

Reducing Energy Costs in Homes and Commercial Buildings

Presented by:
King Electronic Packaging
and
Phase Change Energy Solutions

A simple method to reduce HVAC energy costs



Phase Change Materials

- ★ PCM's are thermal storage devices that work by storing excess heat during peak times and releasing this heat during off peak times.
- ★ Installing phase change in your new and refurbished buildings will immediately reduce overall energy consumption
- ★ Benefits:
 - Reduces both heating and cooling peak loads during the day
 - Decreases run time and energy consumption by the air conditioning unit

While temperatures fluctuate throughout the day, PCM keep inside temperatures consistent and comfortable.

How PCM are Used

Food Delivery including Meals on Wheels

Cold Chain Packaging for Pharmaceuticals

Temperature Sensitive Process Control Markers and Indicators

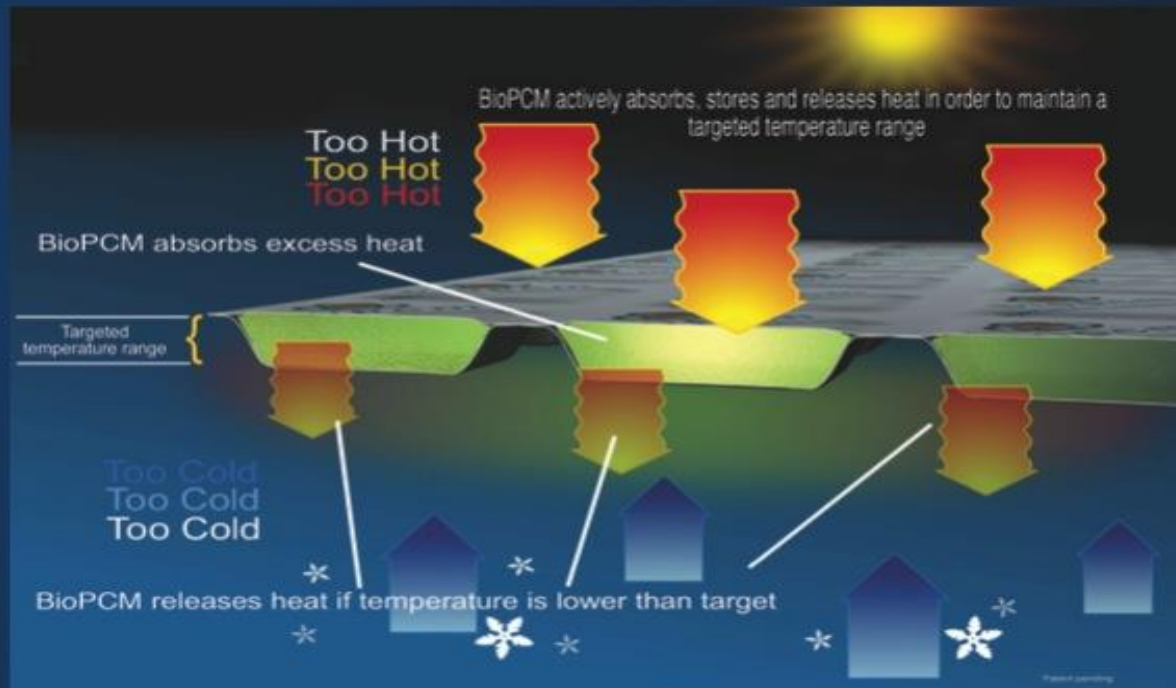
Storage Batteries for Coolers, Dishwashers, Freezers and Shippers

