



Improved Battery Pack Thermal Management to Reduce Cost and Increase Energy Density

**Cooperative Research and Development
Final Report**

CRADA Number: CRD-12-499

NREL Technical Contact: Kandler Smith

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Cooperative Research and Development Final Report

In accordance with Requirements set forth in Article XI.A(3) of the CRADA document, this document is the final CRADA report, including a list of Subject Inventions, to be forwarded to the Office of Science and Technical Information as part of the commitment to the public to demonstrate results of federally funded research.

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CRADA Title: Improved Battery Pack Thermal Management to Reduce Cost and Increase Energy Density

Parties to the Agreement: Creare Incorporated

Joint Work Statement Funding Table Showing DOE Commitment:

Estimated Costs	NREL Shared Resources
Year 1	\$ 00.00
Year 2	\$ 00.00
Year 3	\$ 00.00
TOTALS	\$ 00.00

Abstract of CRADA Work:

Under this CRADA NREL will support Creare's project for the Department of Energy entitled "Improved Battery Pack Thermal Management to Reduce Cost and Increase Energy Density" which involves the development of an air-flow based cooling product that increases energy density, safety, and reliability of hybrid electric vehicle battery packs.

Summary of Research Results:

NREL and Creare performed analysis to establish battery thermal management system requirements for various electric drive vehicle battery packs utilizing low cost Li-ion pouch cell technology. Creare developed and demonstrated a prototype *CrossFlow* air-cooling technology reducing battery pack volume, mass, and peak temperatures experienced by the battery cells, enabling greater performance and lifetime from the battery.

Subject Inventions Listing: None

Report Date: 9/19/2013 **Responsible Technical Contact at Alliance/NREL:** Kandler Smith

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