

Comparative numerical evaluation of ECE-EUDC cycle performances of a hypothetical car equipped with three types of propulsion systems: conventional, series hybrid and parallel hybrid

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Abstract

This publication refers to the studies which were made to a compact car model to observe the behavior of the three drivetrain versions that the car can be equipped with: the version in which the vehicle model is equipped only with a Diesel engine (classic), a plug-in hybrid version with the combustion engine placed in a series circuit (pSHEV) and a second plug-in hybrid variant, where the thermal engine is arranged in parallel (pPHEV) with the electric motor (EM). The study emphasizes the behavior of three different vehicle propulsion systems equipped on the compact car on a standardized road cycle condition defined by the Urban Driving Cycle (UDC) referred as ECE 15 cycle combined with the Extra-Urban Driving Cycle (EUDC). The scope is to set up the three different powertrain systems through numerical modeling and to generate the conclusions based on the simulations results obtained in ADvanced VehIcle SimulatOR (ADVISOR).

Keywords: compact cars, drivetrains, Diesel engines, combustion engines, electric motors

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