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Effectiveness of the measures for CO2 emission reduction in real world

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Abstract

To reduce the CO2 emission level for the new Corporate Average Fuel Economy regulations, a series of measures are implemented by the manufacturers. Besides the use of hybrid and electric vehicles, efficiencies packages are frequently applied to improve the CO2 emissions of conventional vehicles. Some examples of CO2 reduction measures are: Start&Stop system, eco tires, powertrain thermal management and aerodynamic kits. Usually, they are optimized for the WLTC (Worldwide Harmonized Light Vehicles Test Cycle). The aim of this paper is to assess the influence of these packages in real-world driving cycles. The study is done by means of modelling and simulation, using an industrial modelling and simulation environment (LMS Imagine.Lab AMESim). Two passenger cars from different classes, a compact type and a SUV are used.

Keywords: CO2 emissions, aerodynamic kits, passenger cars, sport utility vehicle

References

1. Taylor J and Bassett M 2021 Dedicated Hybrid Engines. (Mahle Powertrain Limited)
Go to reference in articleGoogle Scholar
2. Gutzmer P, Wagner U and Zink M 2018 Mobility for Tomorrow (Schaeffler Symposium 2018)
Go to reference in articleGoogle Scholar
3. Constantin C., Băţăus M, Rentea C and Frăţilă G. 2021 The use of modelling and simulation to ensure CO2 emissions regulations 25th edition of IManEE 2021 International Conference
Go to reference in articleGoogle Scholar
4. Renţea C. and Frăţilă G. 2021 The modelling and simulation of propulsion systems to estimate CO2 emissions (Ingineria Automobilului, nr. 58)
Go to reference in articleGoogle Scholar
5. 2015 IFP Drive Library 14 User's guide
Go to reference in articleGoogle Scholar
6. Commission Regulation (EU) 2017/1151 of 1 June 2017 supplementing Regulation (EC) No 715/2007 of the European Parliament and of the Council on type-approval of motor vehicles with

respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, amending Directive 2007/46/EC of the European Parliament and of the Council, Commission Regulation (EC) No 692/2008 and Commission Regulation (EU) No 1230/2012 and repealing Commission Regulation (EC) No 692/2008
Go to reference in articleGoogle Scholar

7. Bradfield M 2008 Improving Alternator Efficiency Measurably Reduces Fuel Costs, White-Paper
Go to reference in articleGoogle Scholar

8. Schlerege F 2018 Breakthrough of Rollerized Crank Shafts Schaeffler Symposium 2018
Go to reference in articleGoogle Scholar

9. Yuan Z and Wang Y 2017 Effect of underbody structure on aerodynamic drag and optimization Journal of Measurements in Engineering **5** 194-204 2017
https://doi.org/10.21595/jme.2017.19210
Go to reference in articleGoogle Scholar

10. André M 2004 The ARTEMIS European driving cycles for measuring car pollutant emissions Sci Total Environ. 334-335 2004 Dec 1 73-84
Go to reference in articleCrossrefGoogle Scholar

11. Oota Y 2013 12th International CTI Symposium (Berlin: Car Training Institute) The advantage of CVT in the real word
Go to reference in articleGoogle Scholar