

INFLUENCE OF ROAD AND TRAFFIC CONDITIONS ON FUEL CONSUMPTION AND FUEL COST FOR DIFFERENT BUS TECHNOLOGIES

Published Year 2017

By:

Ivan S. IVKOVI, Snežana M. KAPLANOVI, and Branko M. MILOVANOVI

1. Numerous studies and experimental research confirmed that CNG and hybrid buses have significant environmental advantages compared to the conventional diesel buses .
2. The purpose of this research is to highlight the potential benefits of the application of energy efficient vehicle technologies in intercity vehicle service.
3. Potential benefits of the application of energy efficient bus technologies in intercity bus service. Precisely, the focus is on the fuel consumption of diesel, hybrid, and compressed natural gas (CNG) buses according to various road and traffic conditions
4. Fuel consumption of buses depends on many factors, including road type, speed, acceleration, road grade, load mass, air conditioning, driving style, etc.,
5. There are numerous studies which confirm that speed is the one of the most important factor which significantly affects fuel consumption.

Effects of driving style on the fuel consumption of city buses under different road conditions and vehicle masses

Published Year 2015

By:

Hongjie Ma ,Hui Xie,Denggao Huang,Shuo Xiong

1. The variance in fuel consumption caused by driving style (DS) difference exceeds 10% and reaches a maximum of 20% under different road conditions, even for experienced bus drivers.
2. To study the influence of DS on fuel consumption, a method for summarizing DS characteristic parameters on the basis of vehicle-engine combined model is proposed.
3. The author proposes 26 DS characteristic parameters related to fuel consumption in the accelerating, normal running, and decelerating processes of vehicles.
4. This study also calculates the minimum sample size necessary for analyzing the effect of DS characteristics on fuel consumption.
5. The analysis results can be employed to evaluate the fuel consumption of drivers, as well as to guide the design of Driver Advisory System for Eco-driving directly.

Fuel consumption and emission characteristics in asymmetric twin-scroll turbocharged diesel engine with two exhaust gas recirculation circuits

Published Year 2019

By:

Dengting Zhu, Xinquian Zheng

1. This paper is the first known presentation of an asymmetric twin-scroll turbocharged engine with two exhaust gas recirculation circuits for emission and energy improvements.
2. The traditional asymmetric twin-scroll turbocharged engine has one exhaust gas recirculation circuit, which is simple in structure and can improve the trade-off between low fuel consumption and nitrogen oxide emissions.
3. At the high-speed range, the turbine's larger scroll has an exhaust pressure that is higher than the intake pressure, leading to poor fuel economy.
4. A test bench experiment was performed to validate numerical models of the asymmetric twin-scroll turbocharged engine with one and two exhaust gas recirculation circuits.
5. Based on the models, both the influences of critical turbine parameters (turbine asymmetry, efficiency and throat area) on engine emission and fuel consumption characteristics, and the EGR valves and the wastegate control strategy were studied, and they were different from the asymmetric twin-scroll turbocharged engine with one exhaust gas recirculation circuit.
6. The maximum exhaust gas recirculation rate and fuel economy improvements were approximately 8.59% and 1.98%.
7. The new technology of the asymmetric twin-scroll turbocharged engine with two exhaust gas recirculation circuits described in this report has the potential to provide substantial gains in engine emission and energy.