

Technology's description

This invention combines water with a mixture of two or more salts which are excellent PCM Materials. The possible concentrations allow to achieve enthalpy values ranging from 200 to 500 kJ/kg, with intermediate properties adjustable to the targeted operating conditions. As well, their processing and use are carried out at atmospheric pressure & dissociation temperatures from -18°C to 35°C.

This high enthalpy & customizable fluid is ideal for heat transfer applications, both for statically (container, capsule...) & dynamically (hydrate slurry). Also, the mixed hydrates processed as slurries can transport the cold & reduce the amount of refrigerant used. Besides, they have the property to trap gases (e.g. CO₂): when melting, a pressure variation in the fluid is induced (gas released). During the design of the PCM slurries, the actual viscosity and dissociation temperature can be adjusted to the targeted PCM specifications without changing initial PCM concentrations. As well, it is possible to transfer cold at higher temperatures reducing heat dissipation, then release the gas in order to decrease the temperature at the point of use. The gas can be recovered as well at this point.

Advantages

- Customization: a wide range of thermal properties (temperatures, enthalpy)
- PCM material tuning (pressure adjustment)
- Avoids dissipation from the source to the point of use, no gases released when leaking or disassembling
- Normal atmospheric pressure and/or room temperature use (gas free).

Applications

- Refrigeration, Air Conditioning, Transport of cold & gas, Chemical Industries.



Intellectual property

Patent

Development level

Technology validated in lab



Technology transfer

- License,
- Know-how.

