

The Modeling of City Bus Fuel Economy during the JE05 Emission Test Cycle

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Abstract : This paper discusses a model of fuel economy in a city bus driving in a dynamic urban environment. Rapid changes in speed result in a constantly changing kinetic energy accumulated in a bus mass and an increased fuel consumption due to hardly recuperated kinetic energy. The model is based on the bench test results achieved from chassis dynamometer, airport and city street researches. The verified model was applied to simulate the behavior of a bus during the Japanese JE05 Emission Test Cycle. The fuel consumption was calculated for three separate research stages, i.e. urban, downtown and motorway. The simulations were performed for several values of vehicle mass and electrical load applied to on-board devices. The research results show fuel consumption is impacted by driving dynamics.

Keywords : city bus, heavy duty vehicle, Japanese JE05 test cycle, kinetic energy

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