



Heat Sync, Inc.

Technology Presentation

FY24 RFI101623



RFI Net-Zero Carbon Buildings, Fiscal Year 2024



U.S. DEPARTMENT OF
ENERGY

Heat Sync Phase Change Material (PCM) blankets

Heat Sync, Inc. Team:

Gary Gray, Co-Owner

Gary Bender, Co-Owner

Dr. David W. Yarbrough, Technical Advisor

Henry Stueber, Program Manager

**‘Leaders in Phase
Change Technologies!’**

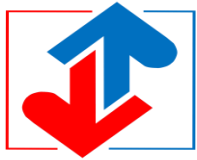




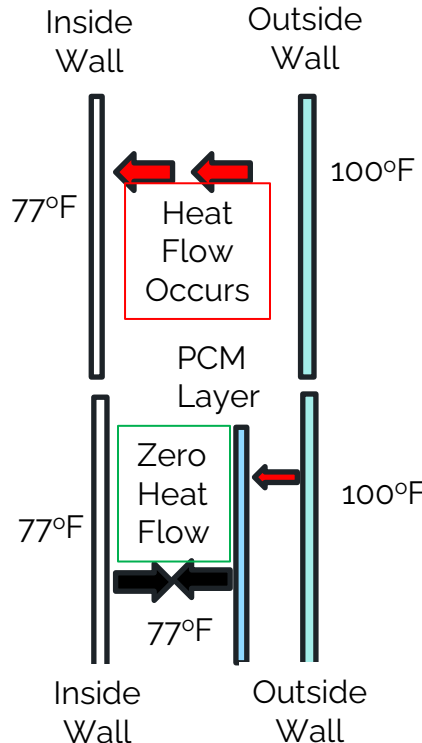
Presentation Outline

- Technology Overview
- Innovation
- Maturity
- Operations & Maintenance
- Performance
- Ideal Test-Bed Scenario
- Value of Testing





HEAT SYNC



Technology Overview

- The Heat Sync product is made of a simple aqueous salt and clay solution, that absorbs thermal energy thereby maintaining a steady temperature within the facility or process piping. In addition, our product has an Infra-Red (IR) Reflective, outer wrapping (patented) to deflect IR wave lengths.
- PCMs are used in the building envelope to reduce the utility load for heating and cooling by absorbing and desorbing heat from the space.
- Vision for deployment with GSA / DOE:
 - Ready for installation into GSA portfolio facilities.
 - Work with DOE & Energy companies to be their energy efficiency upgrade partner.
 - Insulation product for field units: ships, hospitals, tanks...

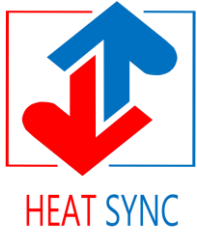


Innovation



Corporate Retreat
Super Coffee Co.
Austin, TX

- Heat Sync PCM blankets:
 - Internal facility Peak load temp. reduced 40°F-50°F.
 - Reduces energy consumption between 20%-40%.
 - Potential to eliminate need for A/C.
 - Easily installed, no special skills or tools.
 - Non combustible – ASTM E-84, class 1 certified.
 - Packaging Industry product of the year 2022.
 - 100% sourced and manufactured in the USA.
 - Multiple patents.
 - Current market competitors = standard insulation:
 - Fiberglass – spun silica, high energy need to produce.
 - Cellulose – flammable, moisture issues.
 - Foam – Expense, oil based, off-gassing.
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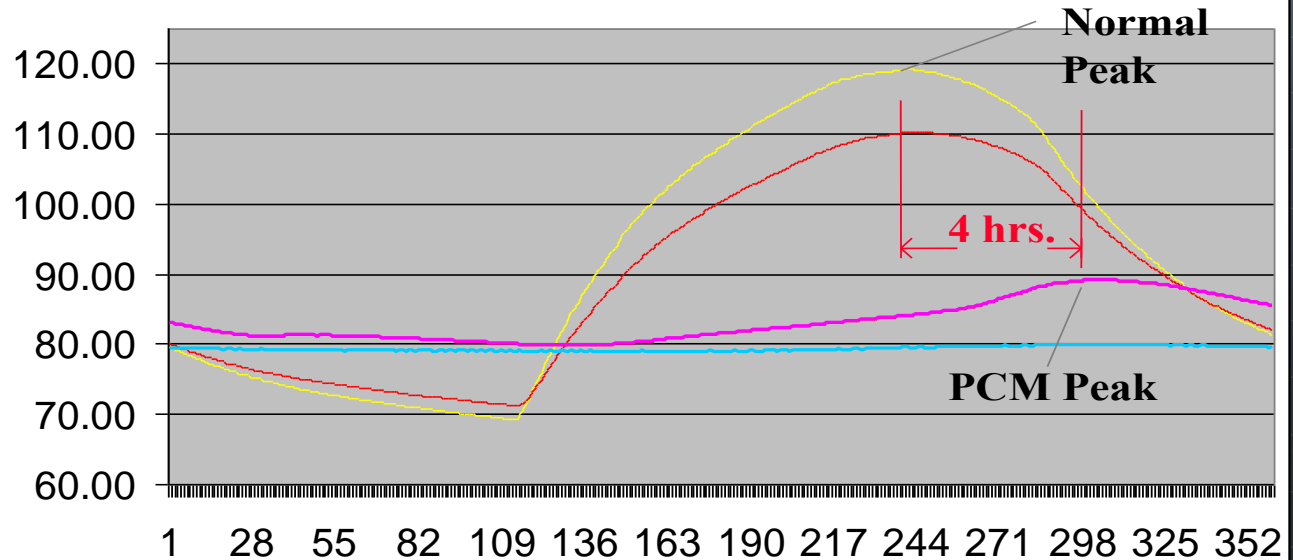


Benefit for Energy producers:

By reducing and shifting the peak load demand by 4-5 hours, Heat Sync helps avoid Black or Brown Outs. In addition, Heat Sync may reduce and/or delay the cost of adding additional capacity.

