

# Numerical study of air preheating effect on NO<sub>x</sub> emissions in a heating furnace

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**Abstract:** This work aims to evaluate the reduce pollutant emission by steel reheating furnaces and operating process of the diffusion flame industrials burners. The example developed here is particularly interested in the influence of the air preheating temperature on NO<sub>x</sub> emissions as well as the dynamic characteristics and heat flow. The study was conducted on an industrial gas burners 250kilowatt. Numerical simulations are per formed using the computer code FLUENT, using the turbulence standard k- $\epsilon$  model coupled to turbulent combustion ED (Eddy Dissipation). The probability density function PDF model (6 species and reactions 3) with a chemical equilibrium model. The results obtained for different air preheat temperatures show that NO<sub>x</sub> emissions depend on the air preheat temperature.

**Keywords :** pollutant emission, industrials burners, turbulent combustion