

PHASE-CHANGE-MATERIALS(PCM)

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Abridged Version

Better storing of heat, better living comfort and less use of energy in winter and summer

Better heating insulation is a state-of-art technology in many countries especially in Europe. Efficient insulation materials and facade systems protect very effectively against high loss of heat in Winter and too much heat in summer. The radiation of the sun through the windows leads to more heat in rooms. Good insulation prevents the cooling process. The problem of heat protection in summer is still underestimated by many people nowadays.

The material of the walls have a big influence on the temperature in the rooms As an example let me mention a hut made of corrugated iron compared to the cathedral in Cologne. You can`bear the temperature inside such a hut in summer, whereas the temperature in the cathedral in Cologne remains cool even in midsummer because of its thick walls. A good method of improving the heat protection in summer is the use of the new PCM technology in special construction materials.

Latent heat storage device or Phase change Material (PCM)

A latent heat storage device is a heat storage device, where a storage medium absorbs and gives off heat at a constant temperature while changing its state (liquid – solid). The stored heat is given off when the storage medium gets solid. The giving off process of the heat is at the original temperature.

Gaining more living comfort when developing a latent heat storage device by means of passive cooling of a building is of utmost importance. The maxit Germany Ltd. has developed the PCM plaster „maxit-clima 26“, which can be used like a conventional plaster. For dry mortarless construction there is a plaster board which can be bought at BASF. These boards serve as an air conditioning management device for indoor rooms. There are both passive and active application concepts. Passive concepts increase the thermal mass when there is a lightweight construction and contribute to an improvement of the heat protection in summer.

In active concepts PCM is used as a heat storage medium to realise air conditioning engineering concepts for example in combination with the active cooling of construction components.

Latent heat storage devices are a future technology which enable a new sort of construction materials. Building owners, architects and building designers will get more opportunities which will enable more design freedom, better energy efficiency and more comfort.

More comfort will be achieved when for example a mineral plaster or a paint with air cleaning effect (airfresh – effect)is used. In doing so annoying smells and air pollutants can be reduced heavily and converted into harmless substances.

Innovative construction materials with active functions provide different opportunities do develop modern sustainable and comfortable buildings.

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