



Impact of Load Cycling on NO_x emissions from Coal-Fired Power Plants

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Coal-fired power plants face numerous operational challenges that affect operation and emissions. In many countries, coal-fired power plants do not operate near full load most of the time, but instead must vary load on a short-term basis to match the demands of the electrical grid. This load-cycling behavior can be due to an increasing share of variable renewable energy and/or natural gas generation entering the grid. Modern coal-fired power plants use selective catalytic reduction (SCR) technology to reduce NO_x emissions to ultra-low levels. Of all the air pollution control equipment on a typical plant, the SCR is the most affected by load cycling, particularly if the SCR was designed for operation at mostly full load. In this presentation, we review the impacts of load cycling on SCR operation and emissions, as well as methods to improve operations at low loads. We will examine the aggregate impact on NO_x emissions from coal-fired power plants in selected regions in the US over the last ten years, as coal-fired plants have transitioned from operating at mostly full load (high capacity factor) to load-cycling with the associated lower capacity factors.

