



FuelCell Energy

World Leader in Ultra-Clean Power

Thrust Area: Bio Fuels

Summary

Renewable fuels are gaining interest as a means to reduce U.S. dependence on imported oil and reduce net greenhouse gas emissions since these fuels are produced from plants that absorb carbon dioxide during their growth cycle. The Bio Fuels thrust area is to develop the ability to process renewable bio fuels such as ethanol, biodiesel, and glycerol as fuels for DFC power plants.

An in-house IR&D effort is underway to develop the ability to use fuel grade Ethanol as a fuel. A system study was conducted to estimate DFC plant performance on Ethanol. Single cell tests were conducted on simulated reformed ethanol indicating acceptable derating in power output compared to natural gas. Subscale fuel processing testing will be conducted to verify the fuel processing steps and conditions needed to produce a fuel cell grade fuel gas from Ethanol.

Preliminary short term prereforming tests with biodiesel were conducted under a program funded by Department of Homeland Security (DHS) indicating that biodiesel can be prereformed to produce a fuel cell quality gas. A conceptual power plant design with internal process water recovery was developed under the same program. FCE is collaborating with the University Connecticut to initiate a project for operation of a 250 kW plant on biodiesel or glycerol at UConn. Glycerol, a by product of the biodiesel manufacturing process and an attractive low cost fuel, will need a cleanup step before it can be used in a prereformer. Funding is being sought to develop a cleanup process and conduct subscale tests before a full-scale power plant can be designed to run on glycerol.