

Unsteady Simulation of Burning Off Carbon Deposition in a Coke Oven

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Abstract : Carbon Deposits are often occurred inside the industrial coke oven during the coking process. Accumulation of carbon deposits may cause a big issue, which seriously influences the coking operation. The carbon is burning off by injecting fresh air through pipes into coke oven which is an efficient way practically operated in industries. The burning off carbon deposition in coke oven performed by Computational Fluid Dynamics (CFD) method has provided an evaluation of the feasibility study. A three-dimensional, transient, turbulent reacting flow simulation has performed with three different injecting air flow rate and another kind of injecting configuration. The result shows that injection higher air flow rate would effectively reduce the carbon deposits. In the meantime, the opened charging holes would suck extra oxygen from the atmosphere to participate in reactions. In term of coke oven operating limits, the wall temperatures are monitored to prevent over-heating of the adiabatic walls during the burn-off process.

Keywords : coke oven, burning off, carbon deposits, carbon combustion, CFD

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