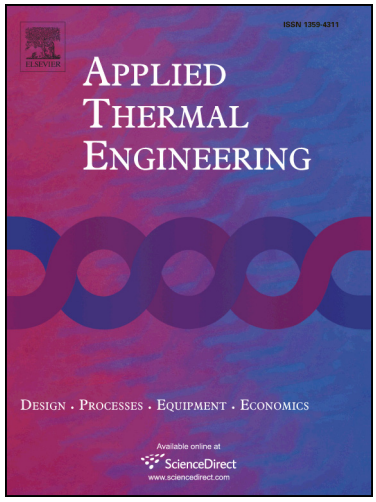

Research Paper

Effects of Miller cycle and Variable Geometry Turbocharger on Combustion and Emissions in steady and transient cold process

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Manuscripts

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Abstract

The influence of Miller cycle and variable geometry turbocharger (VGT) on combustion and emissions was investigated in steady and transient operation of a heavy-duty diesel engine. The experiment was conducted on a six-cylinder diesel engine with common rail fuel injection, two-stage turbocharger and Miller cycle. The results revealed that Miller cycle decreased soot and nitrogen oxides (NO_x) emissions and increased brake thermal efficiency (BTE) in certain operation. In the steady operation, the intake flow was reduced in a cold condition because the low oil temperature led to the hydraulic mechanism delay intake valve closing timing. However, by adjusting VGT, low emissions of soot and NO_x could still be obtained with relatively high BTE. In cold transient process, dynamic response of torque