



Technology Focus Area

Logistic Fuels for Fuel Cell Power Generation

The Logistic Fuels Technology R&D Focus Area aims to develop capability to process logistic fuels (i.e. fuels used for ships or aircraft) including JP-5, JP-8, and diesel fuel for use with FCE's DFC® power plants, as well as other fuel cell power plants capable of operating with high sulfur logistic fuels. This technology development has been mainly driven by Department of Defense (DoD) interest in high efficiency; clean fuel cell power plants that can operate in various applications on logistic fuels available worldwide. These power plants will also be available to provide clean power for commercial applications in off-grid remote locations, islands, environmentally sensitive areas, embassies and other locations where conventional fuels are not available. Development of commercial DFC® as well as SOFC and PEM power plants that operate on liquid fuels including diesel or jet fuel is part of the broad objective of this technology focus area.

FCE's ongoing efforts in logistic fuels processing for fuel cells include several successful DoD-funded technology development and demonstration projects. Under an earlier DARPA funded contract, operation a 32 kW DFC® stack was demonstrated for over 1,000 hours with high sulfur DF-2 and JP-8 fuels. On a recently completed shipboard fuel cell program, FCE constructed and delivered a 500 kW DFC® demonstrator power module to the Navy. During over 1000 hours of hot testing, the plant produced over 17.6 MWh of clean power using high sulfur JP-5 logistic fuel. This unit was the world's first fuel cell power plant of this size operating with high sulfur naval logistic fuels and providing on board water recovery for the fuel processor.

Further development effort in the logistic fuels area at FCE is focused on fuel cell power plant technology options that can meet DoD size and weight requirements for mobile electric power (MEP) generators in the 3 to 100 kilowatt power output range.

A 0.5 MW rated fuel processor was constructed and operated with naval logistic fuels to power an FCE Direct Carbonate Fuel Cell Stack. The power plant was delivered and operated at the US Navy facility in Philadelphia.

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