Time to Replace Fossil Fuels with Hydrogen

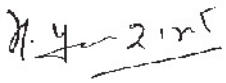
The slew of initiatives announced by the government to reduce the country's dependence on imported fossil fuels, by shifting to battery driven electric vehicles is a welcome step. The emission-less electric vehicles themselves are a good option to curb pollution, especially the emission of green house gases, yet the fuel cell technology is a better alternative to the battery-driven mobility. The hydrogen fuel cell technology is much better, which is under widespread implementation across the world. The technology known as 'Fuel Cell, uses Hydrogen and Oxygen to power Fuel Cells wherein the only resultant bi-product of the reaction is water, a safe and harmless emission. Therefore, even the GST council too has slashed duties on Hydrogen powered vehicles, sparking a new impetus for this technology for car manufacturers in India. Indeed, Hydrogen can become the preferred fuel option to power the next generation of vehicles in India, in view of G. Madhavan Nair as well, a scientist who formerly served the Indian Space Research Organisation (ISRO). The fuel cell also generates electricity, whereas in the electric vehicle, batteries are used with stored power.

The Indian Space Research Organisation (ISRO) had even come out with a vehicle, which was powered by hydrogen. Four years ago, India's Tata Motors and the space agency had endeavored to develop a hydrogen-powered bus after several years of research. The big challenge before the developers is to adopt the existing hydrogen fuel cell technology in a cost-efficient manner to make them financially viable and safe as well. It should also be borne in mind that the adoption of battery driven electric vehicles would create a new environmental problem of disposing the lithium-ion batteries after use in electric vehicles. Indeed, the hazardous Lithium cannot be simply thrown around, as it becomes the most polluting menace. There has to be an adequate mechanism for collection and reprocessing of the used lithium batteries. So, hydrogen-powered vehicles are a better option, in spite of the fact that at present lithium-powered electric vehicles are becoming a much nearer reality.

It is also true that Lithium is already in use for power storage, but, it is costly and we will have to depend on imports of Lithium, and Cobalt as well, needed for battery driven vehicles. It would also be a bigger challenge to create an infrastructure for running electric vehicles and charging them. At present, a lot of investment would be required for it. Electric vehicles need the kind of infrastructure like the one needed for petrol cars. Though, as on date India appears to be looking at having an all-electric car fleet by 2030, with an express objective of lowering the fuel import bill and the running cost of vehicles as well. But, hydrogen fuel cell technology would be a better option, economically as well as environmentally.

In March of 2018, India had already witnessed the launch of its first fuel cell-powered bus and the automobile manufacturers, in collaboration with government entities, are pushing for all possible clean transportation options including hydrogen powered mobility, due to increased pollution and high petroleum import bill. The top Fortune-500 company of the country, the Indian Oil Corporation, which is also India's largest fuel retailer has recently launched the country's first-ever hydrogen fuel cell-based bus in the capital, New Delhi. The bus has been designed and manufactured by Tata Motors. The Tata Starbus has been developed by the Tatas in collaboration with the Indian Space Research Organisation (ISRO). The Tata Starbus Fuel Cell has a hydrogen fuel cell power system that makes 114 hp and an electric propulsion motor that makes 250 hp. The total torque is 1050 Nm at 800 rpm. The bus can seat 30 passengers according to media reports. Fuel cell-powered vehicles are a good option against the growing problem of CO2 pollution in India.

Recently, a zero emission hydrogen powered train has also been launched in Munich in Germany. India too should work faster on hydrogen powered mobility, which has several advantages over battery driven electric vehicles. Firstly, the Hydrogen cell vehicles can be refueled in a matter of minutes, compared to the conventional electric vehicle, which could take as much as a couple of hours to recharge on standard charging. Secondly, once refueled, a Fuel Cell car could easily run for a range of over 500 kms. In comparison, electric cars currently on sale in India are limited to a range of 130-150 kms, with a significant drop in mileage when used in traffic. The fact that fuel cells are mainly reliant on Hydrogen makes the technology even more tempting considering that Hydrogen is the single most abundant element in the atmosphere. The technology uses Hydrogen that can be carried in a tank in the car and fed into the fuel cell stack along with oxygen to create electricity and water, as a by-product. Filling it in vehicles is pretty much like petrol at stations. Hence India should weigh all options available to replace fossil fuel based mobility and hydrogen fuel cell based mobility should be preferred over the battery driven mobility. It would save precious foreign exchange being spent on crude oil and help curb the current account deficit as well as the fall of the Indian Rupee.



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