

Collaborative National Program for the Development of Performance Testing Protocols for Distributed Generation with CHP: Update and Future Steps

February 3, 2009



Basics

- Partnership between DOE and ASERTTI
- Nationally accepted performance testing protocols for micro-turbines, reciprocating engines, small turbines and fuel cells
- National Searchable Database
- New York Databases
- Achieve widespread use of the protocols and databases to support market



Status as of February 2009

- National Searchable Database being populated, now reporting on 26 sites
- NYSERDA DG/CHP Integrated Data System reporting now reporting on 98 sites with 275 power units
- Current monitoring of 15 sites
- Laboratory, field, long-term monitoring, and case study protocols available for all DG systems including fuel cell



Organizational Structure-1

Steering Committee of Sponsors/Representatives

California Energy Commission
CHP Regional Application Centers
Concurrent Technology Corp.
Energy Center of Wisconsin
Montana State University-Billings
National Renewable Energy Laboratory
NETL
NREL
NYSERDA
Sacramento Municipal Utility District
University of Illinois-Chicago/ERC
U.S. Department of Energy



Organizational Structure-2

Stakeholders Advisory Committee

- Manufacturers and distributors
- End users (owners) and operators
- Utilities, researchers including National Labs, public interest groups, and governmental including U.S. EPA
- Subcontractors
 - Laboratory protocol– Gas Technology Institute w/ UL
 - Field protocol– Southern Research Institute
 - Case study protocol– University of Illinois at Chicago – Energy Research Center
 - Long term monitoring protocol- Connected Energy Corporation

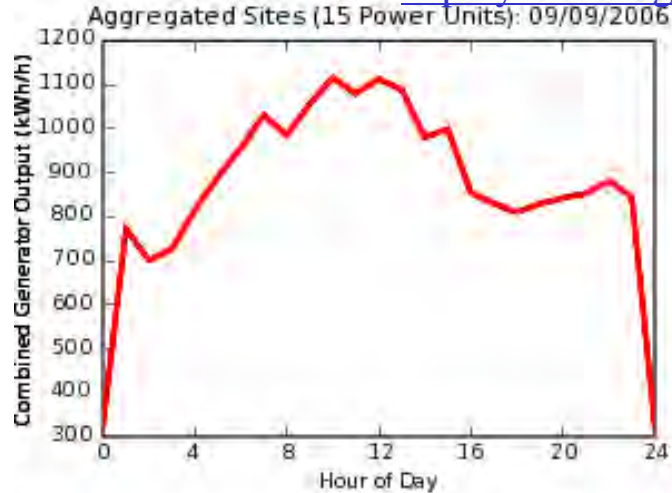


Website Access

- www.dgdata.org (protocols and national database for metadata and attached reports)
- chp.nyserda.org (New York Integrated Data System)
- www.enerview.com/ny/ (New York sites being remotely monitored in real time)



New York Current Sites at chp.nyserda.org



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Phase 2: Issues and Activities

- Base funding established through 2009
- Expand use of protocols and reporting to databases by manufacturers and end users
- ASERTTi members and Regional Application Centers are core drivers
- Include fuel cells in Field and Long Term Monitoring Protocols
- End user confidence and acceptance of final protocols and database are critical to marketplace adoption
- Consideration as an ANSI standard

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Figure 1-1. Patterson Farms in Auburn, New York

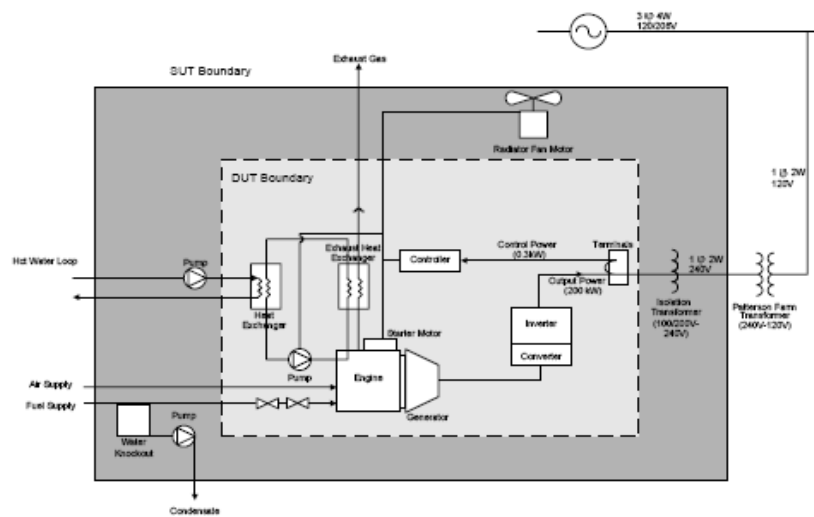


Figure 1-2. Patterson Farms DG/CHP System Boundary Diagram

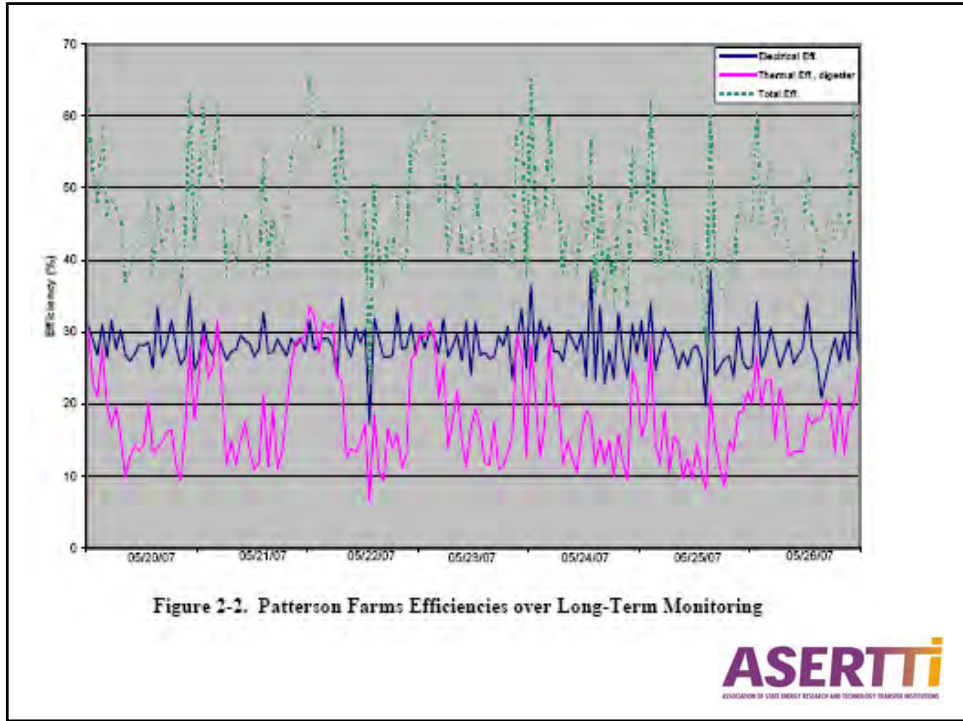


Table 2-8. Estimation of Patterson Farms Emission Reductions

| Regional Power System Scenarios | Annual SUT Emissions ^a , lb/MWh | | Grid Emissions ^b , lb/MWh | | Estimated Annual CO ₂ Emissions Reductions from Capture and use of Biogas, lb/y | Estimated Annual Emissions Reductions, lb/y | |
|---------------------------------|--|-----------------|--------------------------------------|-----------------|--|---|-----------------|
| | NOx | CO ₂ | NOx | CO ₂ | | NOx | CO ₂ |
| New York State | 21.3 | 1430 | 1.46 | 980 | 14,340,000 | -31700 | 13,613,000 |
| Nationwide | | | 2.96 | 1390 | | -29300 | 14,272,000 |

^a Based on the SUT's emissions performance during the full load testing, an expected availability of 95 percent, and the average measured power output during the extended monitoring period.

^b From EGRID

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Phase 3: Issues and Choices

- Should ASERTTI extend the DG/CHP protocols and databases beyond 2009 (2010-2012)?
- If so, what ASERTTI members want to support?
- What role might the RACs (Regional Application Centers), EPA's CHP Partnership Program, U.S. Clean Heat and Power Association play, and others play?
- How do we expand reporting beyond New York State, noting automatic monitoring costs at \$15,000/site including webhosting?
- Should the program be linked to the biodigester effort?



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