

PRACTICAL APPROACH ON OPTIMIZING THE CO-FIRING CONDITIONS AT THE COAL FIRED POWER PLANT OF EPZ

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Abstract:

EPZ started co-firing secondary fuels early 2000 in Borssele power plant in the Netherlands. The methods and routes of co-firing changed over the years and the present fuel handling system is capable of feeding secondary fuels to the coal pulverisers and additional feeding lines directly to the boiler, with total biomass shares as high as 30 wt%. Late 2005, local corrosion problems occurred due to not fully optimised co-firing conditions. In order to evaluate the effectiveness of counter measures taken and to determine the influence of co-firing secondary fuels with fluctuating composition, a corrosion monitoring program was carried out by KEMA in 2008. The corrosion monitoring program consisted of Kema Corrosion Probe (KEMCOP) exposure at various boiler locations and on-line electrochemical corrosion measurements (KEMCOM) in the radiant section and the super heater area simultaneously.

In this work, operational data, such as fuel flow, temperature, composition, and the biomass/coal conditions were analysed statistically, and linked with the corrosion rates. The radiant probe is more sensitive to the process conditions than the super heater probe. The results show that certain biomass can actually reduce the water wall wastage. The influence of coal quality on the corrosion rate was also analyzed in detail. By knowing the influence of fuel compositions and operational data, EPZ can minimise the risk of water wall corrosion by optimising the composition of the fuel mixture of primary and secondary fuels.

Key words: "Co-firing"; "Coal"; "biomass"; "process optimization"; "corrosion monitoring"