Project Goal
Engineer & demonstrate TMI’s 1 kW systems for 30-90 days on liquid biofuel, including “on the fly” transitions from biofuels to a more traditional fossil fuel and then back again at a test site.

Outcome
Positive economic & technical metrics which can establish early market demands for the system & feedback for TMI product developers.

TASK 1 – Project Management, Planning & Reporting
– Kick Off Presentation to DOE / NETL
– Completed Peer Review

TASK 2 – Site Selection
– Survey, Rank Ordered, Select Demonstration Site
  • Goal:
    – <60 miles from TMI in Ohio Congressional District 14
    – Project is CDP through Rep. LaTourette
    – Willing end-user with agricultural production preference
    – Acceptable Security & Local Cooperation
– Completed Site Selection and Final Review

TASK 3 – System Design and Fabrication
– Design/Build/Test Two (2) 1-kW Complete Systems
  • Based on latest TMI designs
  • Operation on both fossil & bio fuels
  • Baseline testing to determine range of performance
– System Design Completed
– Balance of Plant Fabrication Completed,
– Hot Subassembly Fabrication - Delayed due to fabricator welding issues

TASK 4 – Stack Fabrication
– Cell Component & Stack Fabrication for Pre-Testing & Demo
– Approximately 50% of Stacks Completed

TASK 5 – Demonstration
– Site Prep/Installation/Testing/Decommissioning
  • 30 to 90 day test under End User loads
  • Remote monitoring of performance over time
– System Installed / Test Initiated (Expected Completion 11/11)

System Development Background
• Preliminary Tests on JP-8:
  Peak Gross Efficiency 35.6%LHV
  Peak Net Efficiency 29.6%LHV
  Peak Gross Power 1215 Watts
  Peak Net Power 1019 Watts
• Developed specifically for Lockheed Martin for operation on JP-8 & diesel fuel
• Transported to Lockheed- Akron from TMI while operating on JP-8 without change in performance
• First off-site operation of TMI SOFC System on JP-8
• Originally developed for operation on biodiesel & vegetable oil (USDOE, Ohio Soybean Council)
• Demonstrated 30 days operation on soybean oil at farm in Wakeman, Ohio (2009)
• Tested on JP-8 fuel:
  Peak Gross Efficiency 34.3%LHV
  Peak Net Efficiency 28.1%LHV
  Peak Gross Power 1071 Watts
  Peak Net Power 822 Watts