عنوان مقاله:

A Review on the Effects of Hydrogen/Natural Gas Blending on the Industrial and Domestic Gas Burning Devices

محل انتشار:

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خلاصه مقاله:

Regarding several approaches which have been proposed for energy storage, hydrogen production through P2G (Power to Gas) process is approved as one of the most practical technologies. Furthermore, mixing other fuels, particularly the mentioned (renewable) hydrogen, with hydrocarbon fuels can be performed to utilize the stored energy. In order to develop the approach of hydrogen blending, numerous investigations, either experimentally or numerically, have been conducted, which have revealed some of the advantages and pitfalls of the utilization of hydrogen-natural gas mixture in gas burning systems. Considering extensive natural gas infrastructures throughout the world, modifying and using the current gas grid for transmission of the mixture is introduced as the short term and the most economical method. According to the reported results, up to 10 vol.% (20% based on some references) of hydrogen doesn't bring significant consequences for most of domestic and industrial gas burners. However, the researchers, whose works on specific appliances have been presented in the literature, are not completely assured of extending and generalizing their findings to other systems. Based on the previous studies, there is still an essential need for further investigations on the effect of hydrogen addition into natural gas on end-use appliances and devices. Therefore, the objective of the present work is to provide a technical insight into H2-NG blending and its concomitants through reviewing some of the considerable published studies in this field. Moreover, a relatively new burner (LSB), which can be used for H2-NG combustion is introduced. Due to the lifted flame of the aforementioned burners, they can avoid flashback phenomenon as one of the most formidable consequences of H2-NG blending

کلمات کلیدی:

Hydrogen blending, Natural gas, Combustion