

COMPUTATIONAL ANALYSIS OF GAS PHASE MIXING IN A CO FIRED BURNER, USING DIFFERENT GEOMETRIES

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ABSTRACT

The study of swirling jet combustor for biomass coal co-firing is of great interest for energy industry; the biomass co firing can serve as a NO_x reduction method as well as the better use of renewable energy source. Large eddy and RANS model simulation has been performed. Usually pulverised coal–biomass mixture enters the furnace along with primary air through primary pipe; the secondary pipe provides necessary air and mixing for combustion. The improved model has three passages including primary, secondary and middle one for swirling. The simulations on two geometries have been compared; the aim is to design a better and improved burner model for better pre combustion mixing in the biomass co fired furnace. The single phase k- ϵ and LES simulation have been performed on both geometrical models. The results from two ways and three way geometry have been compared with each other as well as with the results from the furnace model used by Apte and Mahesh

KEYWORDS: Swirling Jet, Co-firing, Biomass