



---

# Heat Sync, Inc.

## Technology Presentation

### FY24 RFII01623



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!’**

---





---

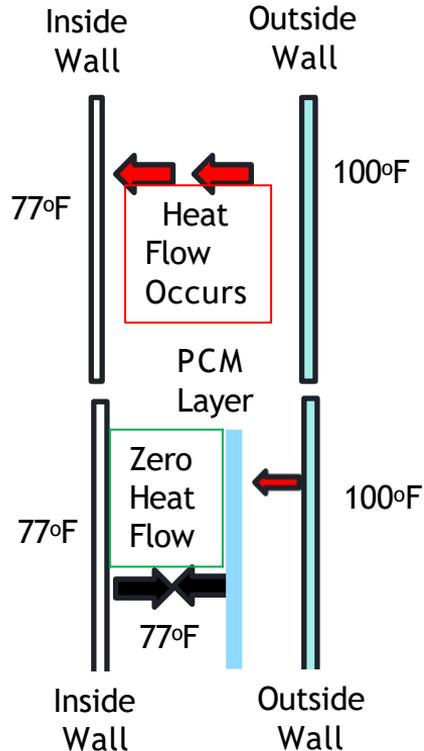
# Presentation Outline

- 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



Manufacturing  
Plant Example

- 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.
-

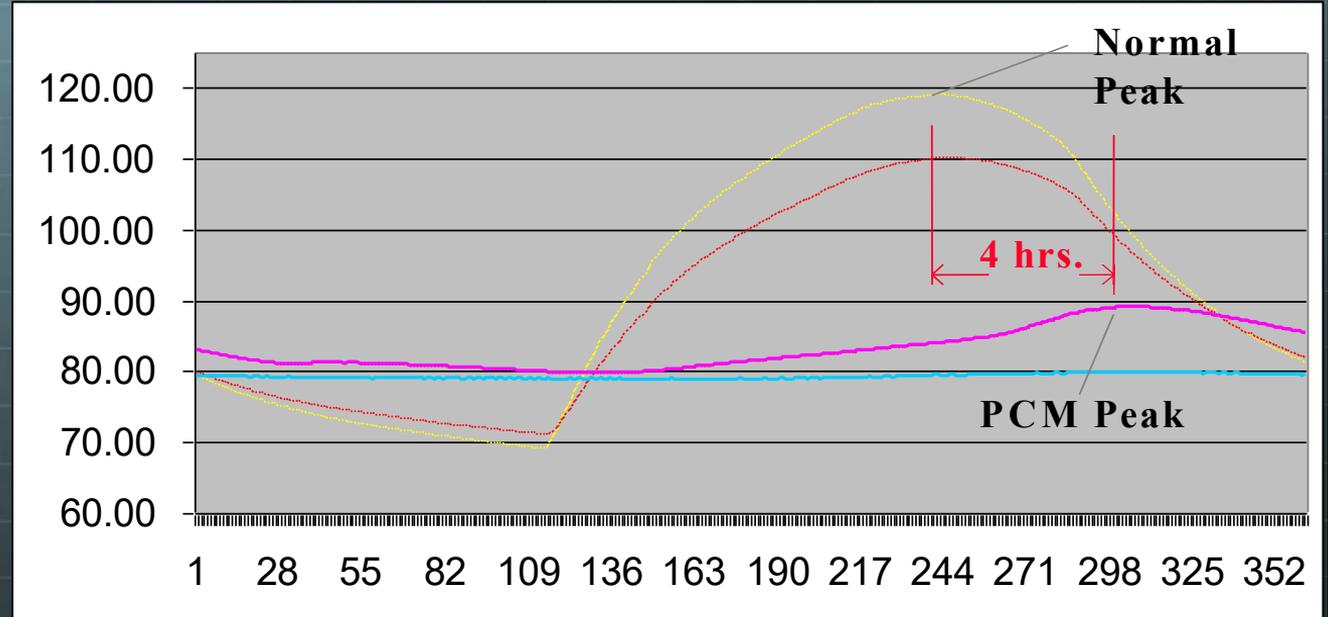


# Laboratory Test Data

## Grid Peak Power Load is Shifted

### 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.





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
    - 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: 1<sup>st</sup> place 2018; currently in 2024 entry.
-



---

# 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
-



---

# Performance



PCM in tandem  
with Solar  
Hydronics

- 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.
-

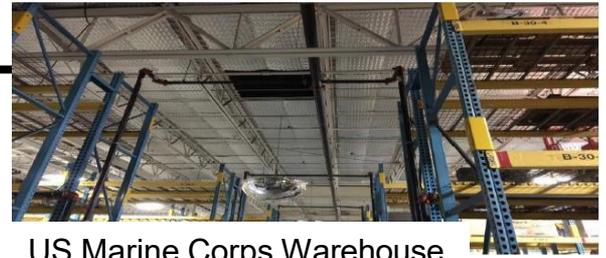


---

# Test-Bed Scenario



Commercial Bldg  
Reroofing with PCM



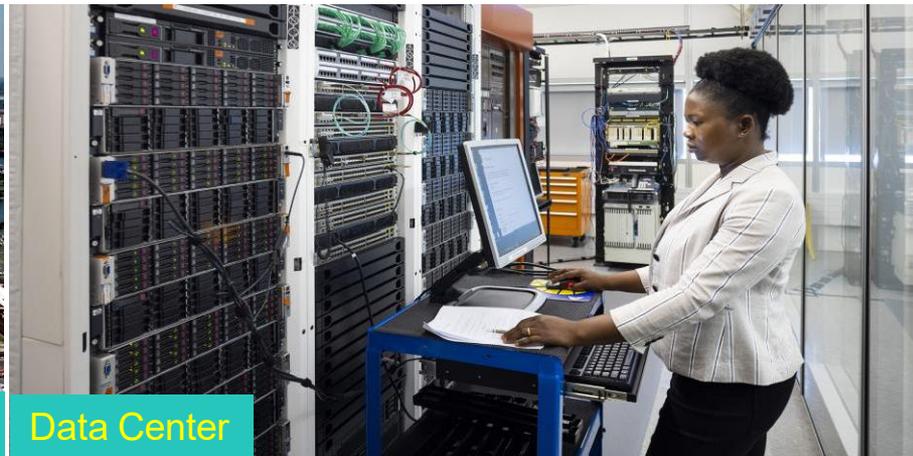
US Marine Corps Warehouse  
29 Palms, CA

- 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).
-

# 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.

