

Solar Assisted Refrigeration

Solar Assisted Refrigeration for large Commercial Refrigeration Systems

Project Code
2020-1021

Prepared by
Tynan Coles

Date Submitted
29/06/2021

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Project Description

This new technology creates a Substitution and/or additional thermal energy via of a secondary FREE source, the sun. The Thermal Collectors are Retrofitted to an existing system, only to replace an element of the thermal energy normally generated by the compressors on a variable speed, or RACK type system. In an open cylinder circuit with sensors, compressor loads are reduced dramatically.

The capabilities and efficiencies of our solar thermal solution, have exceeded and continue to exceed expectations across a range of industries. It has the ability to provide a significant number of benefits, to most if not all organisations, within the Red Meat Industry, through the use of our new solar thermal collection technology.

Project Content

The project contains a comparison of the 12 monthly power usage before and after the solar thermal solution upgrade. It goes through in more detail, each of the benefits that this solution provides commercial refrigeration systems.

Project Outcome

The outcome from the project showed a significant reduction in kVAh and kWh usage across the upgraded refrigeration system. We were also able to reduce the maximum number of compressors running at one time leading to a reduction in demand charges. These reductions were achieved even with the increase of kill weight that these cool rooms were storing. A summary of the project results is in the table below.

Kill Weight Increase	9.5%
kVAh Consumption Decrease	53.7%
kVAh Consumption Kill Weight Adjusted Decrease	57.7%
kWh Consumption Decrease	33.6%
kWh Consumption Kill Weight Adjusted Decrease	39.3%
Demand Charge Savings	26kVA
Power Factor Savings	30.1%
Maintenance and Repairs	\$0
Monetary Savings	\$20,081

Benefit for Industry

There are multiple benefits that our solar thermal solution can provide the industry. The main benefits are listed below.

Reduction in Electricity Usage

By substituting the compressor load, with our solar thermal collectors, we are able to reduce the number of compressors required to output the same amount of cooling. Less compressor runtime, leads to less electricity required to maintain the required temperature.

Demand Charge Savings

The increased capacity provided by the solar thermal collectors, meant we could limit the maximum number of compressors on at one time. This led to a reduction in site demand, a large component of your electricity bill.

Reduction in Maintenance and Repair costs

Less compressor runtime leads to less maintenance and repair costs. Since the upgrade was completed, there has been no maintenance required on the upgraded refrigeration system.