

STATE-OF-THE-ART REVIEW OF ETHANOL-GASOLINE MIXTURES INFLUENCE ON PERFORMANCE CHARACTERISTICS IN INTERNAL COMBUSTION ENGINES

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ABSTRACT

Currently, the energy matrix in Bolivia relies heavily on fossil fuels, a fact that leads to economic problems especially considering that gasoline production in Bolivia does not meet the demand of the domestic market and the country has to import gasoline at high prices. In addition, the transition to a cleaner energy matrix can also drive innovation and development of new technologies and solutions to address climate change and protect the environment, aspects that are encouraged by the United Nations with Sustainable Development Goals 7 and 11. In this sense, this work focuses on the state-of-the-art review on the influence of ethanol-gasoline blends on the performance of internal combustion engines, with the objective of having a starting point for a possible use of these blends in the country and thus reduce gasoline consumption. Initially, a study of the thermochemical properties of different gasoline-ethanol fuel blends found in the literature was carried out. Then, the effect of the percentage of ethanol in the blend on parameters that define the performance of an engine such as: thermal efficiency, specific fuel consumption at braking, maximum braking torque and specific fuel consumption was analyzed. Finally, an analysis of the literature concerning the effects of the ethanol-gasoline blend on the environment impact and negative effects on the engine was carried out.

Keywords: Ethanol, Fuel, Spark Ignition Engine, Calorific value, Octane rating, Efficiency.

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