

SMART BUILDING MATERIALS FOR COMFORT AND ENERGY EFFICIENCY



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- Buildings account for 45% of primary energy used in the US
 - 63% due to domestic buildings
 - 28% due to commercial & public buildings
 - 9% due to industrial buildings

- Watershed in US attitudes to climate change

- The argument is no longer about the rationale for cutting CO₂ emissions but about how this should be achieved

- Projected energy cost trends set to increase

Overheating in buildings

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- Traditional construction
 - Heavyweight structures/high thermal mass
 - Effective fabric energy storage (FES) subject thermal linking

- Framed construction
 - Lightweight structures/low thermal mass
 - Risk of overheating due to solar radiation and internal heat gains which cannot be absorbed by the structure
 - Comfort cooling often specified to make internal temperatures acceptable
 - Knock-on effect that both building running costs and CO₂ emissions will increase

- Alternative
 - Use phase change material as a substitute for thermal mass

Phase Change Materials

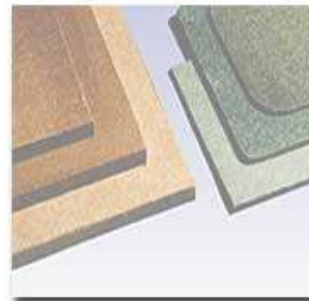
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■ Definition

- A Phase Change Material (PCM) is a substance with a high heat of fusion which, when melting and solidifying at certain temperatures (termed phase change) is capable of storing or releasing large amounts of energy

■ The problem: the practical application of PCMs to buildings

■ Different types of PCMs

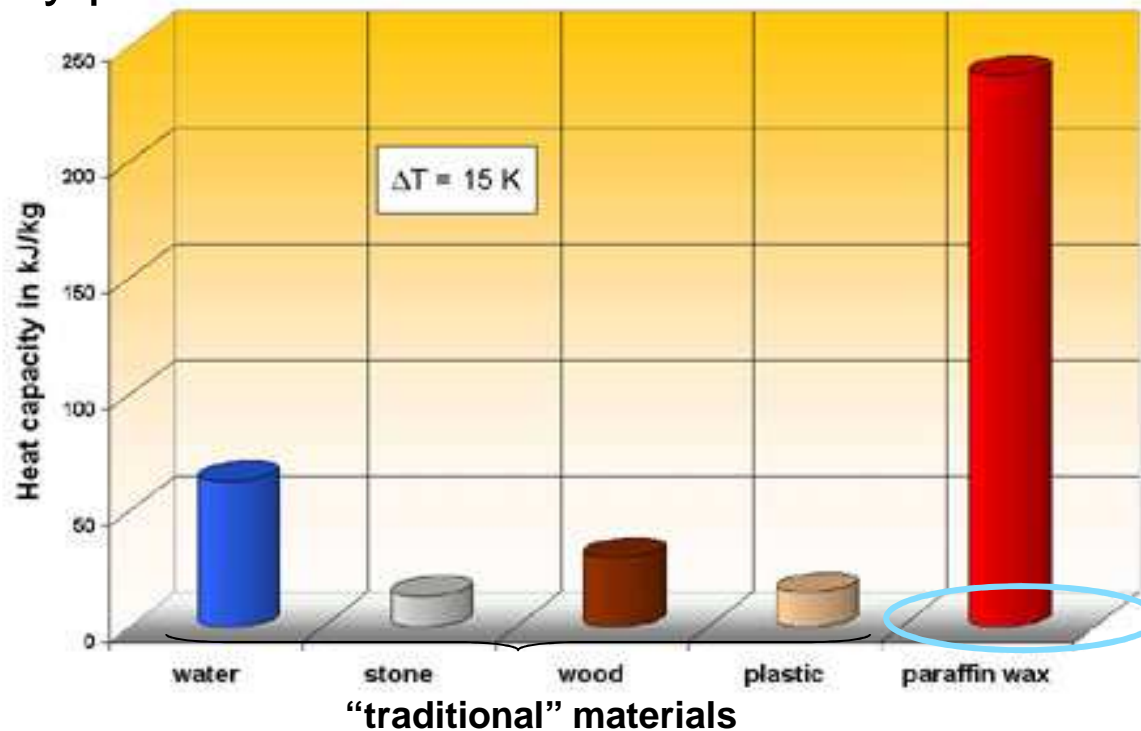


Source: Rubitherm

Phase Change Materials

■ Heat storage capacity

- The advantage of PCMs is they can store heat energy in a **latent** as well as **sensible** manner leading to a greater heat storage capacity per unit volume than that of conventional materials.



Source: Rubitherm

Power Tile smart ceiling and floor panels that capture and release latent heat

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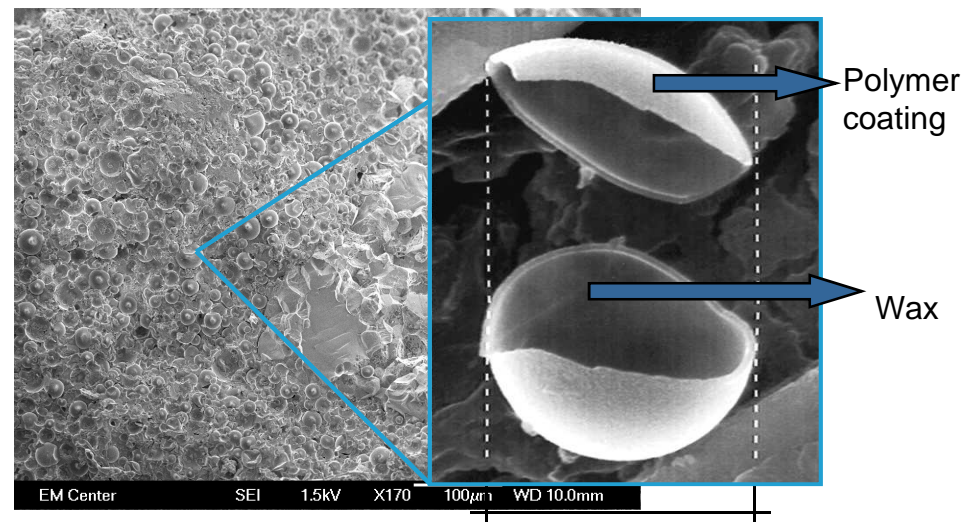
- Modulates interior room temperature over the day to improve comfort
- Saves energy in buildings
- Reduces or eliminates HVAC equipment
- Reduces CO₂ emissions
- Upto 19 LEED credits
- Achieves Demand Response without disrupting utility customers

AirStream™ PCM Tiles and Panels

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ADVANTAGES

- Integrated Design saves Installation Cost
- Design allows superior Thermal Energy Capture and Release
- High PCM content ratio for large thermal storage capacity and mechanical strength
- Low Production Cost
- Validation pending through Dr. Hittle's Army Research Work



Reduced energy use means reduced CO₂ emissions...

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- Tests by US Army indicate that:
 - On average 35% on the energy used for air conditioning
 - Up to 15% on the energy used for heating
-is saved when PCM materials such as Power Tile is used
- And saving energy → reduces building running costs and CO₂ emissions



AirStream™ Product Roadmap

PCM Ceiling Tiles and Floor Panels

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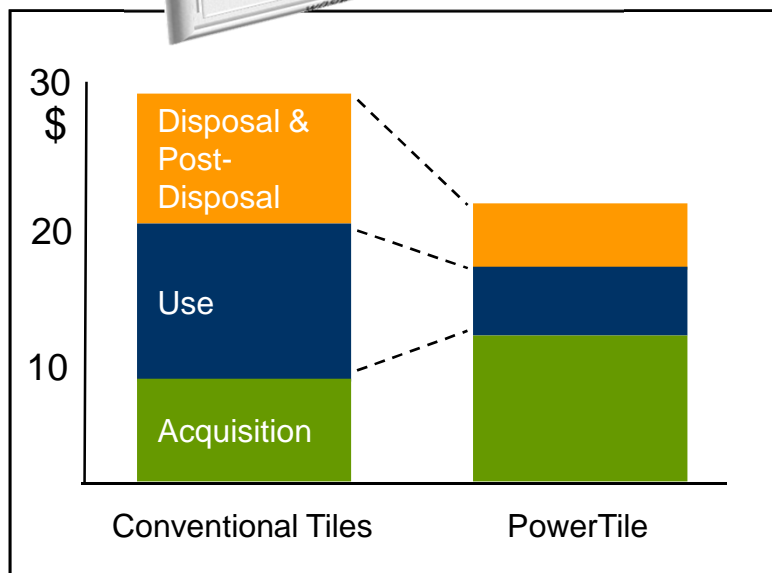
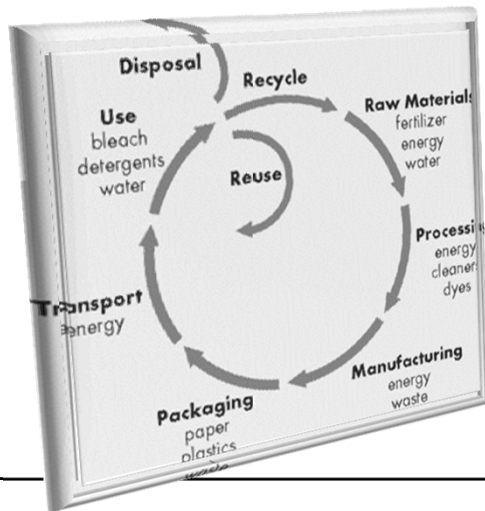
High Cost and Low Performance of existing Phase Change Material (PCM) Solutions

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- Existing products are low capacity PCM carriers with weak structural support
- Separate installation increases Installation Cost
- PCM has poor thermal interface to ambient air

Life Cycle - Sustainability

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- Material is 60% recycled content (40% post-consumer, 20% pre-consumer) which diverts soda and water bottle waste from landfills. Uses 80% less material than conventional tiles
- High reflectance finish reduces lighting costs and conserves energy
- Sustainable tiles are fully returnable at the end-of-use for rebirth as new ceiling tiles
- Free return program offers a true, closed-loop lifecycle
- Reduces or eliminates HVAC equipment
- Reduces electricity consumption and CO₂ emissions from electric plant
- Easy to Use Demand Response

Management Team

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- **Bao Tran – Founder & Interim CEO**

- ▣ 15 years of legal and executive management experience. Early employee of IPO company (NASDAQ :ALGN). Patent Attorney. J.D., University of Houston Law Center, M.B.A., Columbia University

- **Douglas C. Hittle, Ph.D. – CTO**

- ▣ Director, Industrial Assessment Center (IAC), Colorado State University (CSU), Associate Director, Wind Application Center, State of Colorado, and Director, Solar Energy Applications Laboratory. Professor, Mechanical Engineering, CSU. B.S., M.S., and Ph.D., Mechanical Engineering, all from University of Illinois, Urbana-Champaign

- **Richard W. Vicenti –CFO**

- ▣ Nearly 30 years experience in Silicon Valley senior management positions. Experience including venture capital, company founder, IPO, and raw startups. Broad industry background (technology, medical device, life science, consumer). Managed IPO of Inmac. M.B.A., Stanford

- **Steve Gillhouse –VP Sales**

- ▣ Vice President, Sales, USG Building Systems, Chicago, Illinois. Increased sales 10%, retail margins 60% and operating profit 25%. Increased USG product specifications and major project closure rate by 25%. Developed and implemented strategy to acquire key competitive distributors resulting in a 15 point improvement in market share in key strategic markets. Successfully implemented and held price increases to improve profit margins. M.B.A., Northwestern University.

- **Bob Stevens –VP Corporate Development**

- ▣ Strategy and M&A Consultant in a variety of architectural and building segments. Developed strategies and worked on acquisitions in ceramic tile, roofing materials, insulation, wood flooring, laminates, specialty surfaces, exterior cladding. Extensive economic and strategy advisory work with office furniture manufacturer. M.B.A., Columbia University

- **Planned Hires: COO, Q/A materials engineers**