

VIKING COLD SOLUTIONS

OPTIMIZING ENERGY CONSUMPTION FOR THE GLOBAL COLD CHAIN

“Up to 40% of the food produced in the field is wasted before it reaches the fork,” reveals James Bell, CEO of Viking Cold Solutions. Most of that food’s journey is through the global cold chain, which has the highest energy demand of any industrial load per cubic foot and the third highest utility usage category for overall energy consumption. Over \$30 billion worth of energy is consumed globally by cold storage facilities every year.



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These cold storage facilities must maintain low, stable temperatures 24 hours a day. With energy costs on the rise, cold storage operators and utilities are looking for flexible and efficient energy solutions and alternative energy sources that

require greener and more reliable storage technologies. Energy storage with the ability to optimize the time and amount of energy used is key to managing energy costs—enter Viking Cold’s Thermal Energy Storage (TES) technology.

Increased System Efficiency Through Flexibility

Viking Cold’s TES systems store energy in the form of cold to be used at times that provide the most economic benefit to cold storage operators. Improved system efficiencies and time of use flexibility consistently save customers 20%-35% of their energy spend. This flexibility also provides a resource for utility grid operators to help reduce energy demand fluctuations and stabilize the grid—helping to avoid building costly new generation infrastructure and substantially reducing carbon emissions.

The genesis of TES in freezers was born when Paul Robbins, the founder and inventor of Viking Cold’s Thermal Energy Storage technology, saw the need for improved energy efficiency and food protection in the freezer space while shipping frozen food between warehouses in Florida and Puerto Rico. He identified extremely high-energy costs

during transit as well as in the recipients’ cold storage facilities. Viking Cold’s TES system was developed to minimize energy usage to reduce costs while maintaining stable freezer temperatures that better protect food at every point in the cold chain.



James Bell,
CEO

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Innovative Technology for the Global Cold Chain

The Viking Cold TES system is comprised of three key elements: Phase Change Material (PCM), intelligent controls, and a cloud-based

run-time, and avoid customers’ peak demand periods. The TES systems’ efficiency gains allow the refrigeration equipment to be shut down for extended periods of time without compromising the food quality. The monitoring system allows customers to remotely monitor temperatures, equipment run time, door openings, and energy savings in real-time while aggregating the data for enterprise-wide analysis and optimization.

systems are being deployed in cold storage warehouses, supermarkets, restaurants and food processing facilities with installations planned on four continents in 2018.

Operators & Utilities See Benefits of Thermal Energy Storage

Because of the high-energy demand and energy consumption of cold storage facilities, many utilities have recognized that these “behind the meter” TES systems fit well into their incentive programs to help



monitoring and reporting portal. The environmentally-friendly and food-safe PCM formulas, which are comprised of water and inorganic salts, store and release energy while transitioning in the latent phase between solid and liquid states. While in this latent phase PCM absorbs 300 times more heat than frozen food. The PCM is contained in individual cells which are located above the food and directly in the air flow of the facility’s refrigeration equipment. Viking Cold’s intelligent controls integrate with the existing refrigeration equipment to monitor freezer conditions to optimize efficiency, minimize equipment

One unique application in California paired Viking Cold’s TES technology with onsite solar PV at a large cold storage facility. This solar energy storage solution resulted in a 95% reduction in overnight grid demand and a 39% energy cost savings overall. The flexibility of the energy storage allowed the facility to achieve LEED Gold V4 Certification and earn the “2017 Energy Champion Award” from their local utility.

“We are focused on creating innovative products that meet the needs of our customers—from small grocery stores to industrial freezer operators to utilities,” according to Bell. The company’s TES

balance the grid and delay costly infrastructure investments. The Viking Cold TES systems have been tested and accepted by numerous utilities around the country for installations in retail, commercial, and government facilities.

Viking Cold’s Thermal Energy Storage solutions are transforming the cold chain while protecting the world’s food supply. This storage technology continues to grow and evolve as more operators and utilities recognize the value in cost savings and environmental benefits that are achieved through integrating these innovative and efficient solutions. **EC**