easily leading to the increased of the wall temperature than flue gas. The higher mass flow rate will increase the convection coefficient and decrease the heat flux from the tube metal to the steam.

Keywords: High temperature surface; Finite volume method; Wall temperature profiles; Power plant

1. Introduction

With the vigorous development of industrialization and increasing demand for power, traditional thermal power plant in order to achieve higher thermal efficiency and lower pollutant emission, the temperature and pressure of the steam have been constantly improved.