

عنوان مقاله:

Downsizing Iranian National Engine (EF7): Conceptual Design

محل انتشار:

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خلاصه مقاله:

Engine Downsizing has been considered as a promising approach to reduce the CO₂ emission of internal combustion engines since the long term goal of International Energy Agency was published in 2011. The dimension of engines are declined while their performance are preserved in this approach. So, the fuel consumption and engine emission decrease as well as its power to weight ratio increases. In this study, the Iranian national engine called EF7 is considered as the target of downsizing and 3 conceptual designs of downsized EF7 are proposed. The concepts are called EF7 α , EF7 β , and EF7 γ which fueled by Gasoline and Compressed Natural Gas. The performance of each concept is investigated and compared with the base engine employing one dimension engine simulation tools after validating the simulator results by experimental data. The results show the well agreement of simulated results and experimental data as the first step of this research. Indeed, the performance of the gasoline fueled version of downsized EF7, EF7 α , is estimated close to the base engine. The poor performance of engine especially in low load regions due to the fuel shifting to the Compressed Natural Gas is estimated to be well covered by modification of ignition timing at EF7 β and it will be developed by increasing the compression ratio which is called in this research by EF7 γ .

کلمات کلیدی:

Engine Downsizing, EF7, Conceptual Design, Performance, Emission

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