

The Effect of NH₃ Slip Catalyst in Mobile Urea-SCR System on the NO_x Reduction in Exhaust Gas of Diesel Vehicle

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Euro V regulation offers the possibility to reduce the ammonia slip below the target amount of 10 to 20ppm. For this reason, the SCR system needs more sensitive dosing control of AdBlue solution.

Under the dynamic driving condition of diesel vehicle, an excess or untimely dosing of urea to exhaust gas causes NH₃ slip from the SCR reactor. Even when urea solution is not injected, rapid increase in exhaust temperature can also result in NH₃ slip, because the SCR catalyst can absorb the ammonia or ammonia precursor in low temperature and release ammonia as the temperature increases.

NH₃ slip catalyst is generally located behind SCR catalyst and reduces slipped NH₃. Besides, it must be selective toward the formation of nitrogen rather than NO_x or N₂O.

This study demonstrates that the SCR system with NH₃ slip catalyst can reduce more amount of NO_x in exhaust gas of diesel vehicle rather than without NH₃ slip catalyst under ammonia slip amount of 20ppm through the engine-dynamo evaluation, especially ND-13 mode.