

Effect of Fuel Lean Reburning Process on NO_x Reduction and CO Emission

Authors : Changyeop Lee, Sewon Kim

Abstract : Reburning is a useful technology in reducing nitric oxide through injection of a secondary hydrocarbon fuel. In this paper, an experimental study has been conducted to evaluate the effect of fuel lean reburning on NO_x/CO reduction in LNG flame. Experiments were performed in flames stabilized by a co-flow swirl burner, which was mounted at the bottom of the furnace. Tests were conducted using LNG gas as the reburn fuel as well as the main fuel. The effects of reburn fuel fraction and injection manner of the reburn fuel were studied when the fuel lean reburning system was applied. The paper reports data on flue gas emissions and temperature distribution in the furnace for a wide range of experimental conditions. At steady state, temperature distribution and emission formation in the furnace have been measured and compared. This paper makes clear that in order to decrease both NO_x and CO concentrations in the exhaust when the pulsated fuel lean reburning system was adapted, it is important that the control of some factors such as frequency and duty ratio. Also it shows the fuel lean reburning is also effective method to reduce NO_x as much as reburning.

Keywords : fuel lean reburn, NO_x, CO, LNG flame

Conference Title : ICESET 2014 : International Conference on Energy Systems Engineering and Technology

Conference Location : Sydney, Australia

Conference Dates : December 15-16, 2014