

# Penn State Hybrid and Hydrogen Vehicle Research Laboratory

## Research, Education, Demonstrations for Advanced Vehicle Systems

The Hybrid and Hydrogen Vehicle Research Laboratory (HHVRL) at the Larson Transportation Institute (LTI) was established to support the transformation of vehicle power train technology from strict dependence on the internal combustion engine and fossil fuels to "greener" fuel cell and hybrid electric technology. The HHVRL performs research in partnership with other research centers, government entities, and private industry and provides a venue to that supports integration of promising new technologies into the transportation sector. Several important resources and competencies are combined within the HHVRL, including:

- Vehicle **integration** and **control** expertise;
- **Alternative fuel** infrastructure including hydrogen, LNG, and CNG;
- Vehicle modeling and **hardware in the loop (HIL)** test capability;
- **Power electronics** design, fabrication, and testing capability;
- **Power processing** test equipment for **Battery and ultra-capacitors**;
- Vehicle **test track** and **dynamometer** facilities;
- **Vehicle fabrication** facilities; and
- **Fuel cell** and **hybrid electric vehicle** test platforms.

Relevant HHVRL project history includes:

- Combined Battery/Ultra-Capacitor Energy Storage System for Transit Vehicles for DARPA and US DOT
- Conversion of Hybrid Vehicles for Stationary Power Generation for ERA Power Company
- Development of a hydrogen fleet for demonstration of an Air Products hydrogen fueling station funded by Pennsylvania DEP and DCEM
- Demonstration of an onboard hydrogen production module fueled with aluminum and water sponsored by Alloy Surfaces and PA DEP

Website: <http://www.vss.psu.edu/hhvrl/>

Contact: Dr. Joel R. Anstrom, HHVRL Director at jra2@psu.edu



The Larson Transportation Institute (LTI)

Power Electronics



Vehicle Testing Infrastructure



Air Products Hydrogen Fueling Station



Fuel Cell & Energy Storage Systems



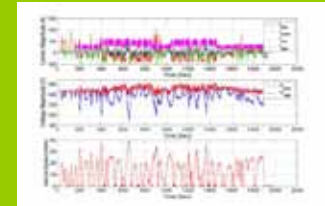
Graduate Automotive Technology Education



Vehicle Dynamics Modeling and Testing



Fuel Economy Modeling and Testing



Vehicle Integration & Control

