

Integrated Hot/Cold Thermal Battery for Direct Air Heating/Cooling

Disclosure Number

201102660

Technology Summary

The disclosed invention takes advantage of synergies resulting from the strengths of two very different thermal storage technologies: the first is hot/cold storage using phase change materials such as the water-ice transition or the liquid water to water vapor transition with the water vapor being adsorbed into a zeolite, - or similar such phase change materials. This technology has the advantage of low-cost and high storage density. The second technology is employing a single or two stage vapor compression heat pump (HP) running off an ancillary battery exhibiting high flexibility in operating modes including using the main electricity supply in case of need. The hybrid system allows for even more operating modes. This technology is a key ingredient in developing the best hybrid electric/thermal storage capability. The resulting hybrid electric/thermal battery takes advantage of the strengths of the individual subsystems resulting in a significantly improved performance level at lower cost as compared to the performance potential of each of the subsystems at minimum weight and volume requirements.

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