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A Review on the Potential of Electric Vehicles in Reducing World CO2 Footprints

Authors : S. Alotaibi, S. Omer, Y. Su

Abstract : The conventional Internal Combustion Engine (ICE) based vehicles are a threat to the environment as they account for a large proportion of the overall greenhouse gas (GHG) emissions in the world. Hence, it is required to replace these vehicles with more environment-friendly vehicles. Electric Vehicles (EVs) are promising technologies which offer both human comfort “noise, pollution” as well as reduced (or no) emissions of GHGs. In this paper, different types of EVs are reviewed and their advantages and disadvantages are identified. It is found that in terms of fuel economy, Plug-in Hybrid EVs (PHEVs) have the best fuel economy, followed by Hybrid EVs (HEVs) and ICE vehicles. Since Battery EVs (BEVs) do not use any fuel, their fuel economy is estimated as price per kilometer. Similarly, in terms of GHG emissions, BEVs are the most environmentally friendly since they do not result in any emissions while HEVs and PHEVs produce less emissions compared to the conventional ICE based vehicles. Fuel Cell EVs (FCEVs) are also zero-emission vehicles, but they have large costs associated with them. Finally, if the electricity is provided by using the renewable energy technologies through grid connection, then BEVs could be considered as zero emission vehicles.

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