Commercial Refrigeration Evaluation - Australia

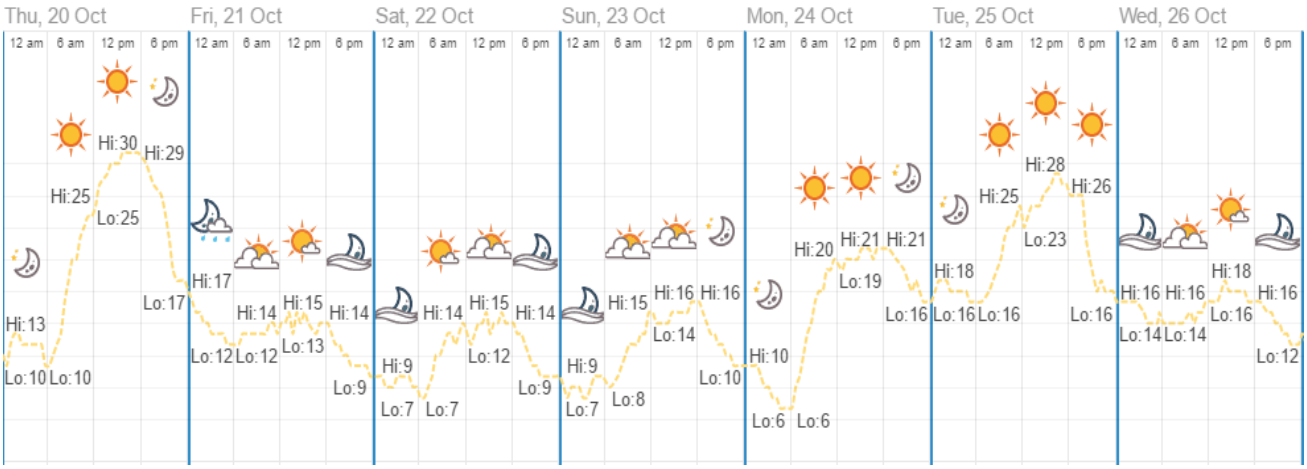
Solar Thermal Refrigeration

Solar thermal assisted compression technologies installed at Highway Meat, Torrensville, Australia.

The Highway Meat cooling facility consists of two Bock HGX6 - 1080-4 compressors, responsible for maintaining a temperature of -18°C. The installation consisted of five solar thermal systems in parallel, partnered with the lead compressor under master and slave control.

Evaluation data - Prior

The graph below illustrates a single week of the weather conditions monitored **prior** to the evaluation period, which includes – average temperatures, sun penetration and cloud cover.



The figures below show the average daily kWh usage of the system prior to the evaluation period.

Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh
20-Oct	1024	21-Oct	1040	22-Oct	957	23-Oct	916	24-Oct	969	25-Oct	1037	26-Oct	983

Average daily high temperature monitored prior to evaluation period	–	21°C
Average daily low temperature monitored prior to evaluation period	–	9.6°C
Average daily energy consumption monitored prior to evaluation period	–	990kWh
Total energy consumption monitored prior to evaluation period	–	6926kWh

Following an in-depth survey of the plant and premises, along with the above post installation monitoring, Citisolar projected an average energy reduction for the client of 153kWh per day, based around the present usage conditions.

Energy earns, or simply burns
...the choice is yours

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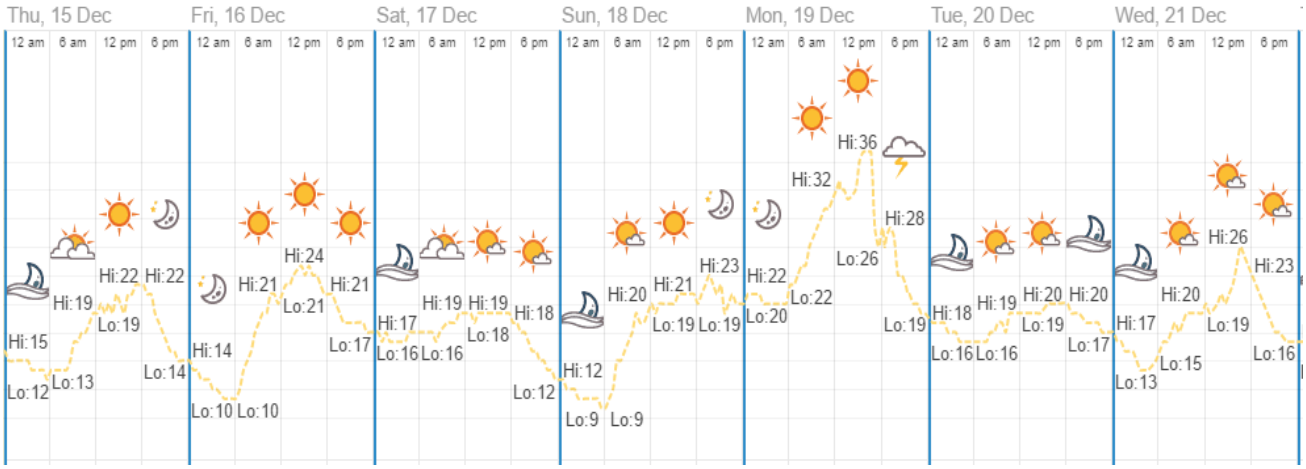
Evaluation data - Post

The graph below illustrates a single week of the weather conditions monitored **during** to the evaluation period, which includes – average temperatures, sun penetration and cloud cover.



The figures below show the average daily kWh usage of the system prior to the evaluation period.

Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh	Date	kWh
15-Dec	766	16-Dec	779	17-Dec	693	18-Dec	638	19-Dec	814	20-Dec	809	21-Dec	775

Average daily high temperature during to evaluation period – 24.3°C (+3.3°C)
Average daily low temperature during to evaluation period – 13°C (+3.4°C)
Average daily energy consumption during to evaluation period – 754kWh (-236kWh)
Total energy consumption during to evaluation period – 5275kWh (-1651kWh)

Total energy consumption reduction – 24%

Although a very positive result so far, it is important to understand that the achieved energy savings are considered exceptionally conservative. The reason being, the average high and low ambient temperatures monitored during the post data period were well in excess of 3% higher than that of the prior measured data. Those educated in this area will know that this differential can have significant negative impact on energy consumption of the refrigeration under normal circumstances, and therefore most would expect to see an increase in energy consumption of the comparative periods, certainly not a significant decline as above.

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