Thermal Battery™ Cooling Systems

The grid is changing due to climate change and the growth of intermittent renewable resources. Soon electricity will be priced by time of energy use. When energy is plentiful, energy prices will be inexpensive but when the sun doesn't shine or wind doesn't blow, or there is a heat wave, energy prices will soar! Can your building react?

Trane Thermal Battery Cooling Systems can help overcome pricing volatility and the intermittency of renewable generation; Can provide resiliency and enable energy agility for the grid and buildings; Plus manage energy costs.

The Thermal Battery system acts like an air-conditioning battery. The Trane controlled chiller charges Ice Bank® energy storage tanks when excess or inexpensive energy is available. The tanks discharge when demand and price are high or when the utility asks for the discharge to occur.

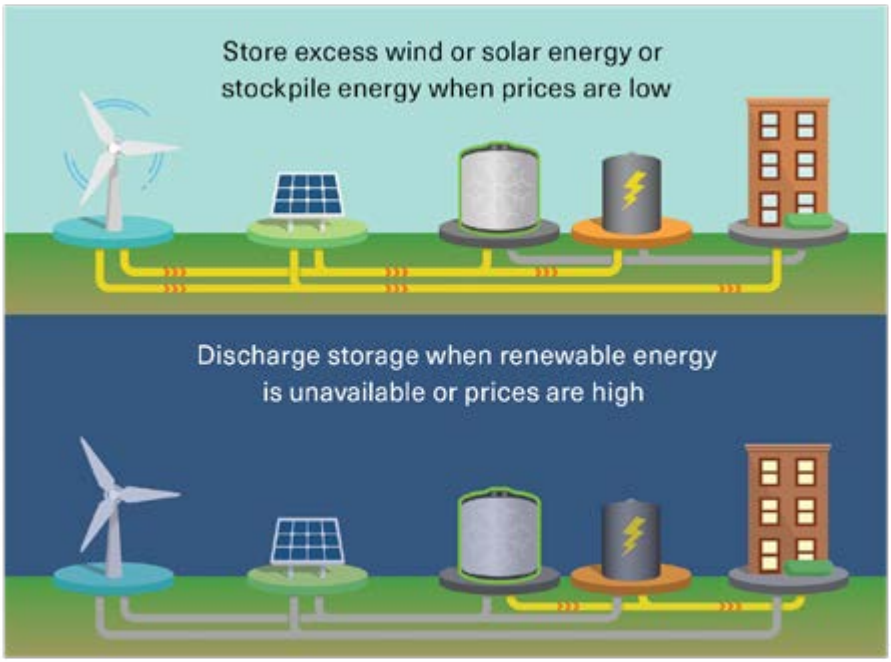
Features

The Thermal Battery™ system features a standard chiller with ice making controls as a factory option, completion module with pumps, controls, control valves, PFHX, if needed and all piping specialties. The control system dash boards demonstrate savings, modes of operation, schematics and much more.

At the heart of the system is a CALMAC Ice Bank thermal energy storage tank, which stores clean, inexpensive energy when available in the form of ice. Unlike other thermal storage systems, the system can come pre-packaged and engineered into a simple turnkey design and fast installation. Just one CALMAC tank has the capacity to cool 6 homes. Energy in the form of ice is stored inside the Ice Bank® tank. One Ice Bank tank* can store18kW over 6 hours to cool over 7,400 sqft. That is 108kWh/day per tank.

Why store cooling?

Buildings are responsible for 40% of the US energy consumption, half of which is due to HVAC1. As utilities and the electric grid evolves and changes, buildings that have the ability to store energy and the agility to modify operational processes will have an advantage to help owners partner with local utilities and to provide energy storage assets to help support and meet their financial and sustainability goals.



Buildings have thermal loads and electrical loads. Peak demand charges can be avoided by storing cooling loads with a Thermal Battery system and a portion of the electric loads in an electro-chemical battery. It is neither efficient nor cost effective to store thermal loads in an electro chemical battery and vice versa. Energy storage provides a building with energy agility. The systems' dashboards help operators with energy awareness to support utilities and resiliency to keep cost low.

Thermal Battery™ systems do the heavy lifting storing the bulk of the energy loads due to HVAC. Cooling is stored at 1/3 the cost of other electrochemical battery systems and lasts 2 to 4 times longer.2 It would make no sense to convert renewable energy to chemical energy only to convert it again with an electric chiller to a btu. That is very expensive and inefficient. Plus with Thermal Battery systems there is no need for capacity additions due to degradation.

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