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Development of Detailed Mathematical Model of a 500 MW Utility Boiler Based on Chemical and Thermodynamic Equations

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Abstract: Environmental impact of pollutant emission and increased efficiency are the most important challenges faced by the industries in the modern world. In a power sector industry, the environmental impact of boilers may be due to air emissions from fuel combustion, untreated water and disposal of ash. Therefore, it is essential to adopt strategies that achieve better combustion efficiency with the least amount of pollutant emissions. One of the effective means of efficiency enhancement in boilers is an improvement of the steam generation control system. An essential tool for such an improvement is to develop a valid boiler model. This paper describes the chemical reactions and procedures involved in developing the detailed mathematical model of a pulverized, fossil fuel fired 500 MW utility boiler.
Keywords : Boiler, Mathematical Model, Thermal Power Plant, Boiler Efficiency.

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