



2018 Title: **Factors Impacting CO and NO_x Emissions on Biomass-Fired Stoker Boilers**

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ABSTRACT:

Many biomass-fired stoker boilers experience challenges meeting carbon monoxide (CO) or nitrogen oxides (NO_x) regulatory emission limits. This paper discusses factors that impact these emissions and gives real world examples from boilers in the industry. For CO emissions, factors discussed include excess air, furnace residence time, fuel size, fraction of natural gas co-firing, fraction of overfire air (OFA), effectiveness of the OFA system, and elevation and staging of the OFA. For NO_x emissions, factors include excess air, fuel nitrogen content, CO, fraction of fossil fuel co-firing, fuel moisture, and air staging.

Examples of measured CO and NO/NO_x data are shown to illustrate the impact of some of these variables. These data were collected on multiple units throughout the industry over several years as part of projects that included tuning and evaluating industrial boilers.