

Evaluation of Economics of Hydrogen Energy Applications in Transportation Sector in India

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Energy plays a crucial role in the development of a country. The nations, which have sufficient energy sources, are fast developing and becoming rich countries. The countries that do not have sufficient energy sources have to depend on energy rich countries, which impedes development. Transportation sector is a major consumer of energy and plays crucial role in the development of a country. In case of India, the transportation sector depends on energy sources like oil that have to be imported. Hence, it is important to look for other alternatives.

Hydrogen is a renewable energy. It can be produced from water. When hydrogen is consumed, it forms water again. Hydrogen can be used as a fuel for vehicles with some modifications in the existing technology. By using hydrogen the performance of engine is not affected and the pollution is negligible as water vapors are released when hydrogen is consumed.

Fuel cell vehicles use hydrogen as a fuel. These fuel cells convert hydrogen energy into electrical energy and vehicles run by electric power. The energy conversion efficiency of fuel cell vehicles is high compared to other conventional vehicles. Since the vehicle runs on electrical energy there is no chance of air and sound pollution.

Hydrogen energy is going to be the key factor in solving India's problems in energy and transportation sector. BY using hydrogen energy, India need not depend on other countries as hydrogen can be produced from water and India has vast costal area.

The present paper discusses various technologies of hydrogen production, storage, transportation and end use applications. We study the costs of hydrogen energy production, storage, transportation and end uses. We also discuss the benefits of using hydrogen energy by comparing with fuels like petrol and diesel.

Keywords:

Hydrogen economy, Alternative fuels, Fuel cell economy