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Author: [ADVANCED](#) | Volume Page
Keyword:



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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Effect of Fuel Additives on Reduction of Smoke and Particulate Matter, and Stabilization of Cycle-to-cycle Variation

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Non-metallic additives are useful countermeasures to reduce smoke and particulate matter from diesel engine emissions. Non-metallic additives include nitro- and oxygenates, oxygenates and nitrogenates. Nitrites and nitrates can reduce smoke and particulate matter in the direct fuel injection engine under constant conditions of 2100 rpm and 80% load. In particular, *n*-hexylnitrite added to gas oil improved particulate matter and NO_x reduction, and fuel consumption efficiency in the indirect fuel injection engine under Japanese 10·15 mode operation. These additives also reduced the cycle-to-cycle variation of maximum pressures in the cylinder. Smoke concentration decreased with increasing oxygenate concentration. However, oxygenates increased fuel consumption and did not stabilize cycle-to-cycle variation.

Keywords: [Gas oil](#), [Fuel additive](#), [Particulate matter reduction](#), [Cycle-to-cycle variation](#), [Nitrite](#), [Nitrate](#)

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