



BioPhaseChangeMaterial™

Smart. Simple. Energy Savings.

Business Benefits

- Reduce Operating Expenses
- Improves Building and Systems Efficiency
- Reduce HVAC Load Substantially
- Extend HVAC System Lifecycles
- Reduce Demand Charges
- Increase Facility Value
- Lower Carbon Footprint

How it Works

BioPCM™'s patent pending material absorbs and releases heat at pre-set temperatures. It is engineered around a fundamental property of nature, the natural tendency of materials to absorb heat when they melt (phase change from solid to liquid) and to release heat when they solidify (phase change from liquid to solid.) All materials exhibit this behavior; however, there are some that release or absorb unusually large amounts of heat in the process which are known as phase change materials. BioPCM™, manufactured by Phase Change Energy Solutions, uses natural, "green" fats and oils that go through this phase change at or near room temperature.

When these phase change materials are placed in quantity, into the structure of a building, they act like an air conditioner and heater, absorbing heat during the day and releasing heat at night. In this way, bioPCM™ intelligently captures and releases energy that would otherwise be wasted. For buildings, the result is more energy efficiency with less BTUs or KWHs being used.



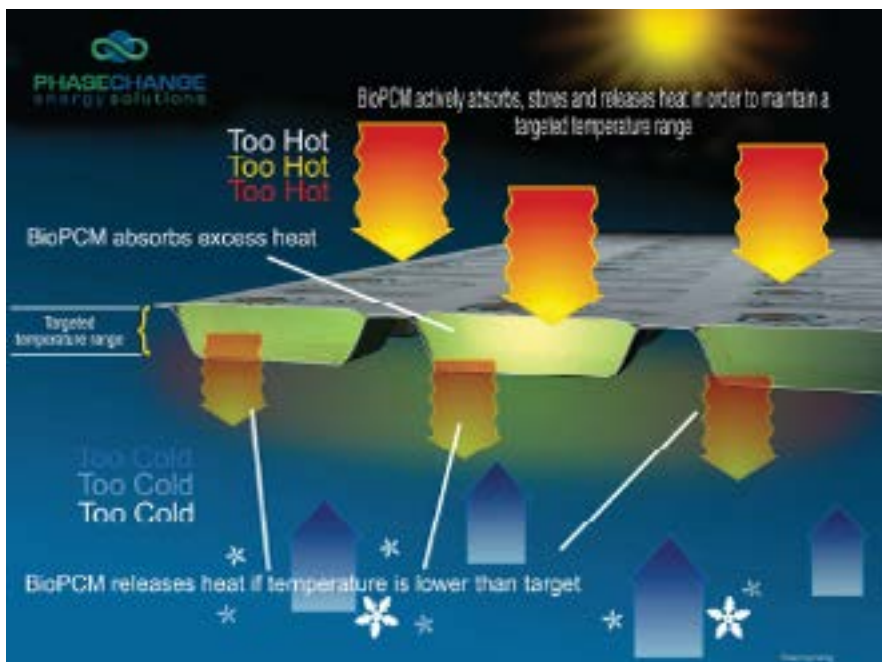
UNIVERSITY OF WASHINGTON MOLECULAR ENGINEERING BUILDING

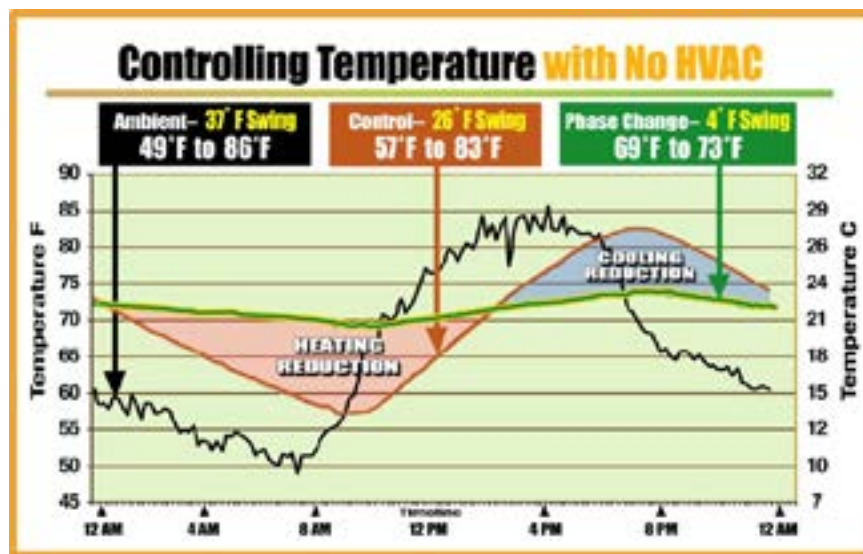
This structure uses bioPCM's ability to minimize energy usage thereby reducing long-term energy costs

Innovative Thermal Storage Technology

A Smart Step Toward Making Your Building More Energy Efficient

BioPCM™ is a very "Smart" product that actively works to conserve energy and improve the efficiency of your commercial building by maintaining comfortable room temperatures all day long. Unlike traditional insulation that acts like a barrier, BioPCM™ uses the power of phase change materials to actively absorb and release heat. These "phase changes" help maintain constant, comfortable building temperatures. By installing BioPCM™ products, businesses can reduce the energy consumption and CO2 emissions of their buildings while shifting peak electricity demand and reducing the cost of energy.



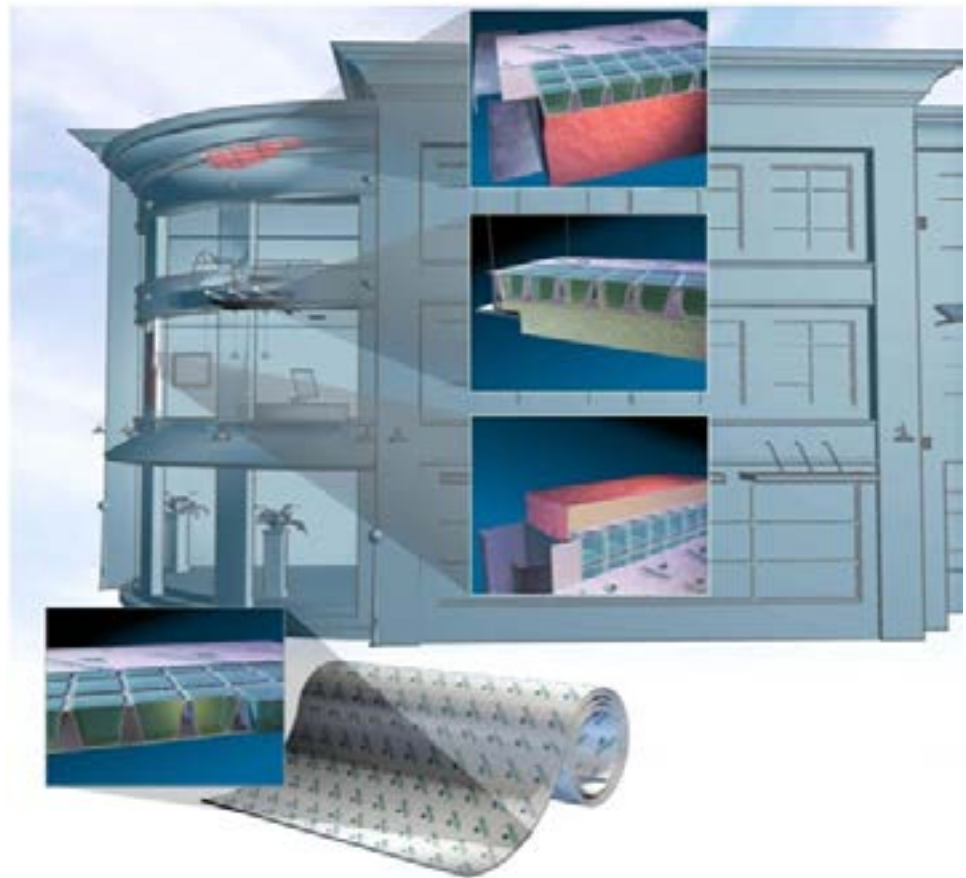
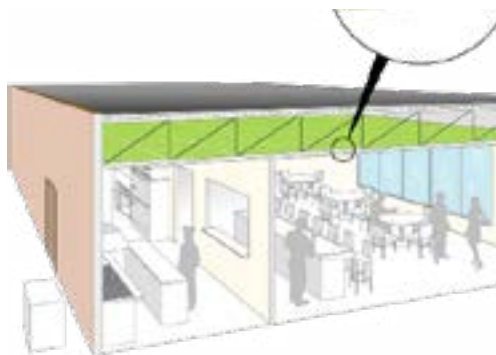


Innovative Design, Simple Installation:

BioPCM™ is encapsulated in flame retardant, super-engineered polyfilm that can be used for multiple building applications:

- BioPCmat™ can be easily installed in existing building by laying the material over conventional the top of drop-in ceiling tiles.
- BioPCmat™ is easily cut to fit around electrical outlets, door frames and framing studs and can be placed within interior walls directly behind standard wallboard.

The material is simply attached to wooden wall studs with a staple gun. With this innovative design, BioPCmat™ is easily installed in normal new construction, in retrofit applications and in temporary structures.



About ESP

ESP designs, develops and delivers advanced distributed energy solutions that integrate clean energy generation with battery storage to deliver affordable, safe and reliable distributed energy resources. Incorporating large scale battery storage smooths the integration of renewables into the grid to deliver "firm" power that can lower overall power costs, reduce greenhouse gas emissions and improve operational resilience. ESP's highly structured approach to solution design, development and deployment minimizes risk, reduces costs and shortens delivery windows.

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