Extends the Usefulness of Free Solar Generated Heat and Hot Water

Adding Thermal Mass to Buildings

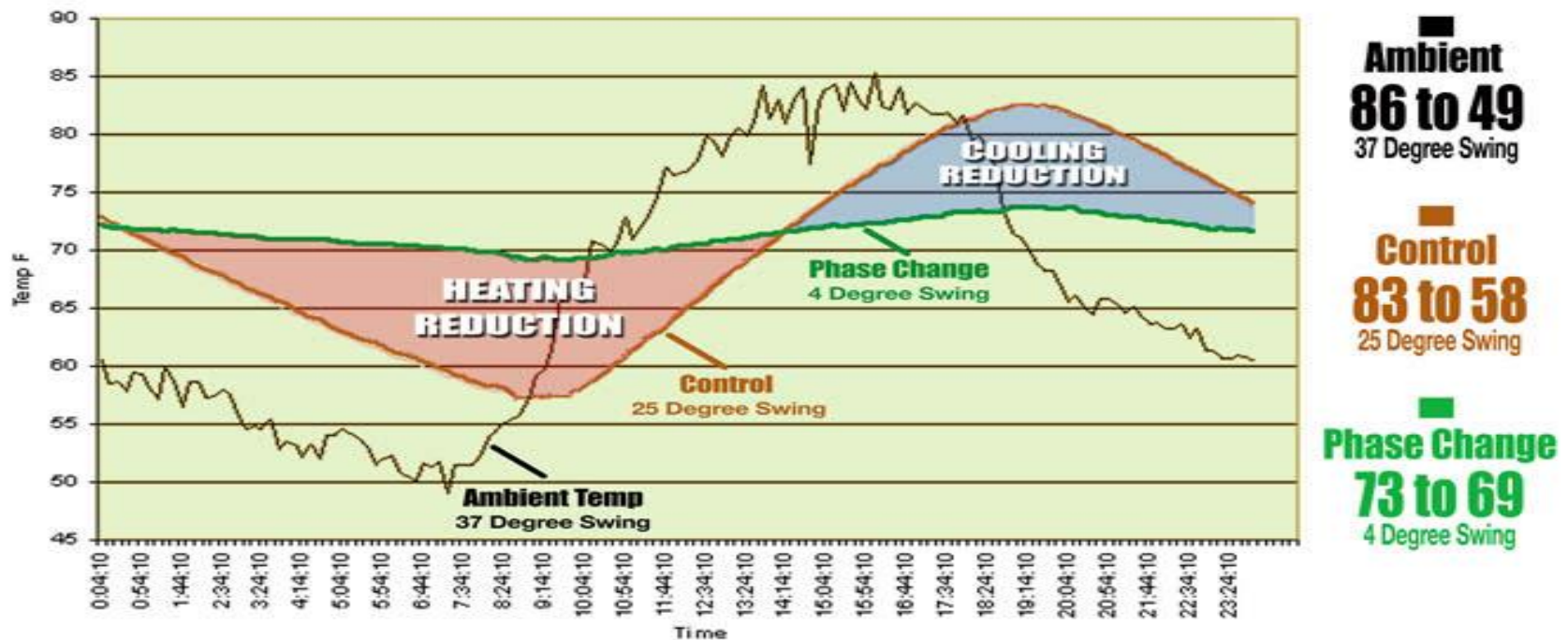
Senses and Stabilizes Temp

How BioPCM Works



Reduces Inside Temp Swings

24 Hour Temperature Monitoring of Test Structures

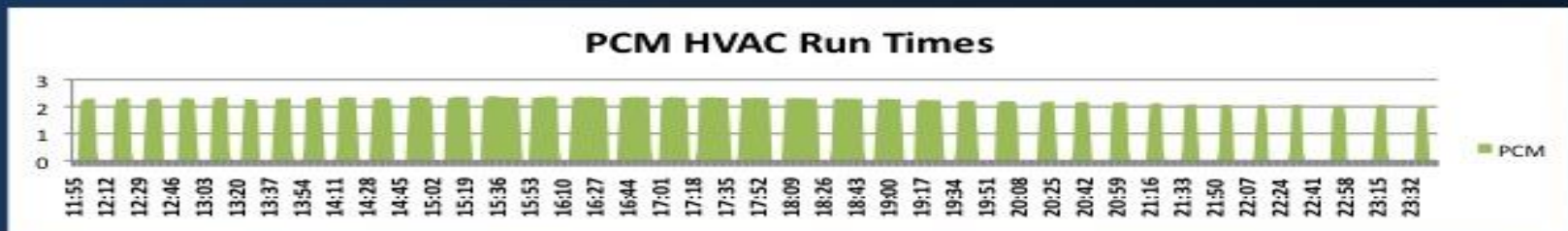
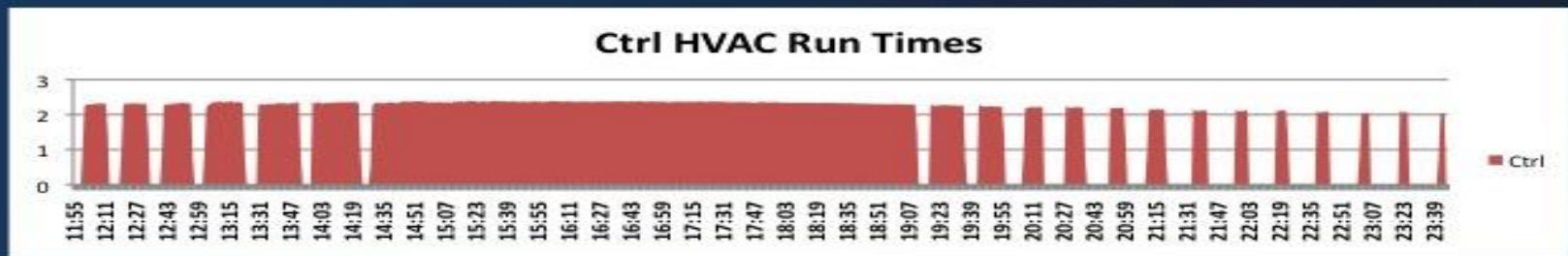


