

# Solar Thermal Air Conditioning



Solar Thermal assisted compression technologies providing effective and efficient process cooling.

Solar Thermal Technology considerably increased the efficiency of the air conditioning within a large IT room at Wyedean School, Gloucester UK. An innovative, combined technology designed to harvest the free energy from the sun, thus creating thermal energy to better assist the refrigerant compression process.

## Customer Situation

Following the repeated failure of the school's existing air conditioning units, Solar Thermal technologies were installed as a replacement.



## Solution

An evaluation system, with a view to replacing the existing failing air conditioning units with the Solar Thermal equivalent technology.

## Benefits

- \*Reduce electricity overhead
- \*Reduced ongoing equipment maintenance costs
- \*Extended equipment lifespan
- \*Reduced CO2 production
- \*Improved working temperatures

Two IT rooms directly adjacent to one another at the school fortunately made it possible to directly compare the newly installed Solar Thermal Collector technology against the existing Daikin system that was still installed in the other classroom.

Below is a table of results illustrating the difference in efficiency with both machines were running at the time

The results speak for themselves.

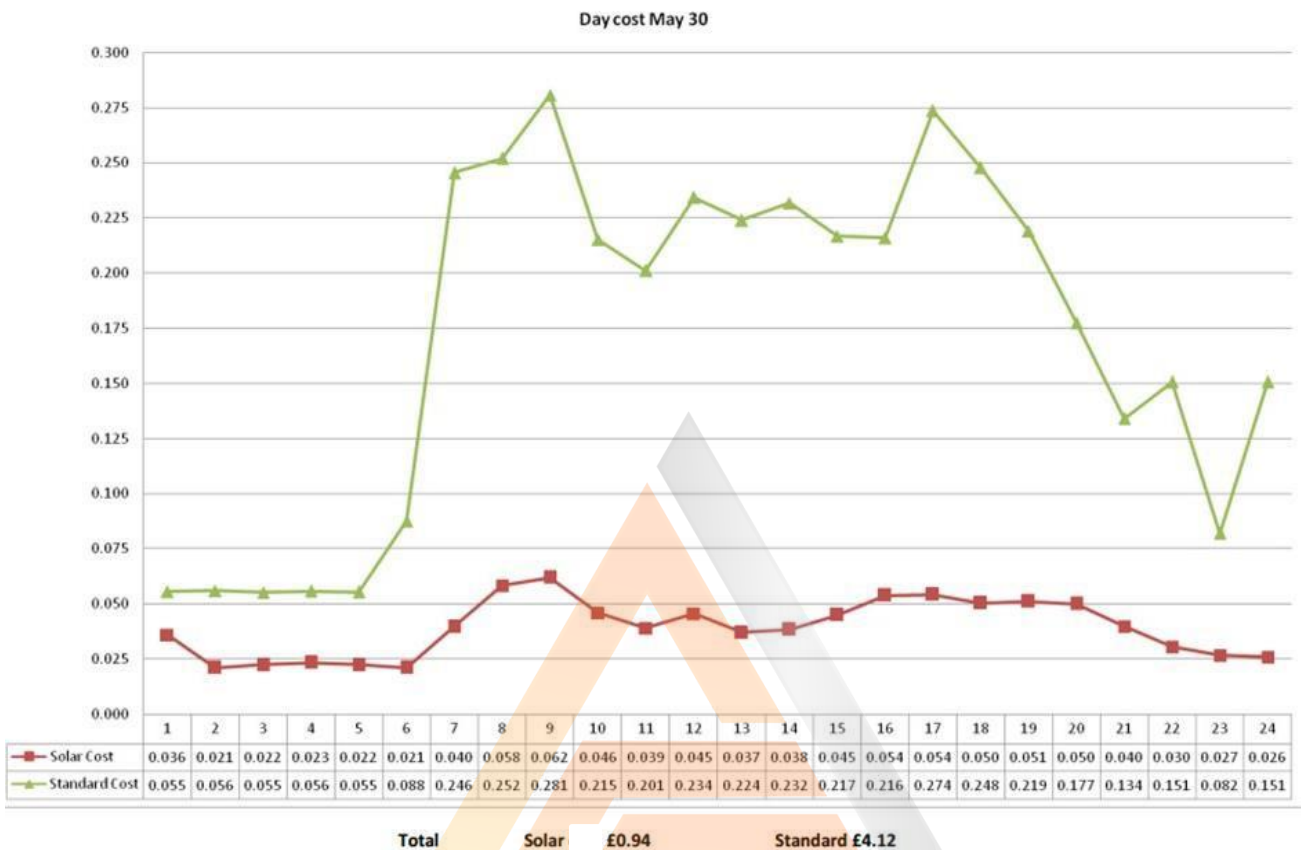
Date	Solar Thermal	Standard	Difference	Saving
May-18	1.51	4.5	2.99	66%
May-28	1.24	7.69	6.45	84%
May-29	0.93	4.54	3.61	80%
May-30	0.94	4.12	3.18	77%
May-31	0.62	2.3	1.68	73%
Jun-25	1.64	6.39	4.75	74%
Jun-26	1.43	8.09	6.66	82%
Jun-27	1.23	8.9	7.67	86%
Jun-28	1.64	6.39	4.75	74%
Jun-29	1.65	7.13	5.48	77%
Jun-30	3.28	12.71	9.43	74%

The three preceding graphs illustrate the difference in energy consumption between the standard system and the Solar Thermal Collector system. The recording was taken on two separate dates, 28th May and 30th May 2015.

The specification of the two systems was as follows:

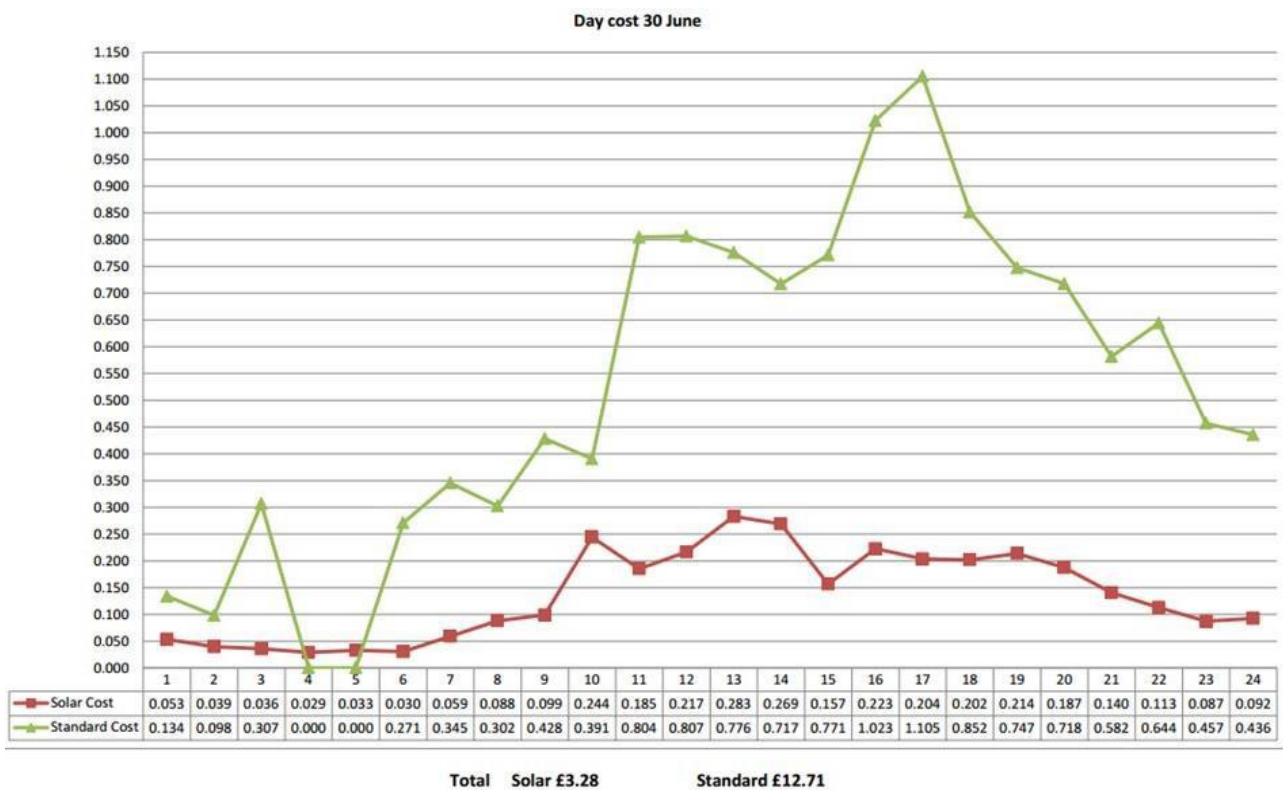
- **Solar Thermal** MDV-V140W/DN1 Inverter 14kW ODU single phase system with two MDV- D71Q4/N1-D 4 7.0kW 4-way cassettes, single phase.
- **Daikin** RYP125B7WI Inverter 12.5 kW 3 Phase Twin Split with two FHYCP60B7V1 6.0 kW 4 way cassettes

The device which was used to collect and monitor the data and consumption was an OWL wireless electricity monitor +USB.



The total usage cost for the Solar Thermal Collector system on 30 May was £0.94, whereas the total usage cost for the standard system was £4.12 – a staggering almost 440% higher (In this case - costs are calculated on 13p for kWh).

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The total usage cost for the Solar Thermal Collector system on 30 June was £3.28, whereas the total usage cost for the standard system was £12.71 – over 340% higher (In this case - costs are calculated on 13p for kWh).

Both comparisons above show a clear conclusion the Solar Thermal Collector system presented a credible saving.

**Project Partners**

- Cotswold Vale Refrigeration Ltd.
- Modern Refrigeration UK Ltd.
- Wyedean High School and VI Form

Solar Thermal Collector technology for refrigeration and air conditioning reduces the overall energy consumption by up to 60% when the sun is in the sky.

*“The UK benefits from between 1,700 and 1,900hrs of unbroken sunshine every year, at such a small comparative additional cost there are no reasons why any business cannot take advantage of this free energy on their cooling & heating systems”*  
 - Chris Micallef, Technical Director

[To find out more...](#)

If you'd like to know more about this project, please email: [Chris@Falkonair.com](mailto:Chris@Falkonair.com)

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