NOVEL CONCEPTS AND INNOVATIVE DEPLOYMENTS
WEDNESDAY, NOVEMBER 8 - ROOM 101 A, 3:45 PM - 5:45 PM

  - FuelCell Energy, Inc. (FCE) has developed the Combined Electric Power and Carbon-dioxide Separation (CEPACS) system utilizing Electrochemical Membrane (ECM) technology. The system separates CO2 from the flue gas of other plants and produces electric power using a supplementary fuel. FCE is currently evaluating the use of ECM to cost effectively separate CO2 from the flue gas of Pulverized Coal (PC) power plants under cooperative agreements with the U.S. Department of Energy (DOE).

- **Riding The Storm: The Trials and Tribulations of a Privately-Funded Microgrid** – Ryan Stoltenberg, Stone Edge Farm
  - This presentation will discuss the unique challenges, benefits, and rewards of integrating a hydrogen electrolyzer, fuel cells, fueling station, fuel cell vehicles, and bulk hydrogen gas storage into a privately funded microgrid housed on StoneEdge Farm, a working winery and farm in the beautiful Sonoma Valley.

- **Performance of a Lightweight Fuel Cell/Battery Hybrid Electric Vehicle Operating in Vehicle-to-Grid** - Vincent Oldenbroek, Delft University of Technology
  - This work will provide the results of a series of tests to evaluate the performance of the vehicle operating in vehicle-to-grid (V2G) mode. Results of extensive testing under variable loads will be provided. The observed energy performance, fuel cell efficiency, voltage and current of fuel cell and kWh deliver to the grid per kg of hydrogen for the different loads will be reported. The environmental benefits of possible energy services and integration of lightweight hybrid electric vehicles into smart cities will also be discussed.

- **Seedling - Circular Aquaponics for Urban Agriculture** - Travis Andren, Seedling LLC
  - Seedling’s proposed redesign of the vertical farming (VF) energy system, nutrient system, and distribution method would use food waste to create biogas, as well as liquid and solid fertilizer. The biogas would be used in a high temperature fuel cell (SOFC, MCFC) in a tri-generation format to produce hydrogen fuel for a fuel cell vehicle delivery fleet for localized produce delivery. In this process we plan to reclaim the water produced by the FCEVs and input it back into our hydrological system, again reducing virgin inputs, this time of water.

- **Renewable Hydrogen Powered Data Centers** – Keith Wipke, NREL
  - NREL, in collaboration with HPE, have developed a system model for simulating both grid-tied and island microgrid power for hydrogen production and data center operation (assumed at 50 MW, 24 hours a day, 7 days a week).
SchIBZ – Large Fuel Cell Systems for Ecofriendly Diesel-Propelled Seagoing Vessels – Pedro Nehter, Thyssenkrupp Marine Systems GmbH

- Under the project name SchIBZ, Thyssenkrupp Marine Systems and 6 partners developed a fuel cell system for seagoing vessels. The presentation will present the results of the first phase of the demonstrator tests as well as an outlook for beneficial applications.