

Power Conditioning and Management

- One rack Real Time Digital Simulator (RTDS) fully digital electromagnetic transient power systems simulator with RSCAD graphical user interface software for utility grid, clean energy conversion, and micro-grid power systems analysis.
- Arbin 8-channel battery tester allows researchers to perform tasks in the area of electrochemical storage. The system is custom designed with eight independent channels that have the ability to run multiple, independent PST/GST experiments simultaneously. Each channel can be referred to its own reference electrode, and comes with three current ranges with 16-bit resolution. The Arbin 8-channel battery tester is also unique in its range of voltage and current test settings, which enable users to more accurately control measurements. It is fine tuned for battery, supercapacitor, electrochemical research and development, and other testing applications for materials, cathode and anode, and direct methanol fuel cell research.
- ABC-150 Power Processing System with performance enhancement package and standard remote operation system (ROS) Software, a dual channel cycling station for flexible DC supply or load capabilities, test batteries, fuel cells and hybrid systems, fully programmable computer control, and bidirectional load capabilities.

- Teledyne/Scribner Associates Model 890 – PEM Test System, 1000 watts, 250 amps, 20 volts, anode flow 5 lpm, cathode flow 15 lpm, max in 6 channels, cell impedance measurement, current interrupt iR measurement, includes gas line heaters, 250 Amp cell cable set.
- Scribner Associates 896 Stack Voltage Monitor for up to 32 cells.
- Lynntech Industries stack test stand - tests up to 1 kW PEM fuel cells, Electronic load bank (100V, 300A, 2000W air cooled), combustible gas meter, humidifier, heated transfer lines Gas metering unit(1 H₂ channel 0.01 - 10 slpm, 1 H₂ channel 1 - 50 slpm, 1 Air channel 0.6 - 30 slpm, 1 Air channel 2.0 - 100 slpm) Reactant Gas Humidifier (up to 24ml/min of water into oxidizer gas stream and up to 12 ml/min of water into fuel stream) I/O Box (Model FCTS IO64) w/ 20 voltage inputs and 20 temperature inputs as well as 4 4-20 ma inputs for pressure transducers and 4 switched outputs for heater or fan controls, Integrated software for control of Agilent 34970A data acquisition unit, and Milliohm meter/switch unit.



- Lynntech Gas Metering Unit, Model FCTS GMET, 4 H₂ Gas Channels at 1 lpm, Methane Gas Channels at 1 lpm and Combustible Gas meter, system allows for the controlling and running of single cells and small stacks



- Avtron Mfg Avtron Freedom portable load bank - 105 KW air cooled load bank with data acquisition capabilities

- SOFCO solid oxide fuel cell test stand, 1300°C maximum furnace operating temperature, automatic control system with programmable set point, ramp rate and over-temperature limit protection, cathode air gas control 0-30 slpm, anode gas flow for hydrogen and nitrogen 0-5 slpm, water column humidification with fuel flow through submerged aerator stone and water, instrumented with cell stack voltage and current digital indicators and cell stack temperature digital indicator.



- Advanced Measurements, Inc. 6 50 W solid oxide fuel cell test stand with AMI custom Integrity software for control of the PXI controlles. Individual mass flow controllers per stand include the following: CH₄ (0-7 sccm), H₂ (0-110 sccm), N₂ (0-326 sccm), CO (0-10 sccm), CO₂ (0-25 sccm) and a purge gas (0-40 sccm). Cathode flows up to 910 sccm. Anode gas temperature controls are from 20 to 150°C with a cell heating temperature range of 20 to 1000°C. Cell resistance and AC impedance monitoring per test stand.



- DC Fibertech High Temperature Furnaces for single cells or small stacks, model number DSC 01871.

