

137d Plug-in Hev Roadmap to Hydrogen Economy

Galen J. Suppes

Closed-system regenerative fuel cells (RFCs) are an alternative to non-regenerative fuel cells as a transition technology and mainstay of a hydrogen economy. Substantially petroleum-free automobiles can spontaneously evolve from hybrid electric vehicles (HEVs) based solely on the economic viability of replacing batteries with RFCs as fuel cell prices decrease. The evolution can be projected first to plug-in HEVs (PHEVs) and finally to a substantially hydrogen-based transportation system.

While there is uncertainty in quantifying the projected costs of fuel cells, the qualitative price trend projections and resulting vehicle power system evolution can be projected with certainty. An important stage in the PHEV evolution is the “combined” use of battery packs and RFC systems as an alternative to relying on only battery packs for storing electrical power on PHEVs. The combined systems are projected to reduce the cost of PHEVs by more than \$1,000 and reduce vehicular gasoline consumption by >80%.