

## **Battery hybrid electric vehicle**

SPIC Science Foundation, India, has developed and demonstrated a prototype fuel cell-battery hybrid electric vehicle (EV). The prototype employs a new hybrid power source consisting of polymer electrolyte membrane (PEM) fuel stacks developed by SPIC together with lead-acid batteries. The key components of a PEM fuel cell are an anode and a cathode separated by an electrolyte. The electrodes contain noble metal catalysts in small quantities and the electrolyte is a proton conducting membrane such as Nafion<sup>®</sup>. The reactant gases fed to the electrodes (hydrogen to anode and air/oxygen to cathode) electrochemically combine, at the interface between the electrode and electrolyte, to produce electricity and water. Unlike conventional batteries that have limited charge-discharge cycles, fuel cells produce electricity for as long as reactant gases are available.

In the EV, the electric motor's power requirement to run the vehicle is shared by the battery bank and fuel cell stacks. A controller, developed by SPIC, facilitates power sharing and can also charge batteries from the fuel cell. Several safety features have been incorporated in the EV. The four-wheel van can seat six people and has recorded an increase of 40 per cent in terms of distance travelled on a single charge compared with a battery-powered EV. *Contact: Mr. Joseph Thomas, SPIC Science Foundation, Chennai 600 032, Tamil Nadu, India.*

*Website: <http://www.indiaserver.com/thehindu/2000/07/13/stories/08130001.htm>*