

Smartcool Performance Report

Barbados Dairy Industries Ltd.
Pinehill, St. Michael, Barbados



Smartcool's energy efficiency solutions achieved the following results during a project at dairy processing and cold storage facility:



“We are pleased with the level of savings achieved utilizing the ESM. It is imperative that we maintain control of our expenditures and one way of doing so is to reduce our power usage, which enables us to continue to invest capital back into our company, helping sustain our economic growth.”

- Clyde Gibson, Managing Director, Barbados Dairy Industries Ltd.

The Energy Efficiency Project

Pinehill Dairy is the primary processing plant for the products of Barbados Dairy Industries. Over 15,000 liters of milk are collected daily, and rely on the high quality equipment at the facility for bottling and other processes before going to market. Other products such as juice and yogurt are also processed at the plant.

Smartcool installed the ESM™ to optimize the compressors in 11 refrigeration systems (various manufacturers) and 2 Carrier air conditioning systems at the dairy processing and storage facility.

Over a two week period in May 2008, the ESM™ units were switched between ON and OFF mode to gain comparative energy usage data. Energy data loggers were installed to monitor the energy consumption of the compressors both with and without the ESM™ units in operation. These loggers took data samples every 8 seconds with an accumulated record every 6 minutes. During the analysis, the data is accumulated and averaged over one hour periods to provide comparative data. The temperature performance of the units during the evaluation was also monitored.



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Project Results

The evaluation demonstrated an overall average reduction in electricity consumption for the air conditioning and refrigeration systems of 166,413 kWh per year, representing energy savings of 17% by the ESM™. This energy savings equates to a rapid return on investment of just 25 months, as well as a reduction of 101,817 kg greenhouse gas emissions.

These energy efficiency gains were made with no discernible impact on temperature or humidity performance of the refrigeration and air conditioning systems.

Smartcool's Energy Efficiency Solutions

Smartcool's green technology is specifically designed to reduce electricity usage (kWh) and demand (KW) of air conditioning compressors, while maintaining temperature and humidity performance.

Conventional controls, including the most sophisticated Building Management Systems (BMS), operate only on reaching pre-programmed fixed (static) values to switch compressors on, and off, or adjust capacity. Rather than replacing existing controls, Smartcool's ESM™ and ECO³™ interface directly with controls to optimize the compressor run time and achieve greater energy efficiency.

ECO³™

The ESM™ and ECO³™ use proprietary software to dynamically analyze compressor cycles, achieving an overall reduction in run time without causing over cycling. Energy efficiency gains are achieved without affecting cooling capacity, temperature requirements or manufacturer warranties.

Smartcool's products optimize the performance of the compressors which consume an estimated 70% of the energy utilized by the cooling system. By reducing the compressor run time through cycle optimization or load shedding, our products save energy both through lower electricity usage (kWh) and decreased demand (KW).



ESM™