

## Hybridization and Dynamic Performance Analysis of Three-Wheeler Electric Auto Rickshaw

**Authors :** Muhammad Asghar, A. I. Bhatti, T. Izhar

**Abstract :** The three-wheeled auto-rickshaw with a two or four-stroke Gasoline, Liquid Petroleum Gas (LPG) or Compressed Natural Gas (CNG) engine is a petite, highly maneuverable vehicle and best suited for the small and heavily-congested roads and is an affordable means of transportation in Pakistan cities. However due to in-efficient engine design, it is a main cause of air-pollution in the shape of white smoke (CO<sub>2</sub>) (greenhouse gases) at the tail pipe. Due to the environmental pollution, a huge number of battery powered vehicles have been imported from all over the world to fulfill the need of country. Effect of degree of hybridization on fuel economy and acceleration performance has been discussed in this paper. From mild to full hybridization stages have been examined. Optimal level of hybridization ranges depending on the total driving power of vehicle are suggested. The degree of hybridization is varied and fuel economy is seen accordingly by using Advisor (NREL) software. The novel vehicle drive-train is modeled and simulated in the Advisor software.

**Keywords :** advisor, hybridization, fuel economy, Three-Wheeled Rickshaw

**Conference Title :** ICEPES 2015 : International Conference on Electrical Power and Energy Systems

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** February 16-17, 2015