Reduces Run Time for HVAC

Test HVAC Run Times

STAR Test Facility – Arizona

Two Identical Buildings Except One Has bioPCmat™ added



test building (green) vs. control (red)

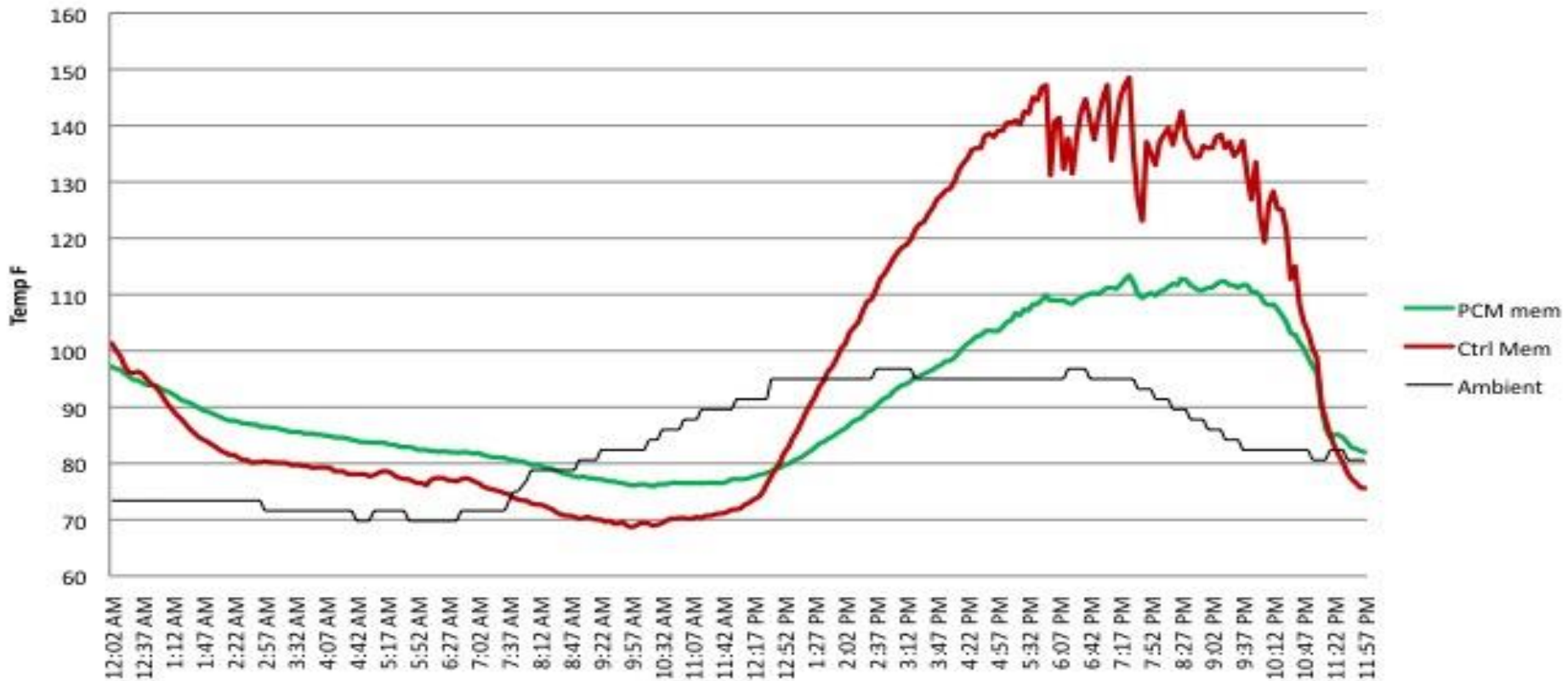
Reduces Roof Heat Penetration

Membrane Temperatures

BioPCM™ vs Control Atlas - PCES roof

