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NO_x formation in a premixed syngas flame S. LEVENT YILMAZ, PEYMAN GIVI, University of Pittsburgh, Pittsburgh, PA, PETER STRAKEY, KENT CASLETON, National Energy Technology Laboratory, Morgantown, WV — Reduction of NO_x is a subject of significant current interest in stationary gas turbines. The objective of this study is to examine the effects of turbulence on non-thermal NO_x formation in a syngas flame. This is achieved by a detailed parametric study via PDF simulations of a partially stirred reactor and a dumped axisymmetric premixed flame. Several different detailed and reduced kinetics schemes are considered. The simulated results demonstrate the strong dependence of combustion process on turbulence. It is shown that the amount of NO_x formation is significantly influenced by the inlet conditions. That is, the turbulence intensity can be tweaked to attain optimal ultra-low NO_x emissions at a given temperature.

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