Laboratory Test Data

Grid Peak Power Load is Shifted





Tampa University
Biology Labs

Maturity

- Heat Sync is a new (2020) commercially available product that is under represented in the market place.
 - Our product is ASTM certified:
 - ASTM E-84, ASTM C-1784
 - There are no potential risks in an operational environment.
 - Market penetration is limited to localized applications:
 - US Marine Corps warehouse 29 Palms, CA
 - Sunpro Solar & ADT Solar - 30 residential homes in LA & TX
 - Super Coffee, Corporate “Barndominium”, Austin, TX
 - Tampa University, 2 Biology Laboratories
 - Current project – multiple homes & businesses for major utility, phase 1 roll out. Southern Company /Georgia Power Pilot
 - Specified by Leeds Platinum Architect group for Downtown Billings Montana retrofitting project
 - US entry for Solar Decathlon: 1st place 2018; currently in 2024 entry.
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Operations & Maintenance

- Installs into new or retrofit applications
 - Easily installed in walls, attics, ceilings.
 - Contractor training is available.
 - No special PPE required; No special tools required for install.
 - Do not need to vacate home/building during install.
 - No maintenance requirements, just install and experience the results.
 - 20 year warranty.
 - Not food or animal nesting material.
 - PCM blankets can be moved and reused.
 - Safe to handle, no toxic chemicals.
 - Cost effective + Improves existing insulation performance
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Performance



- Installed cost = \$4 sqft. (Typical)
 - Material Cost = \$3 sqft
 - Installation cost = \$1 sqft.
 - Lab test results = 40% - 60% HVAC energy reduction.
 - 30 residential installation in LA & TX = 20%-30% total KwHr reduction.
 - ROI > 100%
 - Key driver for savings is correct melt point selected and the amount of Heat Sync installed. Regional Melt points are provided
 - Broader impact with GSA support:
 - Faster adoption rate and validation of energy savings potential.
 - Use in applications that require thermal management.
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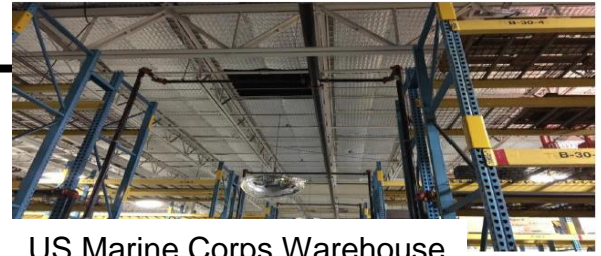


Test-Bed Scenario



Commercial Bldg
Reroofing with PCM

- Best environment for Installations:
 - Commercial facilities.
 - Military: warehouses, field hospitals, service centers.
 - Use in applications that require thermal management:
 - Barracks, Food storage; Medical stockpile warehouse
- Heat Sync is manufactured to standard widths and desired lengths.
- Recommend installation sites have KwHr usage measurement system, for baseline metrics and future data collection / monitoring.
- Ready to support GSA portfolio facilities projects.
- We have and are working with energy companies to collect data as well as penetrate the larger market. Georgia Power Pilot.
- New area for testing would be to use Heat Sync for HVAC duct work (new patent issued).



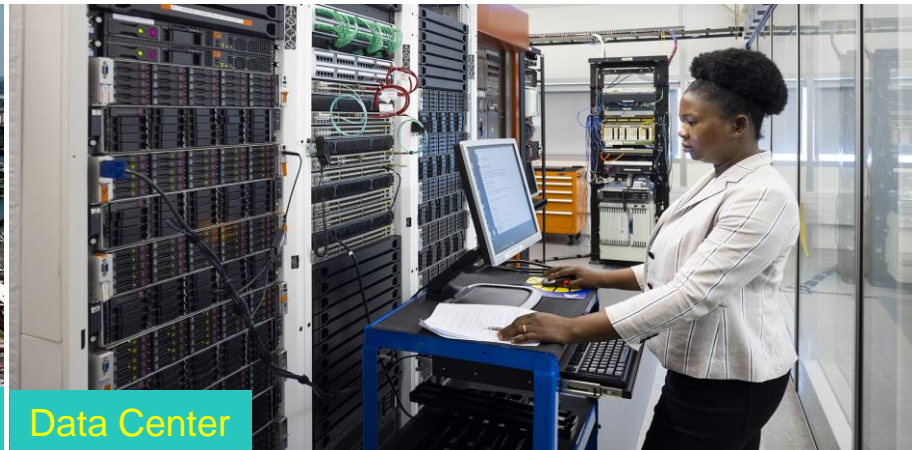
US Marine Corps Warehouse
29 Palms, CA



Additional Application Ideas:



Pentagon



Data Center



Strategic National Medical Stockpile



Military Garage / Vehicles



Value of Testing

- We at Heat Sync, Inc., believe that utilizing the GPG-testbed evaluation, will assist us in expanding our reach to the broader customer base looking for energy efficiency products.
- In addition, with GSA / DOE - GPG validation, more governmental entities would install Heat Sync and achieve their energy savings targets.
- As a Veteran owned, small business, we will prove that Heat Sync significantly reduces energy consumption while providing a stable, comfortable, living and work space, and offers the potential reduce or eliminate the need for conditioned air.