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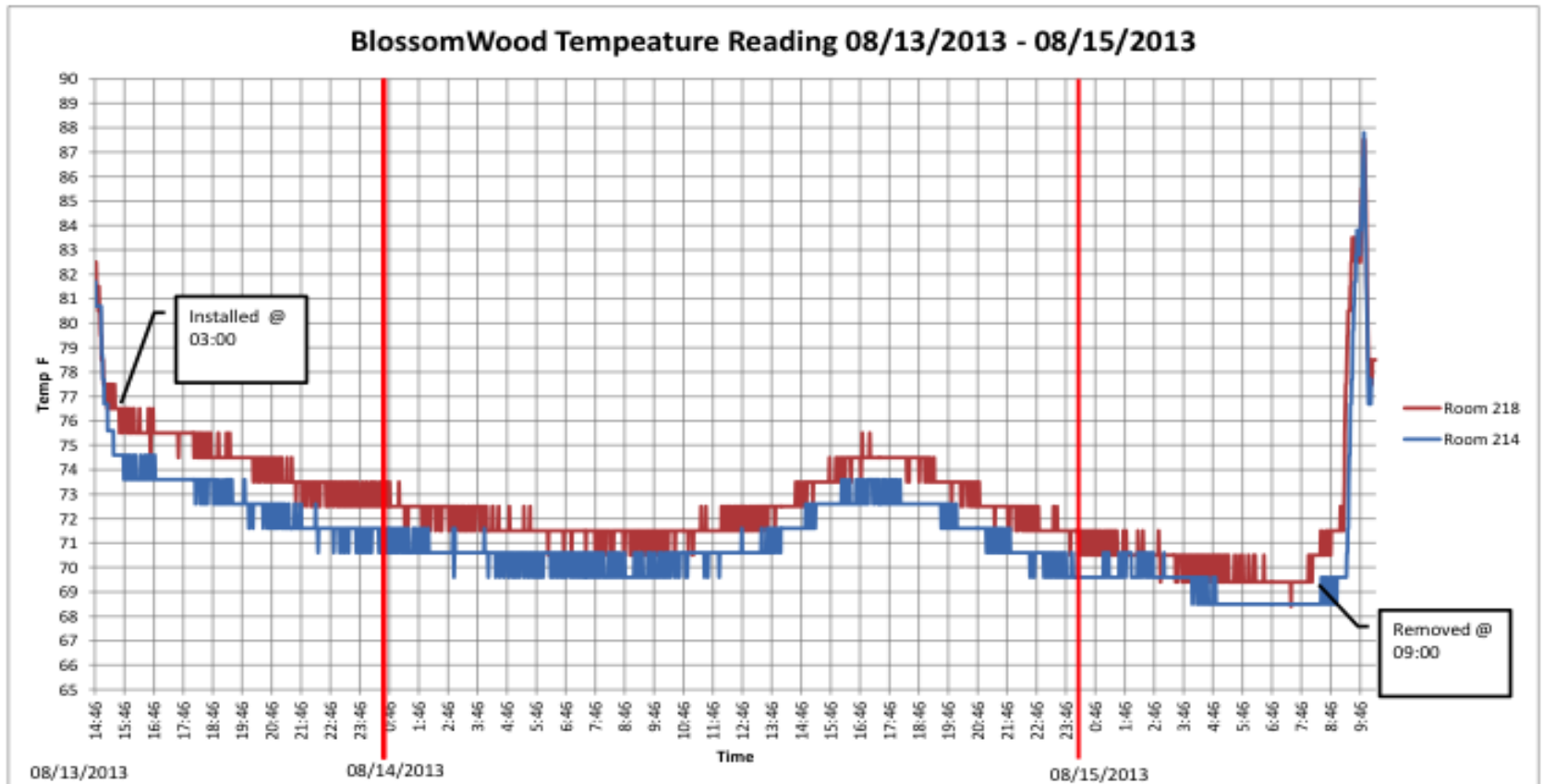
*PCM section has M91 BioPCM™



Spaces Monitored and Controlled



Guidance and Calibration Data



3rd Grade Classroom Passive 3.5-Ton Thermal Storage



Contact Information

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Feel free to contact me anytime with questions or concerns