

Identification of Cross-Sensitivity of Smart NO_x Sensors to Ammonia in Urea-Selective Catalyst Reduction Systems via Fast Fourier Transform

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The smart NO_x sensor (SNS) is prevalingly used in exhaust after-treatment systems such as urea-selective catalytic reduction (SCR) to monitor the concentration of NO_x emission. Owing to the cross-sensitivity of SNS to ammonia concentration, however, the sensor signal suffers significant interference and leads to false reading if excessive ammonia is present. In this paper, an effective method that avoids the cross-sensitivity of SNS to ammonia is proposed on the basis of a periodic modulation of the urea dosage rate and Fast Fourier Transform (FFT) of the SNS signal. This method enables us to measure the true NO_x concentration correctly even if the NO_x is overkilled by excessive ammonia.

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