

## Case Study

# Solar Thermal Air Conditioning

Solar thermal assisted compression technologies providing effective and efficient cooling solutions.

The Marketing 4 Solar Cooling Technology dramatically increases the efficiency of the chiller systems used for comfort cooling and therefore lowering the emissions for Cummins at their Peterborough head office facility. Marketing 4 Solar Cooling is an innovative mix of compression and absorption combined technology, designed to harvest the energy from the sun. Thus creating free thermal energy to assist the efficiency of the refrigerant compression process.

### Customer Situation

A substantially sized building occupied by Cummins Inc. Utility costs are fast becoming the number one overhead after people in this facility. The head of facilities is tasked with reducing this cost.

**Problem:** Several applications consuming large amount of energy and as such, leading to increasing overheads for the company.

### Solution

Retrofitting Solar Cooling to the existing 120Kw (35T) chiller system, installed to manage comfort cooling at the offices based in the Lynch Wood site in Peterborough.

### Benefits

- \*Reduced electricity overheads
- \*Reduced ongoing equipment maintenance costs
- \*Extended equipment lifespan
- \*Reduced CO2 production
- \*Improved working temperatures
- \*Increase in staff comfort



**Generator  
Technologies**

Prior to the installation of this innovative system, the chiller units' consumption was averaging over 200kWh. The Solar Cooling partnership substantially reduced this usage, even surpassing our initial projections.

Not only achieving a more comfortable working environment, but also reducing the running costs of the cooling system by c. 50%, not to mention the vast reduction in emissions.

The CO2 reduction is of particular significance to Cummins Inc. as the company have their very own in-house commitment to producing technologies and products that reduce harmful emissions across the globe. Cummins Inc. are constantly striving to reduce their own carbon footprint and were especially pleased to help achieve these operating standards.

A further aspect adding to the commercial viability of the Solar Cooling pioneering technology is the ROI timeframes, and the significantly reduced ongoing maintenance costs of the said system. Not to mention future proving the business against expected carbon taxation.

**Solar Cooling boasts an ROI of greater than seven times that expected from PV & Wind.**

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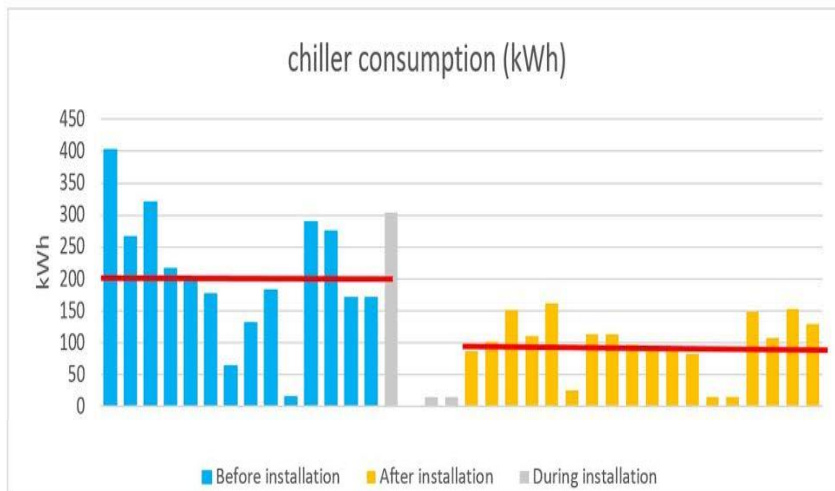


Figure 1: Screenshot from the BMS system (Source: Cummins Inc.)

Cummins continually track the energy consumption data of all large energy consuming equipment throughout their estate.

The graph to the left illustrates the dramatic energy consumption reduction, for the water chillers in this particular facility.

We are now over 1-year since installation (Sept 15), with energy reduction still tracking at over 40%.

*"It's all looks positive so far, to the point where we now have evaluation proposals submitted in the business for Mexico, Columbus, Dubai, India for 2017. In addition we have an agreed evaluation for Charleston, South Carolina planned in for the back end of 2016"*

**Justin McKay, Global Facilities Controller, Cummins Inc.**

### Project Partners

- Cummins Inc.
- Thermx



Picture 1: A Solar installation at Cummins Peterborough (Source: SCE image library)

*"We projected energy consumption savings of 37% over the period of an average year. We knew they efficiencies would be high, given that this was an inefficient system in the first place. We did not however expect the 50% YOY within the first 3-months, and more importantly exceeding well over 40% for the whole year"* – Chris Micallef, Technical Director, SolX Energy



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