**SustainX, Inc.**

**Isothermal Compressed Air Energy Storage**

**Project Description**

SustainX is developing and demonstrating a modular, market-ready energy storage system that uses compressed air as the storage medium. SustainX uses a crankshaft-based drivetrain to convert electrical energy into potential energy stored as compressed air. SustainX’s ICAES system captures the heat from compression in water and stores the captured heat until it is needed again for expansion. Storing the captured heat eliminates the need for a gas combustion turbine and improves efficiency. SustainX achieves isothermal cycling by combining patented innovations with a design based on mature industrial components and principles. The system is designed for a 20-year lifetime. It achieves full power output from start-up in less than one minute, and it does not use toxic chemicals.

**Goals/Objectives**

- Demonstrate the viability of isothermal compressed air technology to provide cost-effective energy storage
- Validate scalability for applications in both low- and medium-voltage distribution or sub-transmission grids

**Key Milestones**

- Pilot 40 kW prototype design and testing Completed (March 2011)
- Crankshaft installation (January 2013)
- Start-up testing (2nd Half of 2013)
- MW-scale pilot test completion (December 2013)
- Submit final technical report (March 2015)

**Benefits**

- Substitutes for transmission and distribution upgrades
- Supports the delivery of variable renewables
- Maintains the stability of the grid
- Reduces the need for gas-fired peaker units
- Increases grid efficiency through new grid managements strategies
- Reduces greenhouse gas emissions
- Reduces electricity costs
- Uses no toxic chemicals

**CONTACTS**

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**PARTNERS**

MAN Diesel and Turbo SE  
Creare  
The Hope Group  
MTechnology

**PROJECT DURATION**


**BUDGET**

Total Project Value  
$13,046,588

DOE/Non-DOE Share  
$5,396,023/$7,650,565

**EQUIPMENT**

Omegadyne PX319 Pressure Sensors  
Nanmac Thermocouples  
Tenma 72-6628 DC Power Supply  
Dynaload DLVP 50-300-3000A

**DEMONSTRATION STATES**

New Hampshire

CID: OE0000231

Managed by the National Energy Technology Laboratory for the Office of Electricity Delivery and Energy Reliability