

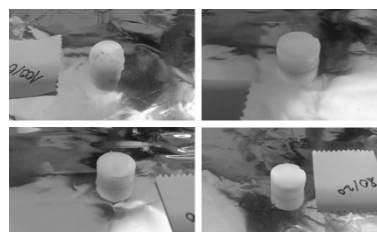
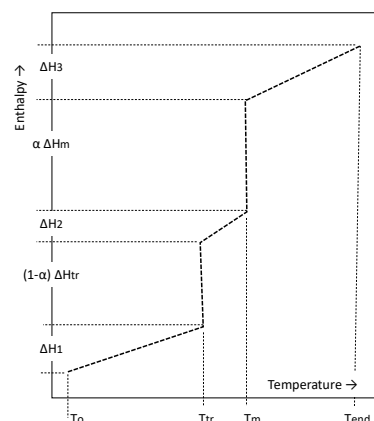
COMPOSITE PHASE-CHANGE MATERIALS WITH ACTIVE SUPPORTING MEDIA FOR THERMAL ENERGY STORAGE APPLICATIONS

PATENT N°: EP 3 760 689 A1

INVENTORS: Elena Palomo del Barrio (CIC energiGUNE), Jean-Luc Dauvergne (CIC energiGUNE), Ángel Serrano Casero (CIC energiGUNE), Stefania Doppiu (CIC energiGUNE)

To date, thermal energy storage (TES) systems have traditionally opted for solid-liquid PCMs because of their high latent heat. However, these materials require encapsulation which leads to a loss of energy storage density, reduced versatility and higher cost.

The authors of the present invention have found that the above-mentioned limitations of solid-liquid PCM leakage and energy density can be surprisingly solved by selecting a non-polymeric solid-solid PCM as the enclosing/supporting material. In addition to the enhanced heat capacity, the transition temperature of the composite PCM of the invention can be easily customized over a wide range of temperatures while can be prepared by very simple and cost-effective procedures. Beside the above advantages, the present invention allows the provision of TES within a poorly covered range of temperatures by current PCMs which make them especially attractive for TES applications at medium temperatures in industrial heat processes, where there is currently only a few PCM alternatives.



ADDED VALUE

- ✓ High volumetric storage capacity
- ✓ Versatility: tailored working temperature range 30-200°C
- ✓ Easy handling and integration into the system due to shape-stability at all working temperatures
- ✓ Easy shaping and sizing offering broad range of derived commercial products related to energy storage, thermal protection and thermal management
- ✓ Cost-effective energy storage systems (competitive manufacture cost with no need of heat exchanger)

APPLICATION OF THE TECHNOLOGY

- ✓ Solar heating and cooling in the domestic sector.
- ✓ Solar industrial heat processes.
- ✓ Decarbonization of domestic heating sector through electrification.
- ✓ Decarbonization of domestic heating sector through electrification.
- ✓ Advanced heat pumps with integrated heat storage capacity.
- ✓ Advanced steam accumulator with enhanced heat storage capacity.
- ✓ Ultra-compact radiators-accumulators
- ✓ Ultra-compact heat accumulators for DHW
- ✓ Heat storage integrated in building elements
- ✓ Battery and microelectronic cooling applications

LICENSING CONTACT

Business Development Manager

businessdev@cicenergigune.com

T: +34 945 297108