



## TECHNOLOGY

# A High Capacity Thermal Energy Storage for Separate Sensible and Latent Cooling

## OVERVIEW

### Background:

Conventional air conditioning systems utilize low temperature evaporators to cool and remove moisture from hot and humid air. In order to remove the moisture, the air temperature has to be below the dew point of the indoor air. However, the dew point temperature is usually lower than the temperature required for the conditioned air supply. Some kind of reheating process is necessary in order to increase the air temperature to an appropriate, comfortable level. The energy is wasted in the process. In the separate sensible and latent cooling system (SSLC) the total amount of cooling is delivered by two sub-systems – the first one only provides sensible cooling, and the second one dehumidifies incoming air. Current typical thermal energy storage (TES) utilizes the temperature glide of 5K.

### Innovation:

Researchers at the University of Maryland have suggested a novel high capacity thermal energy storage system that is integrated into SSLC applications. During the discharge of the TES, the air is cooled and dehumidified in counter flow to the chilled water and the chilled water is heated to the temperature of the incoming air, which is to a much higher value than customary. The use of temperature glide increases the capacity of the water thermal energy storage system three to four times.

## APPLICATIONS

Residential air conditioning systems  
Commercial air conditioning systems

## ADVANTAGES

Improved energy efficiency of air-conditioning systems  
Meeting requirements for smart grid implementation

## CONTACT INFO

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## Additional Information

## INSTITUTION

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## **EXTERNAL RESOURCES**

PS-2014-172