

AN INTEGRATED APPROACH TO BOILER AND AUXILIARY EQUIPMENT PERFORMANCE IMPROVEMENT IN INDIAN POWER PLANTS USING IMPORTED COAL

ASHISH RAI^a, MUKESH PANDEY^b AND PRASHANT BARENDAR^c

^a Adani Power Ltd., Bhopal, India.

^b Professor, Dept. of Energy Technology RGPV, Bhopal, India.

^c Associate Professor, Energy Dept. MANIT, Bhopal, India.

Abstract

The efficiency of the boiler is the measure of its thermal performance and determined by two methods¹, Direct and Indirect. In direct method the energy gain of the working fluid (water and steam) is compared with the energy content of the fuel burnt. This method is easy but does not reflect various losses accountable for various efficiency level. In the indirect method the efficiency is the energy input minus losses. Even this method skips important thermal malfunctions of the boiler, such as draft unevenness, abnormal combustion behaviour, effect of different ash-fouling patterns, and effect of boiler malfunction in auxiliary systems and vice versa. Due to all these factors actual causes of the malfunctions cannot be identified. These malfunctions are critical when the coal quality (CV) and working ambient temperature vary and these variations lead to deviation in performance. This paper describes the scope of work to limit these deviations through maintaining the working parameters near to designed parameters.

Keywords : Calorific value (CV), Electrostatic precipitator (ESP), Induced draught fan (ID fan), APH (air pre heater), New Tilting Direction Flame (TDF), Distributed control system (DCS).