STUDY OF LEAN NO_X TECHNOLOGY FOR DIESEL EMISSION CONTROL

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The aim of this paper is to present the results of testing and analysis conducted at Cummins, Inc. to study the potential of Lean NO_x technology for diesel emission control. In this work, the focus is on the precious metal (low temperature) catalyst. Various parameters, including, reductant type, catalyst volume, series vs. parallel arrangement, space velocity range, injector location, were investigated both analytically and experimentally in the quest for the optimum system design. The precious metal catalysts have a narrow temperature window, however, with the use of proper reductant and an efficient control strategy (to minimize fuel penalty) cycle conversion efficiencies as high as 40% may be obtained. The analysis tool developed to aid the system design is capable of predicting effects of catalyst temperature, NO_x concentration, 0_2 concentration, space velocity etc. on NO_x conversion efficiency.