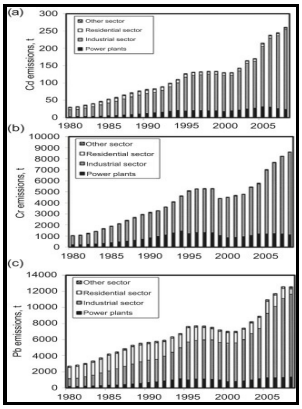
Experimental measurements and mathematical modelling of the flow and combustion parameters in a small stoker coal fired furnace

University of Birmingham - Application of the Numerical Techniques for Modelling Fluidization Process Within Industrial Scale Boilers



Description: -
-Experimental measurements and mathematical modelling of the flow and combustion parameters in a small stoker coal fired furnace
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Notes: Thesis (Ph.D) - University of Birmingham, Department of Chemical Engineering, Faculty of Engineering.
This edition was published in 1996

Tags: #Integrated #modelling #of #process #heat #transfer #with #combustion #and #fouling

Analysis of the Hydraulic Resistance of a Water Wall Based on a Distributed Parameter Model in a Supercritical Once

Nevertheless, one crucial exception to normal additive behavior was discovered, with copper I chloride perceptibly deactivating during devolatilization in the DTF, even though it remained the most effective catalyst tested. For devolatilisation process, three steps homogeneous reactions are considered, but for char oxidation process, two-steps heterogeneous reaction mechanism is applied.

Experimental investigation and mathematical modelling of wood combustion in a moving grate boiler

Even though the graphs in Figures 8 and 9 show a reasonable agreement.

Application of the Numerical Techniques for Modelling Fluidization Process Within Industrial Scale Boilers

A sensitivity analysis has been performed to study the variation in the input parameters of the program, and it has been finally verified by comparing the results with the empirical data collected during coal and wood combustion tests. Robust and validated CFD models can be used as virtual experiments, which can help in improvement of existing processes, accelerate prototyping, optimization, and design of more efficient processes.

Energy & Fuels

All developed functions and calculation strategy ensure stable operation of the numerical model with high accuracy, robustness and stability. As shown in , the calculated concentrations of CO 2 and O 2 deviate respecttively of 7. The presence of tar in the synthesis gas can produce several problems in the plant components: for this reason a particular attention has to be put into the control of tar formation and to the strategies for its removal.

Integrated modelling of process heat transfer with combustion and fouling

Heat-Transfer-Corrected Isothermal Model for Devolatilization of Thermally Thick Biomass Particles. The scalingdown approach adopted in this work can be considered to be adequate to model the particular design and operational conditions of the reactor.

Professor Lin Ma

Applied Thermal Engineering 2018, 128 , 1062-1073.

Experimental investigation and mathematical modelling of wood combustion in a moving grate boiler

The differences between solid and fluid flow can be noticed in an hour-glass and in a U-tube pipe.

CFD investigation on the flow and combustion in a 300 MWe tangentially fired pulverized

In this paper, the density distribution for the resistance calculation of a water wall at the supercritical pressure is numerically analyzed, and a distributed parameter model of the hydraulic resistance is developed in a down-fired 600 MWe supercritical boiler using a three-dimensional temperature distribution. Fuel 2017, 206 , 276-288.

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