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Transient RDE NOx Emissions from Diesel city bus in Xiamen, China

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Xiamen City in Fujian Province is a city that is among the top ten environmentally friendly cities in China, but countermeasures for automobile-derived NOx are an important issue. In particular, the measures of NOx emitted from city buses, which are public transportation, are top priority issues. Prior to electrification in the near future, we measured the RDE of the current diesel bus with buses on board with passengers. By using the NTK compact emission meter (NCEM), continuous 8 hours measurement including morning rush hour for 1 week was conducted. The measured bus was a double deck city bus (2017 model year diesel bus equipped with the urea SCR) operated about 1 hour round trip with maximum 60 passengers. Before this experiment, the measurement accuracy of NCEM was confirmed with chassis dynamometer test. NOx was measured before and after the catalyst and it was found that the SCR does not operate unless the NOx concentration exceeds 1000 ppm. It became clear that the amount of NOx emission at the place of low speed running with congestion where acceleration / deceleration occurs frequently is large. Exhaust NOx concentration was slightly higher at low speed (below 10 km/h) and showed a linearly proportional increase from 20 km/h to 40 km/h. On the other hand, the exhaust PM concentration showed a peak concentration around 25 km/h, and a declining trend was seen at a speed higher than 25 km/h.