Concentrating Solar Power Hybrid System Study

Cooperative Research and Development Final Report

CRADA Number: CRD-13-506

NREL Technical Contact: Craig Turchi

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CRADA Number: CRD-13-506

CRADA Title: Concentrating Solar Power Hybrid System Study

Parties to the Agreement: GE Global Research

Joint Work Statement Funding Table Showing DOE Commitment:

<table>
<thead>
<tr>
<th>Estimated Costs</th>
<th>NREL Shared Resources</th>
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<tbody>
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<tr>
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<tr>
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Abstract of CRADA Work:

The purpose of this Project Task Statement (PTS) is to collaboratively leverage the collective resources at General Electric Global Research (GEGRC) and the National Renewable Energy Laboratory (NREL) in the areas of concentrating solar power hybrid systems to advance state-of-the-art concentrating solar and conventional power generation system integration.

Summary of Research Results:

This project was a collaborative effort between GEGRC and NREL to develop a state-of-the-art model of a representative integrated solar combined cycle (ISCC) power plant. Simulation models were developed by GEGRC and NREL in two different software packages and the results were cross-checked. The chosen integration scheme extracts high-pressure feedwater from a combined cycle plant’s heat recovery steam generator (HRSG) and sends that water to a solar power-tower facility that returns high-pressure, solar-generated steam to the HRSG. The team performed a series of operating scenarios to map the performance space of the selected design under varying ambient weather and solar generation conditions. The resulting model was incorporated in NREL’s System Advisor Model to allow users the ability to estimate annual performance of a representative ISCC system.

Subject Inventions Listing: None.

Report Date: March 18, 2014

Responsible Technical Contact at Alliance/NREL: Craig Turchi

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