

Diafuel® (Diatom Biofuel) vs Electric Vehicles, a Basic Comparison: A High Potential Renewable Energy Source to Make India Energy Independent

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Abstract

We suggest Diafuel®, a gasoline equivalent, be developed as a biofuel derived from diatoms. Diatoms are unicellular microscopic, microalgae that dwell in water bodies requiring only inorganic carbon, silica, water, sunlight and minerals. The Indian subcontinent alone receives approximately 5 quadrillion kWh of solar energy per year incident onto its land. The total electrical energy utilization in India on other hand has increased from 796 TWh to 1,050 TWh during 2008–2012. If Indians were to raise their per capita energy consumption to current North American behaviour, they would require 5,250 TWh of energy per year, and substantially more, as projected population increases. Diatoms could be the best to alternative to expensive imported oil and also as a solution to the currently popular option of electric vehicles to replace oil engines. Though there has been a significant impetus on electric vehicles to replace oil engines, the drive to electric vehicles may be unwarranted because India does not have lithium ion reserves to support the batteries they need. Therefore, to power these dreams India is expected to turn to the so-called lithium triangle, three countries in South America that hold the world's greatest reserves of the metal. Moreover, with the number of privately owned vehicles estimated to rise to 500 million by 2030 shifting the possible sources of electricity to fuel and perhaps this demand is questionable. Nearly all of this electrical energy would probably come from coal, producing more CO₂ emissions than petrol. In all, approximately three times of fossil fuel would be consumed in switching from oil to electric cars. Diafuel®, however, has advantages of having near zero carbon footprint and a potential of 200 times the production of oil compared to oil seed crops.

Keywords: Diafuel®, electric vehicle, energy independence, India

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