

Energy Independent Electric Vehicle Technology Roadmap 2016-2036

Description: This unique report explains the existing and future key enabling technologies of land, water and airborne EIVs, notably harvesting of ambient energy, extreme lightweighting, future streamlining and powertrain efficiency. 45 EIVs and projects intended to lead to EIVs are profiled, identifying business opportunities such as the new types of photovoltaics and batteries coming in and where this is taking place. It is demonstrated that interest and achievement is fairly evenly split between land, water and air vehicles and the extremely broad variety of missions performed is identified. Which countries are in the lead and what comes next across the world is revealed.

Presented as slide format packed with new analysis and infographics, it has a profusion of pictures, new comparison tables and the roadmap of technology improvement. This is understood in the context of precursors of EIVs. These include electric vehicles using photovoltaics for significant range enhancement and mechanically harvesting vehicles such as sailing boats, balloons and gliders.

Future trends in energy harvesting are clarified - such e-fibres to produce traction electricity from rain, wind or sun, and the new conformal, ultra-thin photovoltaics. There is also appraisal of new types of energy storage, including supercapacitors and lithium-ion capacitors and the scope for making them into load-bearing structures. For sailing boats, the rapid progress in using propellers that go backwards to generate electricity is evaluated.

Consideration of lightweighting even extends to structural electronics where the body of the vehicle is the electrics and electronics releasing space and weight and increasing reliability and life. Lightweighting also includes ships harvesting oncoming waves to rise in the water reducing drag: there is much more to this subject than first meets the eye and it is relevant to all vehicles not just the end game of total energy independence.

Consideration of future powertrain efficiency includes the effect of multi-mode regenerative harvesting in the vehicles and the place of streamlining. EIVs being autonomous is considered as a major synergy of technologies.

The system aspects are also considered plus the connected and dynamically charged vehicle as transitional products to EIVs.

Extensive global travel and interviews by expert multi-lingual analysts in 2015 are the basis of the research, together with primary investigations and analysis from unique technology and market databases.

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