



Fuel Cell Research Bus

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This 30-foot fuel cell transit bus, the first liquid-fueled fuel cell bus ever constructed, arrived at UC Davis last spring, and is already integrated into the campus's research and teaching programs. Built by H Power and Georgetown University in 1994, it is the first of three famous proof-of-concept fuel cell buses.

Because of its age, the bus offers UC Davis researchers a unique opportunity to examine lifetime issues such as catalyst degradation and durability. The bus is used for auxiliary component design, to replicate real-world driving conditions for testing and modeling data, and as a teaching tool in classes on methanol reformation and options for producing hydrogen from alternative fuels.

The bus is powered by a phosphoric acid fuel cell, which differs from the proton exchange membrane (PEM) fuel cell technology being tested in many fuel cell vehicles today. Although larger in size than current PEM technology, the phosphoric acid fuel cell has a higher operating temperature and is more tolerant of lower levels of hydrogen purity. The onboard reformer uses a methanol-water pre-mix feedstock to make hydrogen.

The reformation of a liquid fuel provides a practical way around the energy density problem of hydrogen, which typically requires fuel cell vehicles to have either very large hydrogen fuel tanks or settle for limited driving range.

History of Fuel Cell Research Bus

- This project started in 1983. After several stationary test beds, the bus was constructed in 1994. The systems integrator was H-Power and the project administrator was Georgetown University.
- After initial testing in the Washington, DC area, the bus was moved to Argonne National Laboratories in Chicago in 1995.
- In 1997, the bus was delivered to the University of Florida, where it was refurbished and used for demonstrations.
- In 2003, the bus arrived at the Hydrogen Production and Utilization Laboratory at UC Davis for further research, testing, and demonstration.

Partners

- Federal Transit Administration
- Georgetown University
- U.S. Department of Energy
- U.S. Department of Transportation
- South Coast Air Quality